

Prenatal Assessment of Parenting/Child Abuse Potential:

A Self-administered Screening Tool for Prenatal Women

By

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**PRENATAL ASSESSMENT OF PARENTING/CHILD ABUSE
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BY

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Abstract

The physical abuse and neglect of the child between zero to four years and the identification of mothers with potential to abuse is an ongoing problem. The 351 subjects from physicians' offices, hospital prenatal clinics, and prenatal classes completed the SSAPQ, and the CAP Inventory. The obstetrical outcome checklist was completed following the delivery of the baby. The study demonstrated a relationship between the assessment of: (a) nursing experts; (b) referrals by hospital nurses; (c) the Short Self-administered Parenting Questionnaire (SSAPQ); and (d) the CAP Inventory to screen pregnant women who have a potential to abuse. The mothers who had their babies apprehended were more likely to be: younger, have fewer years of schooling, drink, smoke, and have fewer support persons. More of the apprehended group were aboriginal, on welfare, more likely to have been beaten by their parents as children, and suffer from low self-esteem. The SSAPQ was revised, resulting in a total of 15 variables. The variables in the SSAPQ.15 were: age, years of schooling, ethnicity, transiency, single, welfare, more than two children under five years of age living in the home, beaten by parents, ever abused, smoking, drinking alcohol, low self-esteem, no support, dissatisfied with support, and lack of a phone. A cut-off score of six for the SSAPQ.15 was recommended. Using the apprehended/non-apprehended groups, the SSAPQ.15 had a sensitivity of 91.7 %, specificity of 83.9%, and a correct classification of 88.6%. The revised CAP.28 had a recommended cut-off score of 11. Using the apprehended/non-apprehended groups, the CAP.28 had a sensitivity of 90.9%, specificity of 82.4%, and a correct classification of 82.64%. Analysis of over-dispersion demonstrated that the apprehended group ($n = 12$) was not overdispersed in this sample ($n = 351$). Logistic regression was used to determine a model for predicting potential to abuse. The SSAPQ.15 was the instrument of choice, but the addition of the CAP.28 or the CAP as a secondary screening instrument is recommended.

Dedication

To

Donald N. Rourke

This dissertation is dedicated to my husband for his love and steadfast support over the past forty years. His humour, wisdom, caring, and endurance have made the completion of this doctoral degree possible.

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Finally and most importantly, to my family for their love and support, and especially to my grandchildren, Dana, Carol, Darcy, Neil, Donald, and Dorian, who are my future.

Introduction

Physical child abuse has been documented for centuries. In the past, children were the property of their parents. Punishing children, without concern for their physical or mental well-being, was considered permissible. However, in the twentieth century, society began to acknowledge that child abuse was not an acceptable societal norm. Laws were established to protect children. In 1891 the first Children's Aid Society was formed in Toronto followed by similar legislation in Manitoba in 1898 (Wachtel, 1989). However, problems related to reporting of child abuse continued to exist. As a result, the Child and Family Services Act was passed in Manitoba in 1986. This act requires that persons who have knowledge of children at risk are responsible under law to report the situation to designated agencies. In both the USA and Finland, in 1965 and 1981 respectively, 3% of the population reported knowing of children who had been a victim of physical abuse during the previous year (Sariola & Uutela, 1992).

The incidence of abuse has been studied extensively in the USA. As early as 1973 physical child abuse was estimated to be between 200,000 and 500,000 cases per year (Green, 1979). The National Center on Child Abuse (USA, 1988) reported that each year 16.3 children per 1,000 children under 18 years are maltreated; 9.2 are abused; and 4.9 are physically abused (Gelles & Cornell, 1990). In a recent study, Knutson and Selner (1994) found that over a 10 year period, university students had not reported an increase in the incidence of severe physical discipline as children. Interestingly, many of the student failed to recognize that their punishment had been abusive. Researchers in other countries such as New Zealand (Kotch, Chalmers, Fanslow, Marshall, & Langley, 1993) studied rates of morbidity and mortality and found that, among 92 fatalities, only 21 of 68 deaths due to physical and/or sexual abuse were so coded. Segal (1992) in India studied the awareness of professionals and non-professionals of the problem of child

abuse and found some cross-cultural differences between what was considered abuse in India and the USA.

Statistical information is not consistently and regularly available on a national basis in Canada. However, various provinces collect abuse reports or cases listed on their child abuse registries. In British Columbia, confirmed cases increased 1100% from 1974 to 1984. Overall reports in Manitoba increased by 289% from 1979 to 1986. In 1984/85, the British Columbia Ministry of Human Resources reported that the reason for apprehension of children due to physical abuse was 7.5%, an increase from 5.5% in 1983/84. In 1986, Manitoba reported that 29% of child abuse reports were physical and that a 9% increase had occurred over the preceding five years (Wachtel, 1989). Children's Hospital Child Protection Centre (1990) reported that confirmed cases of physical child abuse had increased from 137 to 261 cases, a 52.5 percent increase between 1982 and 1989 (see Appendix A).

In 1989, 1079 children were referred to the Winnipeg Children's Hospital Child Protection Centre. Of the 434 referred for physical abuse, 261 were confirmed as physically abused and 74 as injured due to neglect or gross general neglect. Definitions of the terms abuse and neglect were not incorporated into the report. In 1987 and 1993, newborn babies were discharged with their mothers from a Winnipeg hospital and a short time later the infants were found dead as a result of alleged abuse. In a study of child abuse fatalities Schloesser, Pierpont, and Poertner (1992) found that the majority (85%) of deaths were children under two years of age and 65% were under one year. Similarly, Sabotta and Davis (1992) studied fatalities of children who were known to the Washington State Child Abuse Registry. They found that children who were reported to this agency had a three fold greater risk of death than children not known to the agency. The highest fatality rate occurred for those children who were less than one year of age. In addition, a report of physical abuse carried the highest risk

of subsequent death. Kotch et al. (1993) found that younger children were more likely to be physically abused than sexually assaulted. More than half of the victims of physical abuse were less than three years of age.

In the 1987 Winnipeg case, the court commented that a problem existed with the communication between the staff of the hospital and the Child Protection Agency. Although all mothers are referred postnatally to the Community Health Nursing (CHN), not all mothers with a potential to abuse are identified consistently, referred to CHN, a Social worker or Child and Family Services (CFS), or provided with appropriate care early in pregnancy. The assessment, referral, education, and support of mothers with a high propensity to abuse their children is an important aspect of the care that can be provided by members of the health care team. The physical abuse and neglect of the child between zero to four years and the identification of mothers with potential to abuse is an ongoing problem. Lewin (1988) emphasized that, if our goal is to save babies, we must ensure that mothers have access to prenatal care and knowledge of basic parenting skills. Without a reliable and succinct method of identifying mothers who need special care, prevention is only a dream.

Several questions arise from the problem of child abuse and the difficulty identifying mothers with potential to abuse their children:

- (a) How accurately do nurses assess mothers with a propensity to abuse?
- (b) How consistently do nurses identify and refer pregnant women who have the potential to abuse?
- (c) What set of multivariate criteria, that could be incorporated into a self-administered prenatal questionnaire, would best predict the potential to abuse?
- and (d) Does this set of criteria identify the potential to abuse as effectively as other instruments such as the Child Abuse Potential (CAP) Inventory (Milner & Wimberley, 1979).

The purpose of the proposed study was to: (a) determine how

effectively nurses presently identify those pregnant women who have the potential to physically abuse their children; (b) test the effectiveness of the Short Self-administered Prenatal Questionnaire (SSAPQ) as another method of identifying prenatal women with abuse potential; (c) determine the relationship between the results of the SSAPQ and the results of instruments developed by other researchers; and d) describe the differences and similarities between the pregnant women who have high potential to abuse and had their babies apprehended and those whose babies were not apprehended; pregnant women who were later referred by hospital nurses for early Community Health Nursing (CHN) visits for social problems and those who received routine CHN visits. The purpose of identifying pregnant women who have a potential to abuse is to ensure that these pregnant women receive the services they require to prevent abusive behaviour toward their children.

Review of Relevant Literature

A selective review of studies related to physical abuse of children emphasizes that abuse is related to numerous variables including characteristics of mothers, demographics, family patterns, etc. (see Appendix B). Pregnancy or the perinatal period has been identified as a 'window of opportunity' to assess the potential to abuse (Helfer, 1987). The earlier the potential for parenting difficulties and abuse can be assessed the greater the chance that mothers will receive the help they need. By incorporating selected variables into a Maternal Nursing Data Base or using a short self-administered questionnaire nurses may be able to increase their ability to assess the needs of pregnant women and implement 'special care' aimed at decreasing their potential to abuse their children.

Several researchers (Bishop, 1976; Hurd, 1975; Josten, 1981; Larson, Collett, & Hanley, 1987; Schneider, Hoffmeister, & Helfer, 1976) have attempted to develop screening instruments to identify parents who might have difficulties with parenting skills. These researchers have used varying approaches in developing their instruments. Nevertheless, problems exist with the majority of as these screening tools for pregnant women. Bishop (1976), a Community Health Nurse, argued that three categories of predictors of abuse are important: (a) physical and emotional energy; (b) available support systems; and (c) mother's current level of parenting. However, she did not publish a specific tool. On the other hand, Hurd (1975) felt that pregnancy, labour, and the postpartum periods afforded important opportunities to assess possible parenting problems. Hurd and McRae (1980) devised a study that included questions for use in the antenatal period. The focus was related to concerns about the sex of the baby, parental expectations of the child, parity, and whether or not the pregnancy was wanted. Although the study was completed no data nor instruments were published (B. Currie, Children's Hospital Child Protection Centre, personal

communication, August, 6, 1992). The questions asked by the researchers were concerned with only a few of the possible variables that could have been examined in the antenatal period.

Another nurse researcher and Community Health Nurse, Josten (1981), developed an instrument entitled 'Prenatal Assessment of Parenting Guide'. The guide is divided into: Part I Maternal Tasks of Pregnancy (a) perceptions of complexities of mothering; (b) attachment; (c) acceptance of child by significant others; (d) ensuring physical well-being; and Part II Parent Problems Associated with Child Abuse and Neglect. This guide includes a history of parenting difficulties, intergenerational abuse, lack of knowledge of pregnancy and parenting, lack of support, mental health problems, family abuse, drug dependency, major stress, rejection of the child, and inappropriate use of services. Only an initial study is reported comparing the nurse's assessment of the parenting potential using the guide and the actual care the mother provided to her children. The results indicated that 87 percent of abuse was correctly predicted using the guide. However, 13 percent were incorrectly identified as abusing. Sample size was not included, nor were the details of the research design but the guide was reported to be appropriate for use by nurses with prenatal women.

Schneider, Hoffmeister, and Helfer (1976) developed a predictive questionnaire used to identify child abuse potential. A cluster analysis was done. Six clusters were found: (a) Problems with mother; (b) I'm no good (self-esteem); (c) Isolation; (d) Child expectations A; (e) Child expectations B; and (f) Depression/Crisis. In addition, 18 other questions were included that were based on clinical impressions (GUT scale) and another scale (DIS) resulting from a Discriminant Analysis was used to detect predictive items. The degree of sensitivity (predicting high risk) varied from 21 to 63 percent and the specificity (predicting low risk) from 45 to 84 percent. In order to achieve a high degree of specificity and sensitivity further analysis was done. The

revised questionnaire consists of four of the measures: (a) I'm no good (IM); (b) Child expectations (CEB); (c) GUT; and (d) Discriminant (DIS). The sensitivity and specificity varied from seven out of ten to nine out of ten depending on the measure. False positives remained a problem. Test-retest reliability was measured on the revised four measures and varied from $r=.60$ (IM) to $.83$ (GUT). This tool was administered to mothers in prenatal clinics, doctor's offices, and postpartum units. However, one important finding in the study was that the single best predictive cluster is self-esteem (IM). The single best item for discriminating between the known abuser and the high risk non-abusing parents is "When I was a child my parents used severe physical punishment on me". Schneider et al. (1976) emphasized that this questionnaire appears to be capable of separating groups of women who are at high and low risk for child abuse potential.

Similarly, Browne and Saqi (1988) attempted to predict abusive behaviour using both retrospective and prospective designs. A screening tool consisting of 12 items was developed that could be used routinely and easily by the health visitor (community health nurse) (see Table 1).

Table 1 - page 8

Some important characteristics that were more difficult to assess, such as marital problems and prenatal experiences, were omitted from the checklist to ensure more consistent and reliable use of the tool. The researchers assumed that the more factors present the more the child would be 'at risk' and the more intervention would be required. A retrospective study of 62 abusive families were matched with two groups of control non-abusing families ($n=124$). Of the thirteen screening characteristics, the relative importance of the items was determined using stepwise discriminant function analysis. The health visitor's perception of whether the parent was indifferent, intolerant, or

Table 1

Screening Characteristics for Child Abuse

-
1. Parent indifferent, intolerant, or overanxious
 2. History of family violence
 3. Socioeconomic problems such as unemployment
 4. Infant premature, low birth weight
 5. Parent abused or neglected as a child
 6. Step-parent or co-habitee
 7. Single or separated parent
 8. Mother less than 21 years of age
 9. History of mental illness, drug, or alcohol addiction
 10. Infant separated from mother greater than 24 hours
postdelivery
 11. Infant mentally or physically handicapped
 12. Less than 18 months between birth of children

From Browne & Saqi, 1988

overanxious was the best predictor of child abuse potential. The items that were not significant were 'infant never breast-fed', spacing between births, and handicap but only breastfeeding was considered as nondiscriminatory as the other two variables did not reach significance due primarily to minimal incidence in the sample. As a result 12 items were retained in the checklist.

The researchers recommended that the items be weighted on the basis of their ability to discriminate between the samples. Fully completed checklists classified correctly 86 percent of cases. The screening procedure was sensitive to 82 percent of the abusing families and 88 percent of the control-non-abusing families. Importantly, the checklist missed 18 percent of the abusing families and incorrectly identify 12 percent of non-abusing families as potentially abusive. The percent correctly classified was 86.2 percent. The problem of misclassification is a persistent problems in the search for a reliable method of identifying parents who are 'at risk' to abuse. Browne and Stevenson (1983) reported in an unpublished study the results of screening 14,238 families prospectively using the 12 item checklist minus breastfeeding (see Table 1). The researchers found that 6.7 percent of the families were 'high risk' and that only one out of 17 (6%) of the 'high risk' families and 0.2 percent of low-risk families abused their children. Browne and Saqi (1988) argued that all families with newborns should be screened in the perinatal period, and at three to six months after birth. Early identification of problems especially in the prenatal period is important in the attempt to prevent child abuse. In addition, approximately nine to twelve months after birth, the infant's attachment to the caregiver, and parental sensitivity to the child's behaviour should be assessed. Browne's checklist is the type of tool that nurses in clinics or doctor's offices might use to identify families 'at risk'. However, some of the items that refer to the child such as, parent indifferent to the child, infant premature, separation

of mother and child, and infant mentally or physically handicapped, would not be appropriate for the primiparous mothers in the prenatal period.

Altemeier, O'Connor, Vietze, Sandler, and Sherrod (1982, 1984) found similar results using a 35 minute interview format in a community prenatal clinic. The questions were related to: other's childhood nurturing; her self-image; support from others; parenting philosophy; attitudes about current pregnancy; and health problems such as alcohol and drug abuse. In addition, a modified Life Stress Inventory and subjective observations were used. However, they found that only some of their questions were significantly related to abuse. Four subjective observations were found to be significant: (a) abusive tendency expressed during interview; (b) another child removed from the home; (c) unusually poor nurturing; and (d) untruthfulness. If the subjective observations are removed from the regression analysis leaving only the 16 items in Table 2, the correlation is reduced from $R = .44$ to $R = .36$.

Table 2 - page 11

Even so, the 16 items might still be useful in predicting abuse. The inclusion of subjective criteria is important but the consistency of application and the reliability between nurses in a busy clinic could be problematic. Altemeier et al. (1984) argued that the prenatal population is an appropriate population to assess for prediction of risk. Their initial assessment identified 65 percent of families who were subsequently identified for abuse within two years.

The researchers felt that this first generation instrument was not a practical instrument for predicting child abuse and suggested that a second generation instrument be developed and tested (R. M. Brayden, personal communication including copy of shortened and revised Maternal History Interview, September, 2, 1992). McLaughlin et al. (1992) used a

Table 2

Antecedents of Child Abuse Interview

Perception of Nurture as a Child

1. Lived in foster care
 2. Didn't get along with mother
 3. Felt parents were displeased with her
 4. Received unfair severe punishment
-

Parenting

1. Lost child to foster care or avoidable death
 2. Feared she might hurt her child (multiparas only)
 3. Refused to reveal reaction to irritating child
 4. Violently attacked child or adult recently
 5. Feel anger toward 'screaming baby'
-

Attitude About Pregnancy

1. Didn't want baby when pregnancy confirmed
 2. Pregnancy definitely not planned or planned primarily for selfish reasons
 3. Felt lonely or depressed since pregnant
 4. Wish she was not pregnant
-

Mother's Demographic Data

1. More than one child less than 5 years
2. More than one child any age
3. Married at some time

From Altemeier et al. (1982)

revised form of the Altemeier tool in a study to determine the effects of comprehensive prenatal care for randomized groups of low-income women. The tool was used to identify mothers who were at risk to maltreat their children prior to randomization. The revised tool consisted of 48 items including a five item Lie Scale (Personal correspondence, Brayden, 1992). The items were weighted. The alpha reliability coefficient for the total scale was .80. The tool was used in an interview setting in a clinic. An additional five miscellaneous items, for example, prepregnant weight, transient tendencies, behaviour during the interview, previously apprehended children, were to be completed by the interviewer. The use of this tool in a clinic for screening purposes might be problematic in terms of time and costs.

Neither Browne and Saqi (1988) nor Altemeier et al. (1982) have developed their instruments into appropriate formats that nurses or pregnant women in antepartum clinics could easily complete. Both require that the nurse observe the patient and subjectively decide on the answers to some questions. Tests related to either reliability or validity have not been reported. However, both groups agree that early identification of mothers who need 'special care' is an important endeavour.

Other researchers (Anderson, 1987; Larson et al. 1987) have also developed tools to be used with pregnant and postpartum mothers in hospital and community settings. Anderson (1987) devised an instrument to discriminate between abusive and non-abusive mothers. The tool consists of weighted items under the headings: (a) Assessment of Client (mother); (b) Assessment of Family; and (c) Assessment of Discipline Methods. The items in this nursing risk assessment for evaluating parenting potential are developed from a Discriminant Function Analysis of selected variables. Although minimal testing has been reported, this tool may be useful in the antenatal period. However, the tool might be used by the nurse in addition to the Maternal Data Base form rather

than as part of a database. The Assessment of Discipline Methods are postpartum and not appropriate until home visits are made.

Larson et al. (1987) and Larson and Pless (1988) also have developed and validated a prenatal and postnatal screening test to demonstrate the potential of high levels of parental dysfunction at six months postpartum. Prenatally the test includes: (a) mother's education; (b) prenatal education; and (c) mother's present smoking habits. Some of these items are part of the Maternal Nursing Database used in most Manitoba hospitals. As a method of assessing dysfunctional parenting a scale was devised (Dysfunctional Parenting Scale - DPS). This scale includes such items as problems with immunizations, visits to emergency, breastfeeding, and accidents. The outcome variables are a broader assessment of actual parenting behaviour than apprehension and/or inclusion in the Child Protection Registry. The Prenatal and Postnatal Screening Tools have been assessed for predictive accuracy. This assessment includes: (a) sensitivity curve (true abnormalities); (b) the probability that those screened high risk are high risk; and (c) the overall proportion of the population screened that is identified as high risk. The researcher reported that the prenatal test had: sensitivity of .82; specificity of .67; positive predictive values (PPV) of .39; predictive negative value (PPV) of .94; and the proportion of population screened (PPS) high risk was .36. Questions arise about whether or not this level of sensitivity and specificity is adequate. Follow-up studies using Larson's instrument are limited.

Geddis, Monaghan, Muir, and Jones (1979) reported on the use of a questionnaire with 200 pregnant women to predict their risk to abuse their children. Monaghan and Buckfield (1981) listed the factors most common in high risk mothers (see Table 3).

Table 3

Factors Most Common in High Risk Mothers

Poor relationships with parents
Premature school leaving with a sense of failure
Incompetence likely (lack of mothering skills at time
of discharge)
Inadequate housing
Poor employment record
Financial problems
Harsh discipline as a child
Abnormal or unrealistic expectations of infant
Socially isolated
Two-generation solo family
Multiple ex-nuptial family history
Parental separation as a child

From Monaghan and Buckfield (1981)

Next Monaghan et al. (1986) developed a tool consisting of 10 criteria that were derived from social work assessments of prenatal women who had social problems. These criteria were: early abuse of mother; low self-esteem; unsupported solo parent; personality difficulties; abusive partner; previous child neglect; social isolation; financial difficulties; unrealistic expectations of the child; and negative perinatal events. Four levels of risk (high, moderate, low, and no risk) were used. The outcome variable was the relinquishment of the child. The 200 women who participated in Stage I of the study were followed for two years to assess the relationship between the criteria and the outcome measure.

In Stage II of the study (Monaghan & Buckfield, 1981), another 300 women were assessed using the criteria and interventions were offered. Among the high-risk subjects, the proportion relinquishing were less at the two-year follow-up for the intervention group. No control group was included for ethical reasons. Stepwise Multiple Regression procedures were used to determine the best predictors of relinquishment at two years from each of the previous studies. For each of the two samples, five variables made statistically significant contributions to the multiple regression. One variable, frequent change of address, was common to both stages. Thus nine unique variables were retained plus four levels of risk. Frequent change of address was the best single predictor. Equal weight was assigned to each variable. However, other researchers (Browne & Sagi, 1988) argue that not all variables related to abuse deserve equal weight.

Researchers (Clarkson et al., 1988; Eagan et al., 1990; Monaghan & Gilmore, 1988; Muir et al., 1989) described Stage III. A random sample of 244 prenatal mothers were classified using the new risk criteria and the same interventions were offered. Fewer mothers were categorized at high, moderate, and low risk and more at no risk. A two-year follow-up to assess outcome followed and 90% of the high risk group had at least

one negative outcome. Sensitivity was reported as 93 percent and specificity as 81 percent using relinquishment as the outcome criteria. The instrument now called the Dunedin Family Services Indicator (FSI) allows the obstetrical team to identify 23 percent of expectant mothers who most need further assessment and possibly preventive intervention (Muir et al., 1989). However, researchers recommend that New Zealand's FSI be tested in other cultures and modified to permit its optimal use in other settings (Eagan et al., 1990).

In administration of the FSI instrument, the risk factors (see Table 4) were checked off by a nurse when the mother enrolled for

Table 4 - page 17

prenatal care and prior to discharge after delivery. However, researchers (Monaghan et al., 1986; Muir et al., 1989) point out that three of the nine criteria may be difficult to assess quickly and objectively. These items are: (a) unrealistic expectations (similar to Azar & Rohrbeck); (b) emotional problems; and (c) lack of intellectual ability. Therefore, calling the tool a checklist may be misleading. The aim of developing a simple tool for primary care was not realized. The authors contended that further study is required to assess reliability and validity of the tool using a variety of settings and subjects.

In 1992 Kemper reported using a self-administered questionnaire for psychosocial screening of mothers in Paediatric settings. The questionnaire contained standard screening instruments for substance abuse, depression, self-esteem, social support, domestic violence, homelessness, and parental history of abuse. These variables are important in assessing childrearing potential. The subjects response rate for sensitive questions was 85 percent. Also the questionnaire identified significantly more mothers with possible substance abuse, depression, low self-esteem, and/or history of abuse as a child than

Table 4

Revised Criteria for Determining Risk

-
1. Mother has had frequent changes of address in the year before delivery (More than 2 changes of address in the previous 12 months).
 2. Mother has had past or present psychiatric treatment.
 3. Likely incompetence of mother as a parent because of apparent emotional problems.
 4. Likely incompetence of mother as a parent because of apparent lack of intellectual ability.
 5. Mother has unrealistic expectations of new child.
 6. Mother refused (or dropped out of) prenatal classes.
 7. Mother changed her decision regarding adoption of child.
 8. A previous child was abused or neglected.
 9. Mother suffered parental violence or neglect as a child.
-

This checklist is completed by the nursing staff when the mother enrolls for delivery at the Queen Mary Hospital and when she is discharged. Monaghan et al. pointed out that three of the items (Items 3, 4, and 9) are difficult to assess quickly and objectively.

From Monaghan et al. (1986)

staff charted following interviews with the mothers. Kemper (1992) emphasized that self-administered questionnaires should be considered for routine screening in clinics serving high-risk populations.

The Child Abuse Potential Inventory (CAP)

The most researched tool used to predict child abuse potential is Milner's Child Abuse Potential (CAP) Inventory. The CAP Inventory is a self-administered test with 160 agree/disagree items at a grade three readability level (Milner, 1986). The CAP was based on a psychiatric and interactional theoretical framework of physical child abuse.

Milner and Wimberley (1979) reviewed some 700 articles and books related to child abuse and sought to delineate a taxonomy of personality traits that research and theory suggested were characteristics of individuals who abuse children. They grouped the results into the following areas: unrealistic childrearing attitudes and expectations; anxiety over a child's behaviour; problems in interpersonal relationships; feelings of inadequacy, isolation, loneliness, depression, vulnerability, and insecurity; inability to handle stress; rigid attitudes; impulsivity; dependency; immaturity; negative childhood experiences; and problems in parental relationships. Although not used in the CAP, other variables were cited including problems such as poverty, lack of education, drug abuse, and psychosis. The result was a 334 item Inventory. The agree/disagree format was chosen instead of the Likert-type response, a more precise and favoured type of scale. The researchers believed that individuals under suspicion of abusing their child would be more likely to distort or fake their responses using the Likert Scale. Answering items with minimal face validity was thought to be more difficult to distort using a forced-choice format.

In the initial study Milner and Wimberley (1979) using the 334-item CAP Inventory matched 19 abusing and 19 nonabusing parents on residence, gender, age, ethnic background, education, marital status, number of children, age of children, and gender of children. A regression

analysis indicated that seven of the items showed the highest level of discrimination and accounted for over 90 percent of the variance. The "best" 25 items accounted for 99 percent of the variance. Four dimensions were identified as: loneliness; rigidity; problems with self, family, others, and things in general; and lack of social and self control. Rigidity and problems with self, family, and others discriminated more clearly between abusers and nonabusers than loneliness and control. Forty-four items were significant discriminators and 28 items showed strong discriminating trends. These 72 items, a weaker group of 39 items, plus an additional 12 items suggested by the research staff and social workers, were compiled into a revised CAP. Milner and Wimberley (1980) studied 65 abusive and 65 nonabusive matched parents. As a result seven factors were identified that were able to distinguish the abusers from the nonabusers as follows: distress ($p < .001$); rigidity ($p < .001$); child with problems ($p < .01$); problems with family and others ($p < .001$); unhappiness ($p < .001$); loneliness ($p < .001$); and negative concept of child and self ($p < .04$). Each factor scale involved a variety of statements related to that particular dimension (see Table 5).

Table 5 - page 20, 21, 22

Robitaille, Jones, Gold, Robertson, and Milner (1985) confirmed a statistical relationship between the CAP Inventory rigidity subscale and authoritarianism as measured by the Public Opinion Scale. No relationship was found between child abuse potential scores in the CAP and authoritarianism.

The Negative Concept of Child and Self was found to be the weakest factor and the items were absorbed into the other six factors. Milner (1986) developed additional scales as part of the CAP Inventory. These included: (a) the Lie Scale (Robertson & Milner, 1985); the Random

Table 5

Child Abuse Potential Inventory: Seven Factors including Items

<i>Factors</i>	<i>Items</i>
<i>Distress</i>	<i>being upset and angry</i> <i>frustration</i> <i>loss of self-control</i> <i>being mixed up</i> <i>not understanding one's actions</i> <i>depression, worry</i> <i>fear, rejection</i> <i>difficulty in relaxation</i> <i>confusion, headaches</i> <i>worry about lack of food</i> <i>worry about needs not being met</i> <i>personal problems</i> <i>feeling worthless</i>
<i>Rigidity</i>	<i>rigid in expectations of child's</i> <i>behaviour</i> <i>emphasis on orderliness & neatness</i>
<i>Child with Problems</i>	<i>child frequently in trouble</i> <i>child who is slow</i> <i>child with special problems</i> <i>view: children need strict rules</i> <i>children should be quiet and listen</i> <i>having a bad child</i> <i>(table continues)</i>

Problems from Family and Others

family fights
others making one's life difficult
one's family having problems
people causing one pain
one's parents not understanding

Unhappiness

lack of personal fulfilment
pleasurelessness
not having a good sex life
feeling one can't depend on others
not being happy
not laughing often
not feeling better than others
not having close friends
feeling unlucky

Loneliness

feeling alone in the world
often being alone inside
often feeling very alone
feeling worthless
not being understood by others

Negative Concept of

*Child and Self**

negative perception of child
combined with negative elements of
one's own self-concept
claiming to have a child who is bad
personally having a physical
handicap

(table continues)

*stating people expect too much
indicating children should have play
clothes and good clothes
respondent has not always been
strong and healthy*

** The items from this factor group were absorbed into the other six
factors (p.29). From Milner (1986)*

Response Scale (Milner, 1982; Milner & Robertson, 1985); an Ego-Strength Scale (Milner, 1988); and an Inconsistency Scale (Milner & Robertson, 1989; Robertson & Milner, 1985; Robertson & Milner, 1987).

A Multiple Regression analysis was used to examine the contribution of the various factors to the prediction of child abuse. Distress, rigidity, and unhappiness contributed the most to the prediction of abuse. In this second validity study the CAP Inventory correctly classified 125 of the 130 parents (96%) as abusers or nonabusers (Milner & Wimberley, 1980). All five of the incorrectly classified parents were false-negatives (Milner, 1986). The 77-item abuse scale of the CAP Inventory has not changed since this second validity study (see Appendix C). A third validation study (Milner, 1986) supported the ability of the CAP1--23 Inventory abuse scale to discriminate physical child abusers from nonabusers. Discrimination was better for the controls (88.2%) than the abusers (82.7%). The overall classification rate was 85.4%, a decrease from the second study (96%). The decrease was attributed to: using a sample from a number of diverse agencies; using over 100 professionals to collect the data; and the possibility that the nonabusive group had undetected abusive parents. Although the items were not changed, the number of factors was reduced from seven to six.

Reliability of the CAP Inventory. Milner (1986) reported that the CAP Inventory has high internal consistency coefficients across the control groups (0.92 - 0.96) and higher (0.95 - 0.98) across abuser groups. The inter-item consistency is .963 (as measured by the split-half reliability coefficient). Temporal stability shows a stepwise decrease across time with .91 and .90 correlations for one-day and one-week intervals, respectively, and .83 and .75 correlations for one-month and three-month intervals, respectively.

Validity of the CAP Inventory. Milner (1986) demonstrated that the CAP Inventory has met the criterion for three types of validity: (a) content validity - indicating the degree that items on a test are

predictive of child abuse (described above); (b) construct/trait validity - indicating the degree to which abuse is actually measured by the test, that is, individuals with elevated abuse scores appear to have characteristics, traits, and parenting styles similar to actual child abusers (Milner, 1988, 1989; Robertson & Milner, 1983) and (c) predictive/concurrent validity - indicating that a criterion is actually predicted by an instrument (Milner, Gold, Ayoub, & Jacewitz, 1984; Pruitt & Erickson, 1985; Robertson & Milner, 1985).

Milner, Gold, and Wimberley (1986) studied the predictive value of the CAP inventory. The results indicated that the overall correct classification was 93.2% with 89.2% of the abusers and 96.3% of the control subjects correctly classified. Convergent validity of the CAP Inventory indicates that the CAP Inventory is correlated positively with the Mental Health Index measures of psychological distress and inversely with psychological well-being measures (Milner, Charlesworth, Gold, Gold & Friesen, 1988), and positively with MMPI (Matthews, 1984). In addition, Milner (1991) investigated the relationship between situations that may produce stress such as vaginal and caesarian section delivery and having ill children and the CAP Inventory classification rates. Although the classification rates indicated that the CAP Inventory was not markedly affected by delivery of a child, the data did not indicate the CAP Inventory could be used indiscriminately to screen new mothers in hospital. If the consequences are only to offer services such as prenatal classes and support, the issue of false positive results is less important. However, in situations involving labelling or identification, Milner emphasized that the issue of false positive results must be resolved or screening should not be used. To date no specific testing has been done using prenatal women to screen for the need for 'special services'.

Test Administration. Milner (1986) pointed out that misclassification can result from the screening process. However, if

professionals first used some existing criterion, for example the tool devised by Monaghan et al. or a self-administered questionnaire, to identify a subgroup of high-risk individuals, the CAP Inventory could then be administered as a second screening criterion to select a smaller group who are more likely to be at-risk for physical child abuse. Other data, such as the completion of the Maternal Database, nursing and social work interviews, direct observation, medical data, and psychological testing would serve to increase the probability of correctly identifying individual needs and offering services in the most efficacious manner. Milner (1989) indicated that the CAP Inventory was useful as a screening tool but not to label or classify and never as a single test in diagnosis. The tool was useful as a pre-post-treatment, and follow-up instrument to measure treatment effectiveness. Each subject is used as their own control and the need for control groups is lessened. The tool can be a criterion for physical abuse in a variety of research situations. Considering the importance of screening prenatal women for potential to abuse, what form of screening would be most efficacious? The CAP Inventory is a well researched instrument but seems inappropriately long and expensive for an initial screening tool in a clinic/physician's office setting. To interpret the results of the CAP, training of health professionals would be required. On the other hand, a Maternal Nursing Data Base may not be administered until the mother is admitted for delivery, missing many pregnant women. However, in a retrospective study of 51 abusive and control mothers Rourke (1991) found that nurses and social workers identified a significant number of pregnant women who were at risk to abuse. Even though a significant number of the abusive mothers were identified, many proceeded to abuse their children. Did these mothers receive special care and/or follow-up by a CHN in the antepartum or postpartum period to help prevent abuse?

In addition, many other pregnant woman with a potential to abuse may be missed and also fail to receive "special care" that could be

provided by the health care team. Whether the use of the Monaghan instrument or a revised Kemper self-administered questionnaire including additional variables identified as significant (Rourke, 1992) would be as effective in assessing pregnant women with the potential to abuse as the CAP Inventory or nursing assessment is unknown. Browne and Saqi (1988), Monaghan et al. (1986), and Rourke (1992) have used variables from a variety of dimensions, while the CAP Inventory focuses on the psychological dimension only. Milner emphasizes the importance of reducing false positive results and suggests using the CAP as only one of many tools but not as the sole measure of the potential to abuse.

A need exists to develop an easily administered and objective instrument that can be used for the initial screening of prenatal mothers for potential to abuse and thus identify mothers who might benefit from secondary screening and appropriate health care interventions to prevent abuse. In this time of fiscal restraint, the importance of efficaciously assessing the needs of mothers who would benefit from special prenatal services, for example prenatal and parenting counselling and education, should be emphasized. A screening tool that uses a combination of objective variables and can be easily self-administered would be beneficial. Although others (Clarkson et al., 1988; Eagan et al., 1990; Monaghan et al., 1986; Monaghan & Gilmore, 1988; Muir et al., 1989) have partially succeeded, three time-intensive subjective variables remain in their tool. These variables are: (a) emotional problems; (b) unrealistic expectations of children; and (c) incompetence due to lack of intellectual ability. Monaghan's tool requires the presence of a nurse to ask the questions. On the other hand, the CAP Inventory is a self-administered instrument. The problems with this instrument are that: (a) 160 items must be answered; (b) the instrument must be commercially purchased and is relatively expensive if used in screening all mothers; and (c) and the interpretation of the results requires knowledge and skill.

Specificity and Sensitivity Issues

The issues related to sensitivity, specificity, false positives and false negatives has been discussed by several of the researchers (Altemeier et al., 1984; Browne & Saqi, 1988; Milner, 1986; Monaghan, et al., 1986). Friedman (1987) defined sensitivity as the proportion of truly diseased (abusive) persons who are identified as abusive by the test. Specificity is the proportion of truly nonabusive persons who are so identified by the test. Clearly, researchers and clinicians want high degrees of both sensitivity and specificity. Unfortunately, this goal is difficult to achieve. If the sensitivity cutoff is decreased, a higher percentage of abusive persons will be called abusive but a smaller percentage of nonabusive persons will be called nonabusive. If the specificity cutoff point is increased, more of the nonabusive persons will be called nonabusive but fewer abusers will be detected. Shifting the cutoff point will increase one at the cost of the other. Does the researcher want to identify more false abusive or more false nonabusive persons? Friedman emphasizes that if it is important not to miss a particular entity that is both treatable and serious, then sensitivity should be favoured over specificity. Abusive behaviour is serious but can intervention change that behaviour? Certainly apprehension of children from dangerous situation may save their lives. But what if the person identified falls within the false positive group? The result is a nonabusive person being labelled as abusive and they may be offered expensive and potentially unnecessary services. On the other hand, if abusive persons are identified as nonabusive, the danger exists that a child's future and even their existence may be threatened. The detection and follow-up of abusive persons is important. Some persons will improve and they should be given the opportunity to lower their risk but always maintaining the safety of the child.

Browne and Saqi (1988) pointed out that the low prevalence of child abuse combined with even the most optimistic estimates of screening

effectiveness implies that a screening programme would result in excessive numbers of false positives. Their checklist had an 82% detection rate, with 12% false positives. Therefore, in a population of 4200 antepartum women (the number of women delivering annually at Women's Hospital), using a baserate of five percent, 210 women would be abusers. If a tool has an 82% detection rate, 172 of the women identified as potential abusers would be actual abusers but 28 women would be missed, that is, they would be false negatives. On the other hand, 12 percent of the 3,910 nonabusive women (the balance after deducting the 210 baserate mothers), or 470, would be identified as potential abusers (false positives). Of the 642 women identified as potential abusers, only approximately one third (172 of 642) of those detected as potential abusers would be actual abusers.

To complicate the matter further, not all cases of abuse are reported or detected. For example, Browne and Sagi (1988) found that 949 (6.7%) of 14,238 families in a screened population were high risk for child abuse. On follow-up only 56 (6%) of these high risk families went on to abuse their children. However, on the basis of the known incidence of child abuse before the age of two years in the Surrey area, 35 percent or 232 of the 949 high risk group should have been reported for abuse (assuming all abusers will have been identified in the high risk group). Similarly, Hampton and Newberger (1988) studied families of maltreated children who were patients of one of several agencies. The researchers found that 53 percent of the maltreatment cases rated as serious were not reported to a child protection agency. Thus many abused children may be undetected or unreported. These children are false negatives and are at risk for further and perhaps more serious abuse, a dangerous situation.

Milner (1989) discussed the issue of screening and baserates. Baserate refers to how often a phenomenon occurs in a specific population. The baserate of physical child abuse is approximately five

percent. Based on a test classification rate of 80 percent for abusers and nonabusers, then four out of five abusers in a group of 100 mothers would be detected, but 19 with elevated abuse scores will be nonabusers (p.94). If in a more sensitive ($> 80\%$) screening instrument, for example, an 84.16 percent classification rate were used, the result would be a reduction of false positives. As the correct classification percentage increases, the percent of false negatives or missed abusers decreases. The problem of misclassification continues to be a concern. However, Milner (1986) and Milner and Wimberley (1980) reported a correct classification rate of the abusers as 92.3 percent and the controls as 100 percent for the CAP Inventory (p.76). But Milner (1989) still stresses the importance of multiple stage child abuse screening as a strategy (p.94). Can an inexpensive but effective short self-administered prenatal questionnaire be developed to initially screen prenatal women in clinics and physician's offices?

Checklist Versus Alternative Screening Methods

The early discharge of mothers and babies in the postnatal period dictates that screening for high risk mothers be accomplished in the prenatal period as the hospital stay is usually limited to 24 to 48 hours. Unless the mothers have been identified as potentially at risk for abnormal parenting, they may not receive intervention that may help to prevent abuse. By identifying these mothers early in the antenatal period, members of the health care team have approximately two to three months to prepare the mother/family for 'safe' parenting. Identifying problems and providing education, social support, and assistance to the mother/family may be the intervention that will prevent child abuse later.

Currently, members of the health care team, especially nurses, physicians, and social workers, are instrumental in identifying those parents who are 'at risk' to abuse. They use stereotyping, intuition, observation, and interviewing to identify these parents. Other

researchers have developed instruments to measure potential to abuse. One of the few commercially available tools is Milner's CAP Inventory. However, this tool has 160 questions and is relatively time consuming and expensive for large groups of pregnant women. On the other hand, Monaghan et al.'s FSI is a shortened tool. The problems with this tool is that an interviewer is required. In addition a subjective assessment involving intuition is required for two of the questions. Anderson (1987), Browne and Sagi (1988), and Schneider et al. (1976) developed tools that had several questions that were more applicable in the postnatal period. Although Altemeier et al. (1982, 1984) continue to revise their interview tool, the interview unfortunately still requires approximately 35 minutes to complete. The efficacy of these tools as an initial screening instrument is debatable.

As an alternative to observational techniques or interviews that require a considerable time commitment, a short self-administer prenatal questionnaire (SSAPQ) is proposed. This screening strategy would be cost effective. A pool of potential abusers could be identified using the proposed self-administered questionnaire. This questionnaire is based on variables from the Monaghan's FSI and Kemper's pediatric questionnaire and includes other easily obtained factors known to correlate with abuse (see Appendix B). If this instrument is found to have high sensitivity and specificity, no other tool would be required. However, such a highly desirable outcome is unlikely. The speculation is that additional screening would be required. In any group of pregnant woman who complete the SSAPQ a pool of false positives will exist. The size of this pool will depend upon the levels of sensitivity and specificity. A second level and even third level of screening may be required. For example in a clinic setting, the pregnant woman would be requested to complete the SSAPQ. The nurse would interview the pregnant woman and complete the Maternal Data Base (the current practise for clinic patients). The nurse would carefully consider the

information from the self-administered questionnaire. Selected pregnant women may be requested to complete a CAP Inventory.

The SSAPQ was developed by the researcher. This instrument consists of variables that can be easily answered as a self-administered type questionnaire. The goal is to develop a tool that is easily read and answered by pregnant women in a clinic setting (Fry's Readability Level 4.5 years). Following an analysis of selected review articles and research papers, Rourke (1992) concluded that certain variables were most predictive of the potential to abuse. A cluster model was suggested. The four clusters included: (a) demographic; (b) family relationships; (c) psychological; and (d) maternal-child interaction. In examining selected studies that used multivariate statistical analysis such as discriminant function analysis, logistic regression, stepwise multiple regression, canonical correlation, MANOVA, MANCOVA, stepwise discriminant, in addition to univariate analysis, certain variables were found to be predictive of abuse (see Table 6). Many of these predictive variables were included in the SSAPQ.

Table 6 - page 32

In addition, variables used in other instruments (Altemeier et al., 1982, 1984; Browne & Saqi, 1988; Kemper, 1992; Milner, 1986; Milner & Wimberley, 1979, 1980; Monaghan et al., 1986) were considered for inclusion (see Tables 1 - 5). However, only variables that were applicable to the pregnant woman were included. Although some women have previous children, the SSAPQ is used to assess only the mothers' potential during their current prenatal period. Therefore, the questions related to the maternal-infant interaction are omitted except the question related to unwanted pregnancy.

As a result of the selected review of the literature, the following variables were considered for inclusion in the SSAPQ: (a) SES

Table 6

Research Demonstrating Significance of Perinatal Clusters and Variables

Cluster	Variables	Research
Demographic	income	Anderson, 1987; Benedict et al. 1990; Browne & Saqi, 1988; Dubowitz et al., 1987; Ferleger et al., 1988; Gelles, 1989; Hampton & Newberger, 1988; Herrenkohl et al., 1983, 1984; Murphy et al., 1990; Oldershaw et al., 1989; Sariola & Uutela, 1992; Wipple & Webster-Stratton, 1991.
	education	Anderson, 1987; Benedict et al., 1990; Browne & Saqi, 1988; Crittenden & Morrison, 1988; Hampton & Newberger, 1988; Egeland & Brunnequell, 1979; Kugler & Hansson, 1988; Whipple & Webster-Stratton, 1991
	ethnicity	Benedict et al., 1990; Connelly & Straus, 1992; Dubowitz et al., 1987; Hampton & Newberger, 1988 (found abuse reporting was biased by race)
(table continues)		

<i>age</i>	<i>Anderson, 1987; Browne & Saqi, 1988; Whipple & Webster-Stratton, 1991</i>
<i>employment</i>	<i>Anderson, 1987; Browne & Saqi, 1988; Oates, Peacock & Forrest, 1984</i>
<i>transiency</i>	<i>Creighton, 1985; Daniel et al., 1983; Oates, Peacock, & Forrest, 1984</i>
<i>living conditions</i>	<i>Benedict et al., 1990; Dubowitz et al., 1987</i>
<i>Family</i>	
<i>Relationships</i>	
<i>marital status</i>	<i>Altemeier et al., 1982; Benedict et al., 1990; Browne & Saqi, 1988; Creighton, 1985; Dubowitz et al., 1987; Egeland & Brunnequell, 1979; Ferleger et al., 1988; Gelles, 1989; Sack et al., 1985</i>
<i>intergenerational abuse</i>	<i>Anderson, 1987; Browne & Saqi, 1988; Daniel et al., 1987; Dubowitz et al., 1987; Egeland et al., 1988; Herrenkohl et al., 1983; Meadow, 1990; Oliver, 1985; parens, 1988;</i> <i>(table continues)</i>

		Steele & Pollock, 1974; Whipple & Webster-Stratton, 1990
	family disruption	Anderson, 1987; Cater & Easton, 1980; Monane et al., 1984; Stark & Flitcraft, 1988; Whipple & Webster-Stratton, 1990
Psychological	mental illness	Browne & Saqi, 1988, Egeland et al., 1988; Friedrich et al. 1985; Lynch & Roberts, 1977; Monane et al., 1984; Steele & Pollock, 1974; Whipple & Webster-Stratton, 1991
	self-esteem	Anderson, 1987; Kugler & Hansson, 1988; Oates & Forrest, 1985; Shorkey & Armendariz, 1985; Steele & Pollock, 1974
	loneliness	Egeland et al., 1979; Hunter et al., 1980; Kugler & Hansson, 1988; Polansky et al, 1985; Salzinger et al., 1983; Steele & Pollock, 1974; Whipple & Webster-Stratton, 1991

(table continues)

- substance abuse*
- Browne & Sagi, 1988; Famularo et al., 1986; Larson et al., 1987; Murphy et al., 1991; Whipple & Webster-Stratton, 1991*
- Maternal-Child*
- unwanted pregnancy*
- Altemeier et al., 1982; Egeland & Brunnuquell, 1979; Hunter et al., 1980; Zurvin, 1988*
- parity*
- Altemeier et al., 1982; Creighton, 1985; Friedrich et al., 1985; Herrenkohl et al., 1983; Hunter et al., 1980; Leventhal et al., 1989; Polansky et al., 1985; Zurvin, 1988*
- prenatal care*
- Anderson, 1987; Egeland & Brunnuquell, 1979; Hunter et al., 1980*
-

(income and education); (b) ethnicity; (c) transiency; (d) mental illness/retardation; (e) marital status; (f) intergenerational/family violence; (g) parity; (h) unwanted pregnancy; (i) lack of prenatal care/education; (j) substance abuse; (k) self-esteem; and (l) social support. Based upon these variables, the SSAPQ checklist was developed (see Appendix D).

Outcome Variable/s

Three outcome variables were considered in this study. These consist of: (a) apprehension of the infant in the hospital; (b) nursing special needs referrals related to the safety of the baby; and (c) the judgements of a panel of three judges about the potential for abuse based on the nursing referrals to public health nursing.

Apprehension.

Apprehension of babies prior to their discharge from the hospital is a clear message that the baby is at high risk of being abused if released to the care of its mother. Using the hospital apprehension/relinquishment separation category may be the best short-term detector of potential to abuse. Approximately 107 (2.6%) of babies delivered at Women's Hospital are apprehended/relinquished annually (Medical Information, Health Sciences Centre, 1992). Although, the best indicator of actual abuse is a two year post-hospital follow-up to determine those children who were actually abused, this alternative approach is not feasible as part of this study. Monaghan et al. (1986) used relinquishment as an outcome variable. A potential statistical problem exists with the low number of apprehensions that occur. Therefore, reasonable additional variables have been proposed.

Special Needs Referrals

In a later report, Clarkson et al. (1988) indicated that, because relinquishment was an uncommon outcome, additional measures were included in the two years following the birth. These outcomes included: referrals to social work agencies within and outside the hospital, child

protection agencies, reports from the Community Health Nurse (CHN) indicating the family was having parenting problems, and visits to emergency departments. In this study, early referrals to community health nursing related to a concern for the safety of the infant and the potential for abuse will be included as an outcome variable.

Nurses refer all mothers and babies to PHN in the community. However, if nurses are concerned about the ability of any mothers to parent their babies, that is concerned about the safety of the child/the mother's potential to abuse that child, an early 'special needs' PHN visit is requested. At Women's Hospital, approximately 350 babies are born per month. Of these births, about one quarter (26%) receive special needs visits. Following a review of 50 referrals, an estimated twelve percent of the babies were referred for concerns related to potential child abuse. Therefore, between apprehensions and special needs referrals for potential abuse, the outcome variable category could include approximately 52 (15%) subjects per 350 deliveries.

Expert Panel. A third outcome variable consisted of a review of the documentation by a panel of nursing experts. This panel of three expert nurses were asked to review the nursing referrals for all the subjects and code them according to their assessment of the mother's potential to abuse.

Purpose of the Study

The purpose of this descriptive, correlational, and prospective study was to determine the relationship between the assessment of: (a) nursing experts; (b) a short self-administered questionnaire (SSAPQ); and (c) the CAP Inventory to identify pregnant women who have a potential to abuse. The objectives were: (a) to determine the nature and strength of the associations between the instruments and the assessments of a panel of three expert nurses; and (b) to describe the differences and similarities between mothers who have their babies apprehended temporarily or permanently prior to discharge from hospital,

mothers who are referred to social work, and other mothers who receive early and routine PHN visits; and c) to determine the predictive order and value of selective items on the SSAPQ.

Hypotheses:

1. The scores from a group of selected items from the Short Self-administered Prenatal Questionnaire (SSPQ), and the CAP Inventory scores will be positively correlated;
2. A selected group of SSAPQ variables will be shown to: (a) predict potential to abuse equally as well or better than the CAP; and (b) have comparable sensitivity and specificity;
3. The SSAPQ score will predict child abuse potential as well as the nurse experts;
4. Nurses will not assess and/or refer mothers with potential to abuse for early Community Health Nurse visits as efficaciously as the assessments made by the nursing experts, or using the CAP and SSAPQ checklists;
5. Mothers who have their babies apprehended prior to discharge will score differently on the SSAPQ than the mothers whose babies were not apprehended.

Method

Design

A prospective comparative design was used for this study of the relationship between expert nursing assessments, SSAPQ, and the CAP in identifying the potential to abuse in pregnant women. The data were collected during regular clinic/office visits/prenatal classes. Data related to nursing assessments and the post delivery outcome were collected from the mothers' charts. A supplementary descriptive and comparative design was used to describe and compare the characteristics of four groups of high risk mothers who: a) had their babies apprehended; b) were assessed as high risk by the CAP; c) assessed as high risk by the SSAPQ; and (d) low risk mothers.

Definitions

Legal definition. Manitoba's Child and Family Services Act defines abuse as an act or omission by a parent, guardian or person in whose care a child is which results in (a) physical injury to the child, (b) emotional disability of a permanent nature in the child or is likely to result in such a disability, or (c) sexual exploitation of the child with or without the child's consent (The Child and Family Services Act, 1986).

The researcher was primarily interested in the physical abuse of children zero to four years. A separate definition for neglect was not included but the Child Abuse Nurses' Protocol (1988) defined neglect as "resulting from parents' lack of knowledge, or inability or failure to provide for the child's needs. Neglect can refer to a lack of supervision, failing to meet nutritional needs or provide an atmosphere conducive to a child's normal physical and emotional development" (p.3). A methodological concern is that abuse and neglect are rarely operationally defined as separate entities. On the other hand, Zuravin (1988) in a study of the relationship between abuse, neglect, and fertility variables developed succinct operational definitions of both

abuse and neglect. However, neither of these definition were suitable for operationally defining abuse in the current study.

Operational Definitions of Potential to Abuse and Abuse. The operational definition of potential to abuse in this study was the apprehension of the baby either temporarily or permanently by Child and Family Services (CFS) prior to discharge from hospital; or the referral of a mother and her baby to a foster home or other residential agency for care due to concern about the safety of the baby. In addition a score over 215 on the CAP Inventory was defined as potential to abuse. Milner (1986) reported that a valid, elevated abuse score "indicates that the examinee has characteristics similar to known, active physical child abusers" (p.12). He pointed out that at this cut-off point more abusers are misclassified than nonabusers, that is, the classification errors are more often false negatives. If a panel of three nursing experts assessed the mother to have a high potential to abuse based on the maternal data base, the Public Health Nursing Referral, and social work referrals, the mother was considered to have a potential to abuse.

Ethical Considerations

Physicians were notified about the study and provided with an information sheet (see Appendix E). Pregnant women were invited to participate in the study. Informed consent was obtained. The purpose of the study, its importance and relevance, and the expectations of the subjects were explained verbally. The subjects were given an information sheet (see Appendix F). They were requested to sign a written consent form for the study (see Appendix G). The subject's name and hospital number were included and retained for identification and collation of the data and were kept confidential in a locked cabinet. Addresses of the subjects were included if the subject wished to have a copy of the results of the study.

Questionnaires were coded to maintain confidentiality. Lists of names, addresses, and code numbers were kept in a locked drawer,

separate from the questionnaires. Only the researcher had access to the names, addresses, and code numbers. Subjects could withdraw at any time without affecting their subsequent care. No perceived harmful effects of the study existed except perhaps the inconvenience of the time commitment required to complete the questionnaires. While the benefit of the study for the individual subject may be minimal, benefit to other mothers and children may be expected. The researcher offered to answer any questions that the subjects had related to the study or questionnaires. A phone number was provided. All subjects were offered feed-back on the results of the study.

If pregnant women expressed concerns related to themselves or their family, the researcher was expected to refer the subject to appropriate resources. However, no woman indicated that she was upset or concerned about any aspect of the study. One woman called the researcher to explain that she had indicated that she had drank alcohol during her pregnancy. She wanted to clarify that this had occurred only once prior to her learning she was pregnant. The data was adjusted accordingly. If the results of any of the questionnaires indicated that the subject may have a problem with child care, a referral was to be sent to Public Health Nursing for follow-up. However, all subjects were referred to public health nursing routinely on discharge from hospital.

If a situation arose that indicated that child abuse had occurred, the researcher was to follow the guidelines of the Manitoba Association of Registered Nurses' Child Abuse Protocol. The protocol is based on the Child and Family Services Act of Manitoba (March 1986) that states "Any person who has information that a child may be in need of protection shall forthwith report the information to the director or an agency and any person who fails to do so commits an offence punishable on summary conviction" (p.11). The researcher was to report the situation to the Children's Hospital Child Abuse Centre for their investigation and intervention. If the researcher was unsure if abuse

had occurred or was likely to occur, the nurse at the Child Abuse Centre was to be contacted for advise. No instances of suspected abuse occurred during the completion of the questionnaires. Once the CAP Inventory scores had been calculated, a list of mothers with high scores was provided to a pediatrician, Department of Pediatrics who alerted the Director of the Child Protection Centre.

Hospital, physician, and University Ethical approvals were solicited and received prior to the beginning of data collection.

Sample

The sample was a convenience sample taken between May 17 and October 23, 1993. The sample had pregnant women from all socioeconomic levels of society, including pregnant women who attended physician's offices, university and community clinics, and prenatal classes. The subjects were obtained from among the population of pregnant women who attended prenatal clinics at Women's Hospital and/or selected private physician's offices and/or Women's Hospital prenatal classes. The subjects were English-speaking, in the third trimester of their pregnancy, living in Winnipeg or in close proximity to the city, and planned to deliver their babies at Women's Hospital. Both primiparous and multiparous women were invited to participate. Pregnant adolescents who were considered to be emancipated minors were included in the sample.

Sample Size. Of 382 subjects who were asked to participate in the study, only 31 (8.1%) refused. Of the remaining 351 subjects, 13 failed to complete the CAP Inventory satisfactorily. Eight of the sample did not deliver babies at the Health Sciences Centre. One of the pregnant women was known to have had a miscarriage, while the remaining women probably delivered at other city hospitals.

The minimum size of the sample was based on the size required to perform a logistic regression procedure on 16 independent variables in the SSAPQ instrument. When logistic regression is used to assess the

relationship between one dependent variable (DV) and several independent variables (IV) a desirable ratio of cases to IVs to ensure the stability of results is 20 cases per variable. Power may be unacceptably low no matter what the ratio of cases to IVs is if there are fewer than 100 cases. If 16 variables are used, the sample size should be approximately 320 (Tabachnick & Fidell, 1989, page 128-9). Several problems would require an increase in the sample size: (a) if the DV is skewed and not normally distributed; (b) if the size of the anticipated effect is small more cases will be required to demonstrate a small effect; and (c) if significant measurement error is expected from unreliable variables.

On the other hand, Tabachnick and Fidell (1989) recommend that if discriminant functional analysis is used, "the sample size of the smallest group should exceed the number of predictor variables" (p.511). Therefore, the group who have a high potential to abuse must exceed 16 subjects. The advice of a statistician was solicited and a sample size of 320 was chosen following a preliminary power analysis (J. Sloan, personal communication, November 26, 1992). An overdispersion model was suggested as a possible means to circumvent the potential problem of a small number of cases in the apprehended group (McCullagh & Nelder, 1989).

Instruments

Short Self-Administered Prenatal Questionnaire (SSAPQ). The SSAPQ incorporated many of the questions that are usually included in a demographic questionnaire. These questions were related to the 13 variables that were found to be significantly correlated to child abuse potential in a review of the literature (Rourke, 1992). Each of 21 variables received one point and the points were added together to create a SSAPQ total score. The SSAPQ has been developed for use with prenatal women and is based on Kemper's Paediatric questionnaire (Kemper, 1992). Kemper's self-administered questionnaire was found to

identify significantly ($p < .01$) more psychosocial risk factors than were documented in the medical record. The reading level of the SSAPQ questionnaire was checked using Fry's Readability Graph. The reading level was grade four and one-half. The SSAPQ questionnaire required approximately five minutes to complete.

CAP Inventory. The CAP Inventory consists of 160 items and is a self-administered test at the grade three reading level. The test takes approximately 15 to 20 minutes to complete. Although no reports have been found that indicate that the scale has been used extensively with pregnant woman, the use of the CAP in the current study was considered appropriate as some pregnant women are already mothers, while others expect to become mothers within the next few months. The data was entered into a computer program designed for the CAP Inventory (CAPSCORE Research Program 2.04). The results were included in the overall analysis.

Pregnancy Outcome Checklist. This 15 item checklist was a data collection sheet used to obtain information about the outcome of the mother's pregnancy and the outcome variables (see Appendix H). The information included the date prenatal care began, the mother's para and gravida status, the type of delivery, information about the baby, referrals to the Department of Social Work, Child and Family Services (CFS), and/or Child Protection agencies, referrals to CHN for an early special needs visit, or whether or not the mother relinquished her baby or if the baby was apprehended by CFS.

Procedure

SSAPQ and CAP. During prenatal classes at Women's Hospital pregnant woman were asked by the prenatal teacher to participate in the study. Women usually attend prenatal classes in the third trimester of their pregnancy. The husbands or significant others were welcome to attend. Forty-three pregnant women at prenatal classes agreed to participate. Husbands were offered the opportunity to complete a

separate questionnaire if they wished. Thirteen partners participated. No analysis of these questionnaires was attempted. If they were not interested they were offered the opportunity to watch a television in the lounge. The pregnant women completed two questionnaires separately from their partners.

The researcher invited pregnant women attending prenatal clinics at Women's Hospital and private physicians' offices to participate in the study. Again the subjects were asked to complete the questionnaires in privacy and without the influence of others.

Pregnant women who agreed to participate were asked to read an information sheet and sign a consent form indicating their willingness to participate in the study. The subjects provided their names and the expected date of the birth of their child so that Pregnancy Outcome Data could be completed the researcher. If they indicated a desire to receive a report about the results of the study, they were asked to supply their address. A coded number was assigned to each subject. No names appeared on any of the data forms, checklists, or inventories. The hospital numbers of mother and baby were recorded for the purpose of completing data collection. The subjects completed two forms: a) Short Self-Administered Prenatal Questionnaire (SSAPQ) and b) the Child Abuse Potential Inventory (CAP). This latter form was introduced as a parenting assessment form. Subjects who did not presently have children were instructed to answer questions relating to the care of children as if they already had children.

Pregnancy Outcome Checklist. The researcher reviewed the public health referral forms daily to determine when the patient had delivered and been discharged. Following the mother's discharge, the researcher provided the chart number to the Medical Information Department. The charts were obtained for the researcher. The results of the CAP and the SSAPQ were collated separately with no comparisons until after the Pregnancy Outcome Data have been collected. Therefore, the researcher

did not know the individual mother's potential to abuse when the outcome data was being collected from the chart. Reasons for referrals to social work and CFS were reviewed and recorded for consideration by the expert nursing panel.

Data related to the dependent outcome variables such as apprehension, and agency referral were collected using the Pregnancy Outcome Checklist. The data related to the mother, baby, and pregnancy outcome such as gravida, para, length of prenatal care, type of delivery, baby's condition, and breastfeeding was considered to be co-variables and included in the descriptive analysis of the sample.

Panel of Nursing Experts. The researcher obtained a copy of the Maternal Nursing Database (see Appendix I), the CHN referrals, and pertinent social work referral forms for each subject. All identifying information was removed from the forms. A code number was attached. In order to determine the mothers and babies who should have been referred for a special needs CHN visit due to the potential of child abuse, a panel of experts reviewed individually the Maternal Nursing Database, the CHN referral forms, and pertinent consultation forms. When experts were asked to judge the correctness of activities, such as, nursing referrals Berk (1990) emphasized that the relevant training, experience, and qualifications of the experts should be described (see Table 7) and details of the procedures should be delineated.

Table 7 - page 47

Each expert was provided with a set of the coded databases, referral forms, and other pertinent information. The experts were asked to review each case and complete an assessment type Q-sort form. The process partially followed Berk's guidelines. First, the three judges independently sorted the referrals into three categories. These categories were: (a) concern for the welfare of the mother only; (b)

Table 7

Profile of Nurses Serving on Judgement Review PanelYears of Experience

<i>Judge</i>	<i>Position</i>	<i>Credentials</i>	<i>Specialty</i>	<i>Nursing</i>	<i>Specialty</i>
1	CNS ¹	M.N., R.N.	Midwife	30	20
2	CRS ²	M.N., R.N.	Neonatal	22	20
3	CHN ³	M.N., R.N.	Community	8	6.5

¹ Clinical Nurse Specialist

² Clinical Resource Supervisor

³ Community Health Nurse

concerns for the welfare of the baby; and (c) potential for child abuse. The experts indicated if the potential for abuse was high or low or if they were undecided. Each expert reviewed the referrals separately and recorded the reason for their concerns about the mother and/or baby. Next, the researcher compared the results of the experts. Berk recommended that the use of consensus decision-making be avoided as polarization of opinions may occur during group discussions. He pointed out that polarization may be inhibited when group members record their results privately. Each expert returned to the researcher their completed list including the reasons for their decisions. Each list was designated by a code number. All identifying marks that may identify the expert who completed the assessment were removed.

Sample Characteristics. The demographic characteristics of the sample are summarized in Tables 8 to 10. Missing data are indicated as the difference between the number of subjects in the total sample ($N = 351$) and the number who responded to the individual items in the

Table 8 - page 49

Table 9 - page 50

Table 10 - page 51

questionnaire.

Of the 351 pregnant women, 335 reported their ethnic background as follows: 190 (56.7%) white; 100 (29.85%) aboriginal; 2 (0.60%) Inuit; 16 (47.76%) Asian; 8 (2.39%) black; and 19 (5.67%) other including Metis.

The pregnant women in this study answered selected questions about

Table 8

Number, Mean, Standard Deviation, and Range of Characteristics of Total Group of Pregnant Woman

Characteristics	n^1	Mean	Std.Dev.	Range
Age	341	26.26	5.99	12 - 41
School years	339	12.13	2.76	6 - 24
No. Residences	334	2.10	2.53	1 - 23
No. Children				
in Home	337	1.07	1.26	0 - 7
No. Children				
under 5 yrs.	335	0.63	0.78	0 - 4
No. Drinks	339	0.30	1.20	1 - 11
No. Cigarettes	337	3.64	6.14	0 - 34
No. Support persons	333	2.8	1.20	1 - 4

¹ Maximum subjects = 351

Table 9

Number and Percent of Characteristics of Pregnant Women

Characteristics	<u>n</u>	Number	Percent
<hr/>			
Age 17 yrs.			
or less	331	31	9.4
Degree	338	41	12.1
Gde. 11 or less	339	138	40.4
Aboriginal	340	103	30.2
2 or more children			
under 5 yrs.	332	9	2.7
Residency (more			
than 2 in 2 yrs)	334	64	20.2
Single	340	87	25.5
No Phone	339	36	10.6
Welfare	322	109	33.9

Note. Maximum subjects = 351

Table 10

Number and % of Lifestyle Characteristics of Pregnant Woman

<i>Characteristic</i>	<i>n'</i>	<i>Number</i>	<i>Percent</i>
<i>Depression</i>	<i>339</i>	<i>11</i>	<i>3.2</i>
<i>Planned</i>			
<i>Pregnancy</i>	<i>338</i>	<i>208</i>	<i>61.5</i>
<i>Attend Prenatal</i>			
<i>Classes</i>	<i>332</i>	<i>207</i>	<i>62.3</i>
<i>Violence in Home</i>	<i>341</i>	<i>15</i>	<i>4.4</i>
<i>Beaten by Parents</i>	<i>341</i>	<i>32</i>	<i>9.4</i>
<i>Ever Abused as a</i>			
<i>Child</i>	<i>340</i>	<i>59</i>	<i>17.4</i>
<i>Alcohol in Pregnancy</i>	<i>340</i>	<i>32</i>	<i>9.4</i>
<i>Smoking</i>	<i>340</i>	<i>142</i>	<i>41.8</i>
<i>Drugs</i>	<i>340</i>	<i>18</i>	<i>5.3</i>
<i>Self-esteem (low)</i>	<i>334</i>	<i>113</i>	<i>33.8</i>
<i>No Support</i>	<i>336</i>	<i>15</i>	<i>4.5</i>

Note. Maximum subjects = 351.

their lifestyle (see Table 9). Of the 32 pregnant women who reported that they drank alcohol during their pregnancy six reported they had one drink per day, while 11 had two, eight had three to four, six reported having five to 11. More women smoked than drank alcohol during pregnancy. The mean number of cigarettes per day is 3.64, standard deviation 6.14, and a maximum of 35 per day. Of the 18 women who reported they had used drugs during their pregnancy, 12 had used marijuana, three cocaine, one "acid", and one had sniffed gasoline.

Of the pregnant women who reported they had support (someone to help them), 46 reported having one person, 53 had two support persons, 93 had three, and 126 had four. Three hundred and nine reported being very satisfied or fairly satisfied with the support they received. The remaining 22 ranged from being a little satisfied to very dissatisfied. Only 2.2% indicated that they were dissatisfied with the support they received. When asked to list who helped them when they needed help, 182 women listed either their husband, commonlaw, or boyfriend first; parents were listed first by 85 of the pregnant women, siblings by 20, friends by 12, in-laws by 6, and others by 10 of the women.

Data were collected from the charts of the subjects following the delivery of their babies. The outcome data has been summarized in Tables 11 and 12.

Table 11 - page 53

Table 12 - page 54

The sample consisted of 97 (28.3%) women who were pregnant for the first time and 139 who had no live children. Three had been pregnant 10 times and two had eight live children.

The reasons for the 89 early Community Health visits and the number

Table 11

Number and Percent of Outcome Characteristics of Pregnant Women

<i>Characteristic</i>	<i>na</i>	<i>Mean</i>	<i>S.D.</i>	<i>Range</i>
<i>Gravida</i>	343	2.58	1.64	1 - 10
<i>Para</i>	342	1.05	1.29	0 - 8
<i>Care Began (wks.)</i>	335	12.57	5.92	4 - 37
<i>Weeks Gestation</i>	342	39.59	1.72	29 - 43
<i>Apgar 1 min.</i>	342	7.72	1.77	0 - 9
<i>Apgar 5 min.</i>	342	8.75	0.99	0 - 10
<i>Weight (gms.)</i>	342	3506.75	559.34	1245 - 5100

a number of results available

Table 12

Number and Percent of Selected Outcome Characteristics

<i>Characteristic</i>	<i>na</i>	<i>number</i>	<i>percent</i>
<hr/>			
<i>Type of Delivery</i>	<i>341</i>		
<i>Vaginal</i>		<i>291</i>	<i>85.3</i>
<i>Caesarean</i>		<i>50</i>	<i>14.7</i>
<i>Sex</i>	<i>340</i>		
<i>Male</i>		<i>172</i>	<i>50.6</i>
<i>Female</i>		<i>168</i>	<i>49.4</i>
<i>Nursery</i>	<i>339</i>		
<i>Normal Nursery</i>		<i>308</i>	<i>90.9</i>
<i>Intermediate</i>		<i>22</i>	<i>6.5</i>
<i>Intensive Care</i>		<i>9</i>	<i>2.7</i>
<i>Breastfeeding on</i>			
<i>Discharge</i>	<i>339</i>	<i>262</i>	<i>77.3</i>
<i>Referral to</i>			
<i>Social Work</i>	<i>342</i>	<i>86</i>	<i>25.1</i>
<i>CFS Referral</i>	<i>343</i>	<i>53</i>	<i>15.5</i>
<i>CHN Referral</i>	<i>339</i>		
<i>Early</i>		<i>89</i>	<i>26.3</i>
<i>Routine</i>		<i>250</i>	<i>73.7</i>
<i>Baby Discharged</i>			
<i>With Mother</i>	<i>342</i>	<i>318</i>	<i>93.0</i>
<i>Baby Apprehended</i>	<i>343</i>	<i>12</i>	<i>3.5</i>

of mothers referred were: 14 (15.4%) for age; 7 (7.9%) for alcohol/drug abuse; 16 (18.0%) for unstable home environment/social history; 4 (4.5%) for concerns about single mothers; 47 (52.8%) for reasons related to the health of the mother/baby; and for 1 (1.1%) set of twins. Forty-one (46.07%) of the early referrals were specifically for mothers who had social problems. Of the 24 babies not discharged with their mothers, 12 were apprehended, monitored closely by CFS, or both mother and baby were placed in care.

Results

The presentation of results is organized into four main sections. In the first section, four separately defined groups of at risk mothers are identified and compared with their individual control groups on a variety of SSAPQ and pregnancy outcome variables. In the second section the CAP Inventory, as a measure of potential to abuse in prenatal women, and a modified CAP based on a reduced set of items are evaluated. The third section provides an evaluation of the SSAPQ as a measure of mothers at risk and includes a modified SSAPQ based on selected items. In the final section, predictive models using selected SSAPQ and CAP items are assessed.

Four Groups of 'at Risk' Mothers

The four groups of subjects identified as potentially at risk of abusing their children were: (a) mothers whose babies were apprehended, monitored closely by CFS, or both mother and baby were placed in foster or protective care; (b) mothers who were referred by hospital nurses for early CHN visits for social reasons; (c) mothers with potential to abuse as identified by three nursing experts; and (d) pregnant women with elevated CAP Inventory scores. The characteristics of each group are described and compared. The four groups are not mutually exclusive.

Apprehended group. One of the outcome variables was the apprehension of babies during hospitalization, or the placement of both mother and baby in a supervised residential home, or in one case the mother was returned to a women's jail and baby remained in the intermediate care nursery. The apprehended group consisted of 12 mothers and the remaining group had 332 mothers. This number of cases results in an abuse potential rate of 34.2 cases per 1,000. This rate compares to the rate reported by Garbarino and Kostelny (1992), that is, a high rate of maltreatment was 34 to 36 cases per 1,000.

The apprehended group and the non-apprehended group are described in four tables (see Tables 12-15). Tables 12 provides the mean,

Table 12 - page 58

Table 13 - page 59

Table 14 - page 61

Table 15 - page 62

standard deviation, t-test results, and level of significance for continuous variables, based on selected SSAPQ items, of the apprehended group as compared to the remaining women. These variables included age, the number of years the pregnant woman had attended school, the number of residences where she had lived during the last two years, the number of children who lived in her home, the number of drinks that she consumed daily, the number of cigarettes that she smoked daily, and the number of support persons up to a maximum of four that she felt were available if she needed help.

Table 13 describes binary variables based on selected SSAPQ items. These variables included the aboriginal status of the pregnant woman; her access to a phone; her marital and welfare status; if she had planned her pregnancy; had ever been hospitalized for depression; used drugs, cigarettes, or alcohol; or had ever been exposed to violence. The pregnant woman's self-esteem was assessed by asking the question whether or not she wished that her baby would be like her. In addition, the table reports the woman's satisfaction with the support she received and whether she had support persons in her environment. The number, percent, chi-square, and level of significance are included.

The results of the continuous pregnancy outcome variables including

Table 12

Mean, SD, T-test, and Level of Significance of Continuous Variables of
Selected SSAPO Items for Apprehended and Non-Apprehended Groups (N=351)

Variable	Apprehended ¹		Non-Apprehended ²		Inferential Statistical Value (t test)	Level of Sign. (p<)
	Mean	SD	Mean	SD		
Age	19.92	4.67	26.57	5.92	-3.85	0.000
School	9.41	1.24	12.56	2.76	-7.28	0.000
Residence						
(in 2 yrs.	5.64	6.55	1.90	1.87	1.89	0.088
No. Child	0.92	1.38	1.09	1.26	-.49	0.640
Under 5 yrs.	0.91	1.05	0.63	0.77	1.17	0.240
No. Drinks	1.0	1.60	0.27	1.13	2.16	0.031
No. Cig.	7.18	8.40	3.46	6.01	1.99	0.047
No. Support persons	1.82	1.33	2.85	1.18	-2.86	0.004

¹ n=12

² n=332

Table 13

Number, Percent, Chi square, and Level of Significance for Binary SSAPO Characteristics of Apprehended and Non-Apprehended Groups (N=351)

Variable	Apprehended ¹		Non-Apprehended ²		Statistical Results	
	No.	%	No.	%	Chi-square ³	(p<)
<hr/>						
17 yrs.						
or less	5	41.7	26	8.1	15.44	0.000
Aboriginal	7	58.3	94	29.3	4.62	0.032
Education						
11 yrs.						
or less	12	100.0	123	38.1	18.44	0.000
Residences						
2 or more	7	63.6	54	17.1	15.03	0.000
No Phone	3	25.0	32	10.0	2.86	0.097
Single	10	83.3	130	40.2	8.83	0.003
Welfare	12	100.0	96	31.4	24.25	0.000
Unplanned						
Pregnancy	5	41.7	120	37.7	0.08	0.783
No prenatal						
classes	2	18.2	118	37.7	1.74	0.188
No. child	2	18.2	34	10.7	0.61	0.434
No. under 5	2	16.7	7	2.2	9.12	0.003

(table continues)

¹ n=12

² n=322

³ Both the Chi-square and the Fisher's Exact statistical tests were used to assess the correlation between the groups on binary variables. As the sample was not small (N=351), the results of the two tests were essentially equal, and to conserve space, Chi-square was the statistical test reported.

Number, Percent, Chi square, and Level of Significance for Binary SSAPO
Characteristics of Apprehended and Non-Apprehended Groups

Variable	Apprehended ¹		Non-Apprehended ²		Statistical Results	
	No.	%	No.	%	Chi-square	(p<)Low
Depressed	0	0.0	11	3.4	0.39	0.532
Drugs	1	8.3	20	6.3	0.09	0.771
Smoke	9	81.8	129	40.1	7.64	0.006
Alcohol	4	33.3	27	8.4	8.47	0.004
Violence	1	8.3	13	4.0	0.53	0.468
Abuse	7	58.3	48	15.0	15.71	0.000
Beaten	6	50.0	25	7.8	24.41	0.000
Low Self-						
esteem	8	66.7	101	32.2	6.18	0.013
Dissatisfied	4	40.0	17	5.4	19.28	0.000
with Support						
No Support	3	27.3	10	3.1	16.31	0.000

¹ n=12

² n=322

Table 14

Mean, SD, Inferential Statistical Value (t-test), and Level of Significance of Pregnancy Outcome Variables of Apprehended and Non-Apprehended Groups

Variable	Apprehended ¹		Non-Apprehended ²		Inferential Statistical Value (t test)	Level of Sign. (\underline{P} <)
	Mean	SD	Mean	SD		
Gravida	3.00	1.91	2.56	1.63	0.91	0.364
Para	1.67	1.50	1.02	1.28	1.70	0.089
Prenatal Care ³	14.75	7.10	12.50	5.86	1.30	0.194
Gestation at birth	39.00	1.70	39.61	1.71	-1.21	0.226
Weight (gms.)	3413.00	521.30	3510	561.0	-0.57	0.572
APGAR 1	7.55	1.81	7.73	1.81	-0.34	0.737
APGAR 5	8.55	0.53	8.75	1.00	-1.24	0.237

¹ n=12

² n=323

³ beginning of prenatal care in weeks

Table 15

Number, Percent, Chi square, Level of Significance for Binary Pregnancy Outcome Variables of Apprehended and Non-Apprehended Group

Variable	Apprehended ¹		Non-Apprehended ²		Statistical Results	
	No.	%	No.	%	Chi-square	(p<)
Delivery						
Vaginal	11	100.0	281	84.9		
C.S.	0	0.0	50	15.1	1.95	0.163
Sex						
Male	3	30.0	170	51.4	1.77	0.183
Nursery						
Normal	8	72.7	300	91.2		
NICU	1	9.1	8	2.4		
IMCN	2	18.2	21	6.4	4.37	0.112
Not Breast feeding	3	27.3	75	22.8	0.12	0.728
Mom & Babe Discharged						
Together	6	54.5	313	94.3		
Separate	5	45.5	19	5.7	25.83	0.000
S.W referral	11	100.0	76	22.9	33.44	0.000
Known to CFS	12	100.0	41	12.4	68.04	0.000
Early CHN referral						
referral	7	70.0	82	24.9	10.19	0.001

¹ n=12² n=323

gravida (the number of pregnancies) and para (the number of living children) of the mother, the gestational age (weeks) of the baby at birth, the gestational age at the beginning of prenatal care, the baby's weight and apgar scores at one minute and five minutes after birth, are summarized in Table 14.

Table 15 summarizes the binary pregnancy outcome variables, including the type of delivery, vaginal or cesarean section; sex of the child; the level of nursery care the baby received following birth; the mother's decision to breast feed; whether or not mother and baby were discharged together or separately; referral to social work or if they were known to CFS; and finally, if they were referred for an early CHN visit.

Tables 12 and 13 show that the apprehended and non-apprehended groups differed significantly on several SSAPQ items. The mothers in the apprehended group were more likely: a) to be 17 years of age or younger; b) to have fewer years of schooling; c) to drink or smoke and consume more cigarettes and alcoholic beverages per day; and to report fewer support persons. The apprehended group had a significantly greater proportion of aboriginal mothers. All of the mothers in the apprehended group were on welfare, whereas only 95 (31.3%) of the non-apprehended group received welfare payments. The apprehended group were more likely to have been beaten by their parents or been physically abused, neglected, or sexually abused as children; more likely to suffer from low-self-esteem; likely to be less satisfied with support; or they reported having no support.

None of the continuous or binary pregnancy outcome variables summarized in Tables 14 and 15 differentiated apprehended from nonapprehended groups of mothers. Three of the 12 apprehended mothers and babies were discharged separately. One of the babies was placed in a foster home, and one baby, whose mother was returning to jail, remained in NICU for medical reasons. This latter mother's other three

children were in foster care. The third mother did not deliver at either of the tertiary care institutions as she wanted an induction for nonmedical reason and was refused. This mother is included in the apprehended group for several reasons: all her other children have been apprehended; CFS has issued a 'birth alert' notice; and she has a history of alcohol abuse.

The remaining seven of the babies in the apprehended group were under the jurisdiction of CFS but were discharged with their mothers. Six of the seven mothers had previous children apprehended for parenting problems. Four of those discharged with their babies were sent to group homes or foster homes. One mother and her baby were placed with the mother's sister. Two of the mothers were to have close CFS supervision as they had previous children apprehended.

Mothers were referred to social workers, CFS, community health nurses at various times during their pregnancy. The 12 mothers in the apprehended group were known to Child and Family Services and to social work, but only 7 mothers were referred for early community health nursing visits following the delivery of their babies. Of the five mothers who were not referred for an early CHN visit, one mother's place of delivery remains unknown; another mother was sent to a care home with her baby; another returned to jail, leaving her baby in NICU; and two other mothers whose babies and previous children were apprehended were not referred by the nurses for an early CHN visit.

Eleven of the women in the apprehended group completed the CAP Inventory and 319 of the non-apprehended group. The mean CAP score of the apprehended group (205.4, SD 101.4) was significantly higher than the mean of the non-apprehended group (101.6, SD 85.9). The t -test value was 3.92 ($p < .0001$).

Early CHN referral group. All mothers and their new babies are referred to community health nurses for routine follow-up. In addition, the hospital nurses are expected to assess each mother and baby to

determine if they require, or would benefit from, an early home visit. Some mothers are referred for breastfeeding difficulties or problems related to their health or the health of their baby. However, others are referred for social reasons. In this sample, 35 mothers and their babies were referred by the hospital nurses for early Community Health Nurse visits for social reasons. The 35 excluded the 5 mothers (not referred) discussed above. The social reasons included substance abuse and unstable family situations.

Tables 16 - 19 compare the group of mothers referred for early CHN visits for social reasons and the remaining group of mothers on the same SSAPQ and pregnancy outcome variables that were the basis of comparing the apprehended and non-apprehended groups. Tables 16 and 17 summarize continuous and discrete SSAPQ items, respectively, while Tables 18 and 19 summarize pregnancy outcome measures.

 Table 16 - page 66

 Table 17 - page 67

 Table 18 - page 69

 Table 19 - page 70

The mothers in the early CHN referred group were more likely: a) to be 17 years of age or younger; b) have fewer years of schooling; and c) to live in more than two residences in two years. While the CHN referred group was more likely to smoke, those who smoked did not smoke more cigarettes per day than the remaining non-referred group of

Table 16

Mean, SD, T-test, and Level of Significance of SSAPQ Variables of Early CHN and Routine Referred Group

Variable	Early CHN ¹		Routine CHN ²		Statistical Results	
	Mean	SD	Mean	SD	t-test	p<
Age	19.32	4.83	26.34	5.85	-5.76	0.000
School	10.21	1.72	12.42	2.79	-6.56	0.000
Residence						
(in 2 yrs.)	3.18	3.83	1.82	1.57	2.02	0.051
No. Child	1.09	1.33	1.10	1.26	-2.13	0.983
Under 5 yrs.	0.75	0.88	0.63	0.77	0.83	0.407
No. Drinks	0.56	2.14	0.27	0.99	0.80	0.428
No. Cig.	4.64	5.53	3.37	6.11	1.14	0.254
No. Support	2.63	1.07	2.84	1.21	-1.01	0.315

¹ n=35

² n=304

Table 17

Number, Percent, Chi-square, and Level of Significance for Binary SSAPO Variables of Early CHN and Routine Referred Groups

Variable	Early CHN ¹		Routine ²		Statistical Results	
	No.	%	No.	%	Chi-square	(p<)
<hr/>						
Age 17 yrs.						
or less	10	28.6	21	7.1	17.01	0.000
Aboriginal	19	55.9	79	26.8	12.35	0.000
Education						
11 yrs.						
or less	27	79.4	103	34.8	25.43	0.000
Residences						
2 or more	11	33.3	48	16.6	5.54	0.019
No Phone	10	30.3	23	7.8	16.68	0.000
Single	18	52.9	65	22.0	15.44	0.000
Welfare	26	78.8	77	27.5	35.17	0.000
Unplanned						
Pregnancy	18	54.5	104	35.5	4.67	0.031
No prenatal						
classes	18	56.3	100	34.6	5.81	0.016
No. child	6	18.2	30	10.2	1.93	0.165
Under 5	1	3.0	7	2.4	0.05	0.819
Depressed	2	5.9	9	3.1	0.74	0.389

(table continues)

¹ n=35² n=304

Number, Percent, Chi-square, and Level of Significance for Binary SSAPO
Variables of Early CHN Routine Referred Groups

Variable	Early CHN		Routine		Inferential Statistics	
	No.	%	No.	%	Chi-square	(p<)
Drugs	4	11.8	17	5.8	1.84	0.175
Smoke	23	67.6	111	37.6	11.38	0.001
Alcohol	4	12.1	26	8.8	0.39	0.532
Violence	0	0.0	14	4.7	1.69	0.195
Abuse	12	36.4	42	14.2	10.64	0.001
Beaten	9	26.5	21	7.1	13.85	0.000
Low Self- esteem	20	62.5	89	30.5	13.25	0.000
Dissatisfied with support	5	15.2	16	5.5	4.56	0.032
No Support	2	6.1	10	3.4	0.59	0.444

Table 18

Mean, SD, Inferential Statistical Value (t-test), and Level of Significance of Continuous Pregnancy Outcome Variables of Early CHN and Routine Referred Groups

Variable	Early CHN ¹		Routine ²		Statistical Results	
	Mean	SD	Mean	SD	t-test	(p<)
Gravida	2.67	2.13	2.57	1.57	0.23	0.820
Para	1.00	1.52	1.05	1.26	-0.20	0.841
Prenatal						
Care ³	13.40	6.11	12.45	5.91	0.90	0.370
Gestation						
at birth	39.83	1.39	39.56	1.74	1.07	0.292
Weight (gms.)						
	3560.03	556.62	3560.03	556.62	0.54	0.587
APGAR 1	7.23	2.09	7.79	1.74	-1.76	0.079
APGAR 5	8.74	0.66	8.75	1.0	-0.77	0.939

¹ n=35² n=304³ beginning of prenatal care in weeks

Table 19

Number, Percent, Chi-square, Level of Significance for Binary Pregnancy Outcome Variables of Early CHN and Routine Referred Groups

Variable	Early CHN ¹		Routine ²		Statistical Results	
	No.	%	No.	%	Chi-square	(p<)
Delivery						
Vaginal	32	91.4	256	84.5		
C.S.	3	8.6	47	15.5	1.20	0.274
Male	16	45.7	156	51.5	0.42	0.518
Normal Nursery	31	88.6	275	91.4		
NICU	0	0.0	8	2.7		
IMCN	4	11.4	18	6.0	2.38	0.304
Breast fdg.						
Yes	25	71.4	235	78.1		
No	10	28.6	66	21.9	0.79	0.374
Mom & Babe						
Discharged						
Together	31	88.6	286	94.1		
Separately	4	11.4	18	5.9	1.57	0.210
S.W. referral	28	80.0	55	18.1	65.06	0.000
Known to CFS	22	62.9	28	9.2	71.84	0.000

¹ n=35² n=304

mothers; a greater proportion were aboriginal, single or on welfare. The referred group were more likely to have been beaten by their parents or been physically abused, neglected, or sexually abused as a child; however, the reported violence in the home was not significant. A greater proportion of the referred group had low self-esteem, lacked a phone, and were dissatisfied with the support they received.

None of the continuous pregnancy outcome variables differentiated between the groups. However, significantly more of the referral group mothers were known to CFS and/or had been referred to social work. Mothers were referred to social workers, CFS, and Community Health Nurses at various times during their pregnancy. Of the 35 mothers in the early CHN referral group, 22 (62.9%) of the mothers were known to CFS and 28 (80%) had been referred to Social Work.

Nineteen (54.3%) of the mothers referred for early CHN visits were assessed by the three expert nurses to have high abuse potential, compared with only 14 (4.6%) of the non-referred group. The chi-square value was 88.16, $p < .0000$.

Of the 35 mothers referred for early CHN visits, 33 and 292 of the remaining mothers satisfactorily completed the CAP Inventory during their prenatal period. The mean scores for the early CHN group was 144.42 (SD 96.85), while the mean score of the remaining group was 100.12 (SD 86.82). The difference between the groups was statistically significant t (d.f. 323) = 2.75, $p < .0060$. The Lie Scale detected those prenatal women who lied on the CAP Inventory. The CAP was unable to differentiate between the group of women who lied and were in the early CHN referral group (chi-square (1, n = 183) = 0.68, 0.4113). However, when only the women with normal Lie Scales were compared, the CAP discriminated between the groups (chi-square (1, n = 180) = 7.19, $p < .0073$).

Nurse Expert group. The group of mothers referred to as the Expert group were a group of 35 mothers with high potential to abuse as

assessed by the panel of three nurse experts. Only when the assessments of all three of the experts agreed was the mother placed in this group. The nurse experts were provided with the same information as the nurses on the postpartum units, including the patient's type of delivery, placement, and referral to social work, public health, and whether they were known to CFS. All 12 of the apprehended group were assessed as "at risk" by the nurse experts.

Tables 20 - 23 provide the comparison of the Nurse Expert group and the remaining group on the same SSAPQ and pregnancy outcome variables that were the basis of comparing the apprehended and non-apprehended groups and the CHN referred and non-referred groups. Tables 20 and 21 summarize continuous and discrete SSAPQ items, respectively, while Tables 22 and 23 summarize pregnancy outcome measures.

Table 20 - page 73

Table 21 - page 74

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The mothers' in the nurse expert group were more likely to be 17 years of age or younger; aboriginal; on welfare; have fewer years of schooling; single; have an unplanned pregnancy; have been hospitalized for depression; consumed more cigarettes and alcoholic beverages per day; have been transient, that is, lived in different places more often over the last two year period.

Table 20

Mean, SD, T-test, and Level of Significance of Continuous Variables from
Selected SSAPO Items of the Expert Group and the Remaining Group of
Mothers

Expert Nurses Assessment of Potential to Abuse						
Variable	High ¹		Low ²		Statistical Results	
	Mean	SD	Mean	SD	t-test	p<
Age	21.32	5.20	26.93	5.83	-5.37	0.000
School	9.79	1.39	12.42	2.77	-9.16	0.000
Residences (in 2 yrs.)	4.34	5.14	1.78	1.51	2.81	0.008
No. Child Under	1.49	1.22	1.04	1.22	1.55	0.130
5 yrs.	0.84	0.77	0.84	0.86	1.50	0.135
No. Drinks	1.09	2.42	0.21	0.89	2.08	0.045
No. Cig.	6.55	6.86	3.24	5.95	2.98	0.003
No. Support	2.47	1.34	2.86	1.18	-1.75	0.081

¹ n=35² n=308

Table 21

Number, Percent, Chi-square, and Level of Significance for Selected Binary Variables from SSAPO Items of the Expert Group of Mothers and the Remaining Group of Mothers

Expert Nurses Assessment of Potential to Abuse						
Variable	High ¹		Low ²		Statistical Results	
	No.	%	No.	%	Chi-square	(p<)

17 yrs.						
or less	9	25.7	22	7.3	12.61	0.000
Aboriginal	21	61.8	80	26.8	17.71	0.000
Education						
11 yrs.						
or less	33	97.1	101	33.7	51.08	0.000
Residences						
2 ore more	18	56.3	43	14.6	32.87	0.000
No Phone	10	30.3	23	8.4	15.17	0.000
Single	30	88.2	109	63.5	33.66	0.000
Welfare	31	93.9	76	26.9	59.39	0.000
Unplanned						
Pregnancy	19	57.6	106	35.7	6.05	0.014
No Prenatal						
classes	15	48.4	105	35.8	1.89	0.169
No. child	8	25.0	28	9.4	7.19	0.007

(table continues)

¹ n=35

² n=308

Number, Percent, Chi-square, and Level of Significance for Binary Variables of Selected SSAPO Items of the Expert Group of Mothers and the Remaining Group of Mothers

Expert Nurses Assessment of Potential to Abuse

Variable	High		Low		Statistical Results	
	No.	%	No.	%	Chi-square	p<
Under 5yrs.	2	6.3	7	2.3	1.66	0.198
Depressed	3	9.1	8	2.7	3.80	0.051
Drugs	8	23.5	13	4.4	18.92	0.000
Smoke	26	78.8	111	37.1	21.29	0.000
Alcohol	8	24.2	23	7.7	9.62	0.002
Violence	2	5.9	12	4.0	0.27	0.607
Abused	15	45.5	40	13.4	22.12	0.000
Beaten	11	32.4	20	6.7	23.82	0.000
Low Self-esteem	23	69.7	86	29.4	21.69	0.000
Dissatisfied with support	8	25.0	13	4.4	20.28	0.000
No Support	5	15.2	8	2.7	12.12	0.001

Table 22

Mean, SD, T-test, and Level of Significance of continuous Pregnancy Outcome Variables of the Group of Mothers with Potential to Abuse as Assessed by a Panel of Nurse Experts and the Remaining Mothers

<i>Expert Nurses Assessment of Potential to Abuse</i>						
Variable	High ¹		Low ²		Statistical Results	
	Mean	SD	Mean	SD	t-test	p<
Gravida	3.31	2.17	2.51	1.55	2.16	0.037
Para	1.57	1.58	0.99	1.24	2.14	0.042
Prenatal Care ³	13.80	7.26	12.42	5.74	1.08	0.285
Gestation						
at birth	39.66	1.39	0.58	1.76	0.29	0.773
Weight (gms.)	3429.56	483.67	3515.19	568.05	-0.85	0.398
APGAR 1	7.35	2.06	7.78	1.74	-1.29	0.198
APGAR 5	8.86	1.11	8.77	0.97	-1.18	0.238

¹ n=35² n=308³ beginning of prenatal care in weeks

Table 23

Number, Percent, Chi-square, and Level of Significance for Binary
Pregnancy Outcome Variables of the Expert Group of Mothers and the
Remaining Group of Mothers

<i>Expert Nurses Assessment of Potential to Abuse</i>						
Variable	High ¹		Low ²		Statistical Results	
	No.	%	No.	%	Chi-square	p<
<i>Deliveries</i>						
Vaginal	30	90.9	261	84.7	1.03	0.310
C.S. deliveries	3	9.1	47	15.3		
Male	10	31.3	162	52.6	5.29	0.022
Nurseries					5.96	0.050
Normal Nursery	26	78.8	282	92.2		
NICU	2	6.1	7	2.3		
IMCN	5	15.2	17	5.6	6.4	0.041
No Breast fdg.	14	41.2	63	20.7	7.34	0.007
<i>Discharged</i>						
separately	8	23.5	16	5.2	15.78	0.000
S.W. Referral	31	91.2	55	17.9	87.45	0.000
Known to CFS	27	77.1	26	8.4	113.55	0.000
Early CHN referral	19	54.3	14	4.6	88.16	0.000

¹ n=35² n=308

An example from the Expert Referral group was a mother who reported consuming 11 drinks per day and who had a history of substance abuse, assault, and serving time in jail. This mother was aboriginal, on welfare, had her previous child apprehended, lived in three locations in the last two years, had no phone; her pregnancy was unplanned, and she had low self-esteem. Her boyfriend was her only support and she reported being very satisfied with that support. She lived in an apartment that is coded as "care and caution, drinking environment" with her boyfriend who is not the parental father. She was known to CFS and had been seen by social work. This mother left hospital within 24 hours of delivery with her baby. Arrangements were made for an early CHN visit and CFS follow-up. Her CAP Inventory score was low but her Lie score and Faking Good score were high. This mother and baby were known to CFS and were referred for an early CHN visit.

The Nurse Expert "at risk" group was more likely to have been beaten by their parents or been physically abused, neglected, or sexually abused as children; however, the reported violence in the home was not significant. More of the women in the Nurse Expert "at risk" group suffered from low self-esteem, fewer reported they were satisfied with the support they received, or reported having no support.

In addition, the gravida and para status of the mothers differentiated the two groups. Although the type of delivery was not significant, the caesarean section rate for the Nurse Expert "at risk" group was 9.1%, while the rate for the remaining group was 15.3%. The sex (male) of the baby, breast feeding, nursery placement, mother and baby discharged separately, referrals to social work, and mother known to CFS also differentiated the groups. The nurse experts and the hospital nurses both agreed that 19 (54.3%) of the 35 mothers in the expert group were at-risk and required an early home visit. However, hospital nurses did not refer 16 mothers who had been identified as at-risk by the nurse experts.

Thirty-two women in the Nurse Expert "at risk" group completed the CAP Inventory compared to of the remaining group. Eleven (34.4%) of the expert group had high CAP scores compared with 31 (10.4%) of the remaining group ($\chi^2 = 14.86$, $p < .0001$). The mean CAP score of the expert group (176.62, SD 101.27, $p < .0000$) was significantly higher than the mean of the remaining group (97.16 SD 83.47). The t value was 5.01, ($p < .0001$). However, the CAP did not significantly differentiate between the mothers who had elevated Lie scores (χ^2 (1, $N = 186$) = 2.34, 0.1261) and who had been assessed by the nurse experts as having high and low abuse potential. For the mothers with normal Lie scores, the χ^2 value (1, $N = 182$) = 18.53, $p < .0000$ indicated that the CAP differentiated between the Nurse Expert "at risk" group and the remaining group. As previously explained, whether or not the subjects who had elevated Lie scores were included in the groups, the CAP could distinguish between the groups.

High CAP group. Of the 351 subjects, 337 completed the CAP Inventory. Fourteen questionnaires were incomplete and discarded. The CAP results (total score possible = 486) were divided into two groups: (a) those with scores of 215 or more, called the high CAP group; and (b) those with scores of 214 or less, called the low CAP group. The high CAP group ($n=44$) and the low CAP group ($n=293$) are described in four tables (Tables 20 - 23).

The tables provide the comparison of the high and low CAP score groups on the same SSAPQ and pregnancy outcome variables that were the basis of comparing the other three groups. Tables 24 and 25 summarize continuous and discrete SSAPQ items, respectively.

Table 24

Mean, SD, T-test Results and Level of Significance of Continuous Variables from Selected SSAPO Items of Groups of Mothers with High and Low CAP Inventory Scores

Variable	High CAP ¹		Low CAP ²		Statistical Results	
	Mean	SD	Mean	SD	(t test)	(p<)
Age	23.07	5.21	26.81	5.90	3.98	0.000
School	10.77	2.35	12.38	3.68	3.68	0.000
Residences						
(in 2 yrs.)	3.42	4.46	1.82	1.64	-2.26	0.029
No. Child	1.39	1.48	1.03	1.23	-1.74	0.080
Under 5 yrs.	0.72	0.85	0.62	0.77	-0.81	0.423
No. Drinks	0.46	1.11	0.27	1.16	-1.01	0.311
No. Cig.	4.50	6.67	3.40	5.60	-1.13	0.260
No. Support	2.05	1.27	2.92	1.16	4.43	0.000

¹ n=44² n=293

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 Tables 26 and 27 summarize pregnancy outcome measures. The high and

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 Table 27 - page 85

low CAP groups differed significantly on SSAPQ variables. The mothers in the high CAP group were: more likely to be 17 years of age or younger, aboriginal, transient, on welfare, single, smoke, and use alcohol. More of the high CAP score group had been hospitalized for depression, suffered from low self-esteem, reported fewer support persons, or no support, and were more likely to be dissatisfied with the support they had received. The high CAP group were more likely to have been physically abused, neglected, or sexually abused as a child, or lived in a home where adults were violent; however, reports of injuries or beatings as a child by parents was not significant.

Para (the number of living children) and gestation at birth differentiated the high CAP and low CAP groups. Significantly more of CAP group mothers were: discharged without their babies; known to CFS; and/or had been referred to social work. The high CAP group mothers were more likely to be referred for an early CHN referrals for social reasons and to be in the apprehended group.

In reviewing the results of the four groups, the apprehended, early CHN referral, nurse expert, and the elevated CAP, certain variables differentiate between the groups consistently. Those variables from the SSAPQ that identified mothers with potential to abuse in each of the four groups were: 17 years of age or less, fewer years in school,

Table 25

Number, Percent, Chi-square, and Level of Significance for Binary SSAPO
Variables of Groups of Mothers with High and Low CAP Scores

Variable	High CAP ¹		Low CAP ²		Statistical Results	
	No.	%	No.	%	Chi-square	(p<)
17 yrs. or less	8	18.6	23	7.8	5.31	0.021
Aboriginal	24	55.8	76	25.9	16.01	0.000
Education						
11 yrs. or less	30	69.8	106	35.8	18.02	0.000
Residences						
2 or more						
in 2 yrs	16	40.0	45	15.6	13.78	0.000
Welfare	32	82.1	74	26.6	47.22	0.000
No Phone	6	14.3	29	9.8	0.78	0.326
Single	31	72.1	110	37.5	18.38	0.000
Unplanned						
Pregnancy	20	50.0	110	37.2	2.45	0.118
No classes	18	43.9	107	37.0	0.72	0.396
No. child	8	40.0	45	15.6	13.78	0.000
No. under 5	1	2.4	8	2.7	0.02	0.893
Depressed	4	9.5	7	2.4	5.95	0.015
Drugs	3	7.1	18	6.1	0.07	0.790
Smoke	24	55.8	116	39.3	4.21	0.040

(table continues)

¹ n=44² n= 293

Number, Percent, Chi-square, and Level of Significance for Binary SSAPO
Variables of Groups of Mothers with High and Low CAP Scores

Variable	High CAP ¹		Low CAP ²		Statistical Results	
	No.	%	No.	%	Chi-square	(p<)
Alcohol	9	20.9	23	7.8	7.56	0.006
Violence	6	14.0	9	3.0	10.57	0.001
Abuse	13	30.2	46	15.6	5.58	0.018
Beaten	7	16.3	25	8.4	2.70	0.101
Low						
Self-esteem	25	59.5	87	30.0	14.31	0.000
Dissatisfied						
with support	8	19.0	13	4.5	13.06	0.000
No Support	5	12.2	10	3.4	6.47	0.011

¹ n=44

² n= 293

Table 26

Mean, SD, T-test, and Level of Significance of Pregnancy Outcome
Variables of Mother with High and Low CAP Inventory Scores

Variable	High CAP ¹		Low CAP ²		Statistical Results	
	Mean	SD	Mean	SD	t-test	p<
Gravida	2.83	1.86	2.53	1.57	-1.13	0.260
Para	1.50	1.61	0.98	1.21	-2.01	0.050
Prenatal Care ³	13.44	7.02	12.42	5.82	-1.01	0.310
Gestation at birth	38.90	2.13	39.70	1.64	2.31	0.025
Weight (gms.)	3376.17	728.17	3534.22	531.65	1.36	0.182
APGAR 1	7.55	1.94	7.77	1.73	0.76	0.446
APGAR 5	8.62	1.43	8.78	0.86	0.71	0.482

¹ n=44

² n=293

³ beginning of prenatal care in weeks

Table 27

Number, Percent, Chi-square, Level of Significance for Binary Pregnancy Outcome Variables of Mothers with High CAP and Low CAP scores

Variable	High CAP ¹		Low CAP ²		Statistical Results	
	No.	%	No.	%	Chi-square	p<
Deliveries						
					1.01	0.316
Vaginal	38	90.5	242	84.6		
C.S. Deliveries	4	9.5	44	15.4		
Male	22	52.4	145	50.9	0.03	0.856
Nurseries						
					1.90	0.386
Normal Nursery	35	85.4	261	91.6		
NICU	2	4.9	6	2.1		
IMCN	4	9.8	18	6.3		
No Breast fdg.	10	24.1	64	22.5	0.08	0.782
Discharged						
Separately	7	16.7	17	5.9	6.25	0.012
S.W. Referral	21	50.0	59	20.6	17.26	0.000
Known to CFS	12	28.6	37	12.9	7.11	0.008
Early CHN ³	8	19.0	25	8.8	4.18	0.041
Apprehended	5	11.9	6	2.1	10.97	0.000

¹ n=44² n=293³ referral for social reasons only

aboriginal, on welfare, smoking, abused as a child, reported low self-esteem, and dissatisfied with support. Additional variables differentiated between groups in three out of the four groups. These variables were: single, use of alcohol, beaten or injured as a child by parents, or having no support person. Thus, 12 of the SSAPQ variables appear useful in differentiating between the groups of at-risk mothers.

Only three variables from the pregnancy outcome measure consistently identified mothers with a potential to abuse. These variables were the referral of the mother and baby to social work, referral for an early CHN visit, and the fact that the mother was known to CFS. The separate discharge of mother and baby variable is common to three of the groups. None of the variables directly related to the pregnancy, for example, gravida, Apgar, time prenatal care began, weight or condition of the baby at birth, sex, or breast feeding differentiated between the at-risk groups and the remaining group.

Combined potential to abuse group.

As an alternative analysis, all mothers identified as at-risk by one or more of the apprehended, early referral, expert, or the high CAP groups were merged into a combined potential to abuse group (n=80). The remaining group of mothers was referred to as the control group (n=261). Tables 28 - 31 provide a comparison of the combined group and the control group on the same SSAPQ and pregnancy outcome variables that were the basis of comparing the four initial groups. Tables 28 and 29 summarize the continuous and discrete SSAPQ items, respectively.

Table 28 - page 87

Table 29 - page 88

Table 28

Mean, SD, T-test Results and Level of Significance of Continuous Variables from Selected SSAPO Items of the Combined Group of Mothers and the Control Group

Variable	Combined ¹		Control ²		Statistical Results	
	Mean	SD	Mean	SD	t-test	p<
Age	22.35	5.14	27.45	5.72	-7.14	0.000*
School	10.50	2.11	12.63	2.74	-7.36	0.000*
Residences						
(in 2 yrs.)	3.21	4.14	1.69	1.04	3.16	0.002
No. Child	1.34	1.52	0.99	1.16	1.91	0.059
Under 5 yrs.	0.73	0.85	0.60	0.76	1.25	0.212
No. Drinks	0.67	1.78	0.18	0.85	2.33	0.022
No. Cig.	5.49	6.43	3.07	5.95	3.08	0.002
No. Support	2.37	1.31	2.94	1.15	-3.67	0.000

* this variable is significant in at least 3 of the 4 initial groups: apprehended, early CHN, expert, or high CAP group.

¹ n=80

² n=261

Table 29

Number, Percent, Chi-square, and Level of Significance for Binary SSAPO
Variables of the Combined Group of Mothers and the Control Group

Variable	Combined ¹		Control ²		Statistical Results	
	No.	%	No.	%	Chi-square	(p<)
Aboriginal	46	57.5	57	21.8	36.94	0.000*
Welfare	59	79.7	50	20.2	90.31	0.000*
No Phone	18	22.8	18	6.9	16.14	0.000
Single	34	42.5	53	20.3	15.87	0.000*
Planned						
Pregnancy	41	53.2	89	34.1	9.21	0.002
No classes	39	50.6	86	33.7	7.22	0.007
Depressed	6	7.9	5	1.9	6.21	0.013
Drugs	11	13.9	7	2.7	15.29	0.800
Smoke	55	69.6	87	33.3	32.83	0.000*
Alcohol	16	20.3	16	6.1	14.19	0.000*
Violence	6	7.5	9	3.4	2.39	0.122
Abuse	26	32.9	33	12.6	17.37	0.000*
Beaten	16	20.0	16	6.1	13.85	0.000*

(table continues)

¹ n=80

² n=261

Number, Percent, Chi-square, and Level of Significance for Binary SSAPO
Variables of the Combined Group of Mothers and the Control Group

Variable	Combined ¹		Control ²		Statistical Results	
	No.	%	No.	%	Chi-square	(p<)
<hr/>						
Low Self-						
esteem	48	62.3	65	25.3	36.32	0.000*
No Support	9	11.7	6	2.3	12.22	0.001*
Dissatisfied						
with support	7	9.2	5	2.0	8.81	0.003*
<hr/>						

* these variables are significant in at least 3 of the 4 at-risk groups.

¹ n=80

² n=261

While Tables 30 and 31 summarize pregnancy outcome measures.

 Table 30 - page 91

 Table 31 - page 92

The combined and control groups differed significantly on SSAPQ variables. The mothers in the combined group were: more likely to be 17 years of age or younger, have spent fewer years in school, aboriginal, transient, on welfare, single, smoked more cigarettes, drank more alcohol, had more unplanned pregnancies, and had never attended prenatal classes. A greater proportion of the combined group had been hospitalized for depression, suffered from low self-esteem, reported having no phone; fewer support persons, or no support, and were more likely to be dissatisfied with the support they did receive. The combined group were more likely to have been beaten or injured by their parents, or physically abused, neglected, or sexually abused as children, whereas they were no more likely to lived in a home where adults were violent.

Of the pregnancy outcome variables, the number of live children the mother has (Para), the discharge of mother and baby separately for non-medical reasons, the referrals to social work, and the fact that the mothers were known to CFS differentiated between the combined and the control groups.

Of the SSAPQ variables, 14 variables were common to the combined group and at least three of the four at-risk groups that is, the apprehended, the early CHN, nurse experts, or the high CAP group. In reviewing the items that would be most effective in assessing potential to abuse, those 14 variables would form the core of a revised SSAPQ. An additional six variables that differentiated between the combined and

Table 30

Mean, SD, T-test, and Level of Significance of Pregnancy OutcomeVariables of Combined Group of Mothers and the Control Group

Variable	Combined ¹		Control ²		t-test	p<
	Mean	SD	Mean	SD		
Gravida	2.91	1.99	2.48	1.51	1.78	0.078
Para	1.34	1.56	0.96	1.19	2.02	0.046
Prenatal Care ³	12.99	6.27	12.45	5.81	0.70	0.485
Gestation at birth	39.31	1.90	39.67	1.66	-1.69	0.092
Weight (gms.)	3432.21	646.83	3528.78	530.12	-1.21	0.231
APGAR 1	7.37	2.11	7.83	1.65	-1.75	0.084
APGAR 5	8.63	1.29	8.78	0.87	-0.98	0.331

¹ n=80² n=261³ beginning of prenatal care in weeks

Table 31

Number, Percent, Chi-square, Level of Significance for Binary Pregnancy Outcome Variables of the Combined Group of Mothers and the Control Groups

Variable	Combined ¹		Control ²		Statistical Results	
	No.	%	No.	%	Chi-square	(p<)
<i>Deliveries</i>					1.54	0.214
Vaginal	70	89.7	222	84.1		
C.S.	8	10.3	42	15.9		
Male	35	45.5	138	51.3	1.11	0.292
<i>Nurseries</i>					2.74	0.255
Normal Nursery	67	87.0	241	91.6		
NICU	4	5.2	5	1.9		
IMCN	6	7.8	17	6.5		
No Breast fdg.	22	28.6	56	21.3	1.79	0.182
<i>Discharged</i>						
Separately	12	15.4	12	4.5	10.91	0.001
S.W. Referral	53	67.9	34	12.8	96.71	0.000
Known to CFS	37	46.8	16	6.1	77.38	0.000

¹ n=80

² n=261

the control group but were not necessarily significant for the other groups were also considered in developing a revised SSAPQ. Those variables were: changes in residency, no phone, planned pregnancy, lack of prenatal classes, depression, para, and mother and baby discharged separately.

In summary, the combined group of 80 subjects and the apprehended, early CHN referral, nurse expert, and the elevated CAP were examined to determine the number of subjects who were in more than one of the four groups in addition to the combined group. Only three (3.75%) of the 80 women in the combined group were in all four of the groups, that is, in the apprehended, early CHN referral, nurse experts, and elevated CAP score groups. The three mothers had some common characteristics. They were: on welfare, had only grade 10 or less education, smoked, were referred to social work, and were known to CFS. Their CAP Inventory scores were 249, 267, and 310. All these scores were considerably higher than the cut-off of 215.

Of the 80 subjects in the combined group, only 13 (16.3%) had elevated CAP scores and were also in at least one of the other three groups. Similarly, only 11 (13.8%) of the 80 mothers were in the nurse expert group and also assessed as at-risk by at least one other group. One mother had not completed the CAP but was in the other three groups. Based on the fact that the overlap between the groups was so meagre, the advisability of using more than one approach to assessing potential to abuse is compelling.

Details Consideration of the CAP Inventory

The CAP Inventory was administered to 351 subjects and 337 completed the Inventory. In assessing the results of the CAP Inventory, Milner (1986) designated a critical or cut-off point to distinguish between those subjects with low potential or high potential to abuse. He recommended two cut-off scores namely, 215 and 167 out of a total possible score of 486. The cut-off score was based on a decision about

the level of sensitivity and specificity, and the number of false positives and negatives that were acceptable. Sensitivity is the proportion of truly diseased persons (those who abuse) who are called diseased (potential abusers) by the test, that is, mothers who have a high potential to abuse are labelled as positive. Specificity is the proportion of true negatives (low potential to abuse) that are labelled as negative (Friedman, 1987). In setting a cut-off point, attention must be paid to the purpose of the test. If the condition is treatable and serious then sensitivity is favoured over specificity. In addition to the level of sensitivity, the number of subjects who are screened as 'false negatives' or persons with the disease for whom the test is negative must be considered. Similarly, those subjects with a positive test but who are actually negative who are called 'false positives' are important as they increase the costs of screening unnecessarily. Milner (1987) recommended a conservative (fewer false positives) score of 215 or greater as the cut-off for subjects who have a potential to abuse. The more conservative approach (cut-off 215) with fewer false positives (approximately twice the number of false negatives as false positives) was chosen for this study rather than the more liberal cut-off of 167. Milner pointed out that an elevated abuse score indicated that the subject has characteristics similar to known, active child abusers. An elevated score indicates the need for additional evaluation from other sources such as interviews, nursing databases, case histories, and direct observations.

Subjects were divided into high and low abuse potential groups based on the 215 cut-off score. The relationship between this abuse/no abuse split and the split into high and low abuse categories for other at-risk criteria were evaluated in a series of two by two chi-squares.

The CAP Inventory abuse split of 215 is significantly related to each of the other three criterion splits, although the association between the CAP and the early CHN referral criteria was not as strong as

the association between the CAP and the apprehended and the nurse expert groups. Table 32 provides the results.

Table 32 - page 96

The sensitivity and specificity of the CAP Inventory based on the contingency table using the apprehended and non-apprehended groups as the true abuse criterion were determined. Friedman (1987) defined the formula for sensitivity as the proportion of true positives that are labelled as positive and specificity as the proportion of true negatives that are labelled as negative. For the apprehended group, the sensitivity and the specificity of the CAP Inventory at the 215 cut-off were 45.5% and 87.4%, respectively. The effectiveness of the CAP Inventory was less than expected. However, the CAP Inventory has not been used extensively with prenatal populations for predicting child abuse potential. As a result, the decision was made to attempt to find a subset of the 160 CAP Inventory items that might provide a shorter instrument with improved sensitivity for the prenatal population.

Revised CAP Inventory. As the CAP Inventory has a total of 160 items, is cumbersome to administer in a busy clinic or physician's office, and has a low sensitivity in relation to the apprehended group, a revision of the CAP was attempted. The shortened version of the CAP was generated from among the CAP items. Fisher's exact test was used to assess the relationship between each of the CAP items and each of the apprehended and the nursing expert groups. Table 33 presents the Fisher's Exact coefficient and the accompanying level of significance for the CAP items that were significantly related to both the apprehended and the expert groups.

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Table 32

Chi-square and the Level of Significance for CAP Inventory Scores and the Apprehended, Early CHN, Expert, and Combined Groups

CAP Inventory Scores		
Groups	Chi-square	(p<)
Apprehended	10.97	0.0009
Early CHN	4.18	0.0409
Nurse Experts	14.86	0.0001

Table 33

Fisher's Exact and the Level of Significance of CAP items and the Apprehended, and the Expert Groups

CAP Item ¹	Apprehended		Expert	
	Fisher's Exact p<		Fisher's Exact p<	
#13	-0.13756	0.0194	-0.1167	0.0398
#22	-0.1389	0.0314	-0.1490	0.0121
#23	-0.1774	0.0004	-0.1883	0.0012
#29	-0.1585	0.0014	-0.1311	0.0098
#32	-0.1672	0.0005	-0.0277	0.0000
#36	-0.2059	0.0001	-0.2174	0.0003
#38	-0.1918	0.0047	-0.1459	0.0124
#41	-0.1328	0.0373	-0.1768	0.0038
#48	-0.1791	0.0166	-0.1270	0.0379
#52	-0.1701	0.0020	-0.1547	0.0023
#63	-0.4429	0.0000	-0.1721	0.0023
#67	-0.1483	0.0021	-0.1850	0.0004
#68	0.1483	0.0048	-0.1572	0.0049
#74	-0.1180	0.0118	-0.2067	0.0003
#75	-0.1147	0.0720	-0.1303	0.0077
#78	-0.1875	0.0001	-0.1105	0.0291
#85	-0.1778	0.0076	-0.2502	0.0000
#87	-0.1666	0.0005	-0.1635	0.0021
#93	-0.1376	0.0084	-0.2051	0.0003

(table continues)

¹ n=34

Fisher's Exact and the level of significance of 32 CAP items and the
Apprehended, Early CHN, and the Expert Groups

Apprehended		Expert	
CAP	Fisher's Exact p<	Fishers's Exact p<	
#98	-0.2216 0.0000	-0.2133 0.0000	
#103	-0.2440 0.0007	-0.2799 0.0000	
#105	-0.1384 0.0048	-0.1754 0.0032	
#108	-0.1360 0.0038	-0.2319 0.0000	
#111	0.1873 0.0038	-0.2796 0.0000	
#120	0.1508 0.0033	-0.2302 0.0000	
#138	0.2310 0.0000	-0.2061 0.0007	
#140	0.1184 0.0492	-0.1769 0.0030	
#143	0.1411 0.0042	-0.1796 0.0007	
#148	0.2631 0.0006	-0.1933 0.0005	
#151	0.1695 0.0010	-0.2133 0.0000	
#154	-0.2025 0.0002	-0.2415 0.0001	
#158	-0.1768 0.0114	-0.2043 0.0003	

The results indicated that 32 CAP items were significantly able to distinguish between the apprehended group and the non-apprehended group and between pregnant women at-risk to abuse in the nurse expert group and the remaining mothers in the group. Of those 32 items, only those items that had a level of significance of $p < .02$ or less in the apprehended group were included in a revised CAP of 28 items. Table 34 lists the 28 CAP items that became the revised CAP.28.

Table 34 - page 100

The next step was to assess the association between the scores of the CAP.28 and the apprehended group using the chi-square procedure. Then using the results of the contingency tables, the specificity, sensitivity, and the percent correctly classified of the cut-off scores were determined.

Friedman (1987) stressed that setting the cut-off point depends on the purpose of the test. If the intention is not to miss a particular disorder that is both treatable and serious, then sensitivity over specificity is the usual choice. Therefore, the hope is to identify as many cases as possible. Alternatively, if detecting a condition results in little benefit, while false labelling results in worry and costs, then specificity is preferred. In the case of child abuse potential, sensitivity is preferred as the objective is to identify as many pregnant women who have high child abuse potential scores as possible so that they may receive interventions aimed at reducing abuse.

The chi-square, significance, sensitivity, specificity, and percent correctly classified for selected cut-off scores of the revised CAP.28 are presented in Table 35.

Table 35 - page 102

Table 34

Revised CAP Inventory: 28 Items From the Original Inventory

CAP Item	No.	Item
<hr/>		
#13	#1	You cannot depend on others
#23	#2	I often feel lonely inside
#29	#3	I sometimes wish my father would have loved me more
#32	#4	My telephone number is unlisted
#36	#5	I sometimes worry that I will not have enough to eat
#38	#6	I am an unlucky person
#48	#7	My parents did not really care about me
#52	#8	I often feel worried
#63	#9	I am often worried inside
#67	#10	People have caused me a lot of pain
#68	#11	Children should stay clean
#74	#12	These days a person doesn't really know on whom one can count
#78	#13	Other people do not understand how I feel
#85	#14	As a child I was abused
#87	#15	I do not like to be touched by others
#93	#16	I have fears no one knows about
#98	#17	People do not understand me
#103	#18	I have many personal problems
#105	#19	I often feel upset

(table continues)

Revised CAP Inventory: 28 Items From the Original Inventory

CAP Item	No.	Item
<hr/>		
#108	#20	A home should be spotless
#111	#21	My parents did not understand me
#120	#22	I am often upset
#138	#23	I am often upset and do not know why
#143	#24	I often feel alone
#148	#25	My family has many problems
#151	#26	Other people have made my life hard
#154	#27	I often feel afraid
#158	#28	As a child I was knocked around by my parents

Table 35

Selected CAP.28 Cut-off Scores, Chi-square, Significance, False Positives and Negatives, and the % Correctly Classified for the Apprehended Group.

CAP.28		Apprehended						
Cut-off Level	Chi-sq.	False Pos.		False Neg.		Sens.	Spec.	Correct
		No.	%	No.	%	%	%	%
10	30.61*	65	(20.2)	1	(9.1)	90.9	79.8	80.24
11**	35.61*	57	(17.6)	1	(9.1)	90.9	82.4	82.64
12	33.70*	48	(14.9)	2	(18.2)	81.8	85.1	85.03
13	39.93*	41	(12.7)	2	(18.2)	81.8	87.3	87.13
14	48.20*	34	(10.5)	2	(18.2)	81.8	89.4	89.22
15	29.78*	32	(9.9)	4	(36.4)	63.6	90.1	89.22

* $p < .000$

** selected cut-off score

An inspection of Table 35 suggests that a CAP.28 cut-off score of 11 is the most sensitive and has a reasonable specificity for the apprehended group. Using a score of 11 for the apprehended group, the sensitivity, the proportion of the true positives that are labelled as positive, is 90.9%. The specificity, the proportion of the true negatives that are labelled as negative, is 82.3%. Using the revised CAP.28 with this cut-off scores improves the sensitivity of the CAP considerably (90.9% from 45.55%) but specificity is reduced marginally from 87.4% to 83.3%. This slight drop in specificity is acceptable because of the very large increase in sensitivity, making the CAP.28 a tool to consider in evaluating potential to abuse in pregnant women.

Next, the relationships between the CAP.28 and the apprehended, early nurse referral, and nurse expert criteria were assessed using the chi-square statistic. This procedure was performed to determine if the revised CAP.28 and the three at-risk groups were significant and how those relationships compared to the relationships between the CAP.215 and the at-risk group (see Table 36). In performing the Chi-square tests, the CAP.215 was transformed into a binary variable, using the 215 cut-off and the designation of high and low potential to abuse. Similarly, the revised CAP.28 was transformed into a binary variable using the cut-off of 11 as the designation of the high and low potential to abuse.

Table 36 -page 104

The chi-square values were consistently higher for the revised CAP.28 than the original CAP215.

The SSAPQ

Based on the literature review (see Appendix B), the SSAPQ questionnaire was developed. Data was collected and collated for each of the 16 SSAPQ items. Twenty-one separate variables were identified

Table 36

A Comparison of the Chi-square and Level of Significance for the Revised CAP and the CAP215 in Relationship to the Apprehended, Early CHN, and Expert Groups.

Groups	Revised CAP.28		CAP215	
	Chi-square	p<	Chi-square	p<
Apprehended	35.61	0.000	11.52	0.001
Early CHN				
referral	8.92	0.003	4.59	0.032
Expert group	43.16	0.000	14.82	0.000

and transformed into binary data. The binary results of each variable were examined, for example, 142 of 340 pregnant women smoked, while only nine of 338 women reported having children under five years of age living in their homes. The binary splits of these 21 SSAPQ items were then entered into two by two chi-square analyses with at-risk versus control groups of the four identified at-risk criteria. The chi-square outcomes of this analysis are shown in Table 37. The hypothesis was that an association existed between the individual SSAPQ item and the at-risk categories.

Table 37 - page 106

Fourteen of the 21 variables differentiated between the apprehended group and the non-apprehended group. Those variables were: age, school, transiency, ethnicity, single, welfare, more than two children under five years of age, beaten by parents, ever abused, smoked, drank, lack of self-esteem, no support, and dissatisfied with support. One other variable, the lack of a phone differentiated between the at-risk and non-at-risk mothers in the CHN referral and the Nurse Experts groups but not in the apprehended group. Lack of a phone was added to the other 14 variables. The above 15 variables were used in a revised SSAPQ.15 instrument. For each of the subjects a score of one was given for each item that was associated with abuse potential. A total score was calculated for the 15 SSAPQ items for each subject.

Scatter plots were completed for both the apprehended and the nurse expert at risk groups, X (SSAPQ.15) by Y (CAP.28). A clustering of at-risk mothers was observed in both the plots (see Appendix J) and possible cut-off points were observed below nine and above four.

Then the SSAPQ.15 cut-off scores that could be used to most accurately predict subjects with high and low potential to abuse using

Table 37

Chi-square Level of Significance the Selected SSAPQ Items for the
Apprehended, Early CHN Referral, Nurse Expert, and the CAP Group

Level of Significance				
SSAPQ Item	Apprehended	CHN	Expert	CAP
Under 17 yrs.	0.000	0.000	0.000	0.068*
School <11 yrs.	0.000	0.000	0.000	0.000*
Aboriginal	0.032	0.000	0.000	0.000*
Residences 2 or more in 2 yrs.	0.000	0.019	0.000	0.000*
Phone	0.087	0.000	0.001	0.008**
Single	0.003	0.000	0.000	0.000*
Prenatal class	0.188	0.016	0.082	0.520
No. children	0.434	0.165	0.007	0.195
Under 5	0.003	0.819	0.196	0.978***
Welfare	0.000	0.000	0.000	0.000*
Depressed	0.532	0.387	0.051	0.051
Unplanned pregnancy	0.783	0.031	0.013	0.220

(table continues)

Chi-square Level of Significance the Selected SSAPQ Items for the
Apprehended, Early CHN Referral, Nurse Expert, and the CAP Group

Level of Significance				
SSAPQ Item	Appreh.	CHN	Expert	CAP
<hr/>				
Violence in home	0.468	0.195	0.604	0.005
Beaten by parents	0.000	0.000	0.000	0.249*
Abused ever	0.000	0.001	0.000	0.056*
Alcohol	0.004	0.528	0.002	0.000*
Smoke	0.006	0.001	0.000	0.040*
Drugs	0.771	0.175	0.000	0.935
Self-esteem	0.013	0.000	0.000	0.000*
No Support	0.000	0.444	0.001	0.000*
Dissatisfied with				
Support	0.000	0.033	0.000	0.000*

* SSAPQ.15 variable (significant in three of the four at risk groups

** SSAPQ.15 variable (significant in three of the four but not the
apprehended group.

*** SSAPQ.15 variable only significant in apprehended group

the apprehended criteria were determined. Table 38 presents the possible cut-off scores and the number and percent of false positives and negatives associated with each score, as well as the sensitivity and the specificity of the SSAPQ.15.

Table 38 - page 109

The SSAPQ.15 score that has reasonable sensitivity and specificity is a cut-off score of six. For the apprehended group the sensitivity and specificity is 91.7% and 83.9% respectively, and a correct classification rate of 88.7%. A SSAPQ.15 score of six or more identified 11 of the 12 pregnant women whose babies were later apprehended or monitored by CFS. The one pregnant woman who did not have a score of six or more had a score of five. She reported that she was: aboriginal, single, had lived in two residences within the last two years, received welfare, and smoked. Her CAP215 score was high (310) and her lie score was elevated and the 'faking good" was positive. In reexamining all the documentation the researcher found that a discrepancy existed between the woman's responses on the two education questions. On the SSAPQ questionnaire, the question asked for the number of years of school completed and she responded 12 years; but on the CAP questionnaire, the question was asking about the highest grade completed and she responded grade nine. If the question on the SSAPQ was changed to ask about the number of grades completed then the score on the SSAPQ.15 would have been six. This mother has two other children under the care of CFS but she does have visiting rights. During her pregnancy she was bleeding vaginally as a result of a fight. Her social history was a concern. Her baby from her current pregnancy was

Table 38

SSAPQ.15 Cut-off Scores and the No. of False Positives and Negatives for the Apprehended Group

SSAPQ.15

Apprehended¹

Cut-off

Score	False Pos.		False Neg.		Sens.	Spec.		Correct
	No.	%	No.	%		%	%	%
03	190	58.8	0	0.0	100.0	58.8		60.3
04	113	35.0	0	0.0	100.0	65.0		69.3
05	88	27.2	1	8.3	91.7	72.8		73.4
06*	55	17.0	1	8.3	91.7	83.9		88.6
07	28	8.7	2	16.7	83.3	91.3		91.1
08	12	3.7	7	58.3	41.7	96.3		94.3

* the selected cut-off score

¹ n=12

apprehended. She had been known to CFS, was referred by the hospital nurses to social work, and for an early CHN visit as she had a sexually transmitted disease and required follow-up to monitor her compliance with the medication protocol.

Fifty-five of the non-apprehended group had scores of six or more. The number of false positives (55) was relatively high but the objective was to identify women at-risk to abuse their children within the next four years, not just those women whose babies might be apprehended or closely monitored.

A comparison of the false positives and negatives, the sensitivity, specificity, and the percent correctly classified for the CAP215, CAP.28, and the SSAPQ.15 using the apprehended group is presented in Table 39. Overall the SSAPQ.15 performed as well as the

Table 39 -page 111

CAP.28 and both the CAP.28 and the SSAPQ.15 improved the upon the sensitivity of the CAP. However, the false positives were higher than those for the CAP.

Using a SSAPQ.15 cut-off of six with the nurse expert group, the sensitivity and specificity are 79.4% and 87.0% respectively, while the percent correctly classified is 86.2. In this group a score of six or more identified 31 of the 34 pregnant women who would later be identified as at risk by the nurse experts. One of the three pregnant women who scored less than five was the woman described above in the apprehended group. The other two pregnant women who scored less than six on the SSAPQ.15 but who were identified as at risk to abuse, drank alcohol, smoked and used drugs (marijuana), and one baby was in the IMCN for observation and treatment due to the mother's use of drugs. Both women were referred to CFS and the baby discharged with the mother was being monitored by CFS.

Table 39

Comparison of the Sensitivity, Specificity, & Correctly Classified
Between the CAP215, CAP.28, and SSAPQ.15 for the Apprehended Group

Tool	False pos. No.	False Neg. No.	Sens. %	Spec. %	Correct %
CAP215 ¹	36	6	45.5	88.8	87.5
CAP.28 ²	57	1	90.0	82.4	82.6
SSAPQ.15 ³	55	1	91.7	83.9	88.7

¹ cut-off 215

² cut-off = 11

³ cut-off = 6

Thirty-nine of the pregnant women not at-risk had scores of six or more. These 39 false positives were not unreasonable as those in the nurse expert group were identified by all three experts so that more were actually identified than were accepted into the expert group. Using the chi-square statistical procedure, the association between the SSAPQ.15 (cut-off = 6) the CAP Inventory (Cut-off = 215), and the CAP.28 (cut-off = 11) and the apprehended, early CHN, and nurse experts groups was performed (see Table 40). Two results from this table are worthy

Table 40 - page 113

of note. First, the measure of association is higher for the nursing expert group on all three scales. Second, the SSAPQ.15 is more strongly related to each of the criterion groups than either of the CAP indexes.

In response to the initial hypothesis that the scores of the SSAPQ and the CAP Inventory will be positively related, a chi-square test of association was performed using the SSAPQ.15 and the CAP 215. The result was significant (see Table 40). This confirmed the hypothesis that an association existed between the two instruments. As well, the hypothesis that an association existed between the revised SSAPQ.15 (cut-off = 6) and the revised CAP.28 (cut-off = 11) was tested and confirmed, using chi-square ($(1, N = 351) = 54.70, p < .0000$).

Using the total scores of the CAP Inventory and the SSAPQ.15, a correlational analysis was performed. The correlation coefficient, measuring the degree to which the CAP and the SSAPQ were linearly related was 0.48992 ($N = 339, p < .000$). The two instruments were positively correlated but more importantly they measured different entities (the simple R-squared value was 0.24 ($N = 339, p < .000$)). Similarly, the SSAPQ.15 and the CAP.28 were examined using the correlational analysis. The correlational coefficient was 0.5925 ($N = 341, p < .000$). These two new instruments were positively and more

Table 40

Chi-square and Level of Significance for the Dichotomized SSAPQ.15 and the CAP.28 for the Apprehended, Early CHN Referral, and the Nurse Expert Groups

Group	CAP.28 ⁴		SSAPQ.15 ⁵		CAP215 ⁶	
	p< Chi-sq	Chi-sq.	p< Chi-sq.	Chi-sq.	p< Chi-sq.	Chi-sq.
<hr/>						
Apprehended	35.61	0.000	40.74	0.000	11.52	0.001
Early CHN	8.92	0.003	36.70	0.000	4.59	0.032
Nurse Experts	43.16	0.000	84.95	0.000	14.82	0.000
CAP215			25.43	0.000		

⁴ cut-off = 11

⁵ cut-off = 6

⁶ cut-off = 215

strongly related. They seemed to be measuring more specifically the same construct that the CAP 215 measures. The simple R-squared value was 0.351 ($N = 341$, $p < .000$). Therefore, in the prenatal period, if a second instrument was to be used the preferred instrument is the revised CAP.28 rather than the CAP215 that is more cumbersome to administer.

Prediction Models

One of the purposes of the study was to determine what variables would be effective, if administered in the prenatal period, in identifying or predicting mothers with potential to abuse their children. The ability to examine data intelligently demands the creation of patterns that can describe succinctly the systematic variation in the data and that correspond to patterns in similar data collected at another time or by another researcher (McCullagh & Nelder, 1987). A search was launched to discover a predictive model that would indicate whether or not individual variables, the SSAPQ.15 or the CAP.28 could be used to predict potential to abuse in other clinical or research settings. The ability to predict mothers at-risk to abuse is important so that health care professionals can be involved in early assessment, support, and education of pregnant women at-risk to abuse. The prevention of future child abuse is the ultimate goal.

In order to achieve those goals, a predictive model was sought to assess relationships among discrete variables. A variety of statistical procedures were used to examine the likelihood that individual SSAPQ variables, the SSAPQ.15 and the revised CAP.28 could predict the mothers who had abuse potential. The models used included discriminant analysis, a variety of logistic regression procedures, the over-dispersion model (McCullagh & Nelder, 1989), and the negative binomial logistic regression (Hilbe, 1994). The sensitivity and the specificity of the chosen model including a determination of the false negatives and the false positives and the alteration of the decision-rule are reported.

Logistic Regression. Several models were used to assess the ability of the SSAPQ.15 and the CAP.28 to predict or correctly classify the apprehended and the nurse experts groups. However, to investigate the relationship between the response probability and the covariates, a formal model capable of describing this relationship, but able to use assumptions appropriate for binary variables, such as a log-linear model, was required. The log-linear model is a form of multivariate analysis that requires that all variables be entered as categorical variables (Friedman, 1987). Most of the data in the current study is categorical and the other data such as age and education was transformed into categorical data for use in chi-square tests. The binary form of the CAP215, CAP.28, and the SSAPQ.15 was used in the logistic regression analysis.

Four types of linear models for binary responses are: (a) logit or logistic function; (b) probit or inverse normal function; (c) complementary log-log function; and (4) log-log or the counterpart of the complementary log-log function (McCullagh & Nelder, 1989). All of the models were performed using SAS. The logit model was performed first. The first predictors were the SSAPQ.15 and the CAP.28 and the dependent variable was the apprehended criteria. A second analysis was performed by using the nurse expert group as the dependent variable. Of the original 351 cases, 18 were deleted due to missing values for the response or explanatory variables.

Alternative models, the probit, normit, and the complementary-log were performed with no improvement in the results; therefore, only the logit model is reported. In Tables 41 and 42, the odds ratios are

Table 41

Logit Analysis: Chi-square, Level of Significance, and Odds Ratio of the Apprehended and the Nurse Experts (DVs) and the SSAPQ.15 and CAP.28 (IVs)

Variable		Results		
DV	IV	Chi-square	p<	Odds Ratio
Appreh.*	SSAPQ.15	7.72	0.006	1.875
	CAP.28	5.45	0.020	1.172
Nurse**	SSAPQ.15	28.51	0.000	2.116
	CAP.28	2.18	0.140	1.061

* Percent correctly classified = 96.71%

** Percent correctly classified = 91.59%

Table 42 - page 118

reported and are another measure of association. The concept of oddsratio closely approximates relative risk and is important for rare occurrences, such as abuse potential. Relative risk/odds ratio represents how many times more (or less) likely disease/abuse potential occurs in the exposed group as compared with the unexposed, indicating the relative likelihood of the predictor being related to the event (Schlesselman, 1981). When both of the independent variables SSAPQ.15 and the CAP.28 were entered into the Logit analysis with the dependent variable apprehended, the odds ratio, the relative likelihood of the predictor being related to the event, was 1.875 for the SSAPQ.15 but only 1.172 for the CAP.28. For every "unit of change" in the SSAPQ.15, the subject is 87.5% more likely to be in the apprehended group; while for every "unit of change" in the CAP.28 the subject is only 17.2% more likely to be in the apprehended group. When the dependent variable entered was the assessment by the nurse experts, the odds ratio for the CAP.28 and the SSAPQ.15 were 1.06 and 2.12, respectively. When only the SSAPQ.15 was entered, the odds ratio was 2.26 for the apprehended group and 2.27 for the nurse expert group. For every unit change" in SSAPQ.15, the subject was 2.26 times more likely to be in the apprehended group (Table 42). Similarly, for the nurse experts group, for each unit increase in the SSAPQ.15 score, the subject was 2.27 more likely to be in the potential to abuse group.

Another statistical test that was used in conjunction with logistic regression models was R-square. The R-square statistic measures the amount of variability in an outcome variable, such as apprehension, that is explained by the independent variables in the model. Friedman (1987) emphasized that levels for R-square often appear small in epidemiological studies. The fact that so much measurement error and

Table 42

Logit Analysis: Chi-square, Level of Significance, and Odds Ratio of the Apprehended and the Nurse Experts (Dvs) and the SSAPQ.15 IVs)

Variable		Results		
DV	IV	Chi-square	p<	Odds Ratio
Appreh.*	SSAPQ.15	16.22	0.000	2.259
Nurse**				
Experts	SSAPQ.15	37.02	0.000	2.272
* Percent correctly classified = 96.7% at the 0.5 probability level				
** Percent correctly classified = 90.7% at the 0.5 probability level				

random variation exists in epidemiological data suggest that a low level R^2 can be expected even when the model clearly indicates that predictive factors are present. In this study, when SSAPQ.15 and CAP.28 were entered into the NCSS logistic regression formula, for the apprehended group, the model R -square was 0.1073 ($p < .000$) and for the nurse experts group 0.2126 ($p < .000$). The model R -square was calculated as $C/(n-p+C)$ where C is the chi-square value, n is the number of observations, and p is the number of variables plus one (Hintze, 1990). The percent correctly classified in the apprehended and the nurse expert group was 96.71% and 91.59% respectively. For the apprehended and the nurse expert groups, the model R -square values for SSAPQ.15 alone were 0.1009 and 0.2142 ($p < .000$) respectively, while the model R -square for the CAP separately was 0.0229 ($p < .004$). The R -square value of 0.10 indicated that 10% of the variation in the apprehended group could be explained by the SSAPQ.15. The R -square values were small and therefore, only a small part of the variance could be explained by the independent variables in the model. When the SSAPQ.15 was used alone, the amount of variance explained increased slightly. Demaris (1992) suggested that the best that can be said for the use of R -squared in conjunction with logistic regression is that the R -square measure is a rough approximation for assessing predictive efficacy. In addition, he maintained that the R -square statistic underestimates the proportion of variation explained in continuous variables, indicating further loss of explanatory power when the response is measured only at the binary level. The R^2 type statistics when used in conjunction with logistic regression should not be interpreted akin to ordinary regression and is controversial in the statistical literature (Aldrich & Nelson, 1988).

Additional results of the Logit link function are presented in classification Tables 43 and 44. If the optimal level of sensitivity is 100%, then the probability level is 0.010. At this level (sensitivity = 100%), 11 of the 12 pregnant women in the apprehended group were

Table 43 - page 121

Table 44 - page 122

predicted as at-risk, but 90 (specificity = 72%) were false positives. Although the sensitivity is ideal, the false positives are unacceptably high.

The selection of a cut-off is not merely a choice of the maximum correct classification rate. Depending on the relative costs of false positives and false negatives, a decision may be made to choose an alternative cut-off. The alternative cut-off may give a lower correct classification and fewer false positives but may effect the sensitivity and specificity ratio (Schlotzhauer, 1993).

Table 43 demonstrates the possible decisions and the results that can arise. At the 0.05 probability level, 9 of 11 in the apprehended group are identified, while only 45 are false positives (sensitivity = 81.8%; specificity = 86%). As the sensitivity was less than desirable, the .025 probability level was examined. The sensitivity improved and 10 of the actual cases were identified. However, the number of false negatives increased to 63. Thus, the cost of the improvement in sensitivity must be considered.

Using the 0.100 probability level for the nurse expert group, 28 out of 33 at-risk pregnant women were correctly identified (see Table 44). However, 60 false positives resulted and the sensitivity and specificity were lower (84.8% and 80.0 %, respectively). By attempting to improve the sensitivity, the 0.05 level of probability was considered. The results indicated that 31 of the 33 pregnant women at-risk would be identified, but 81 false negatives would also be included in the at-risk group. The sensitivity improved to 93.9%, whereas the

Table 43

Classification Table: Probability Level, Sensitivity, Specificity, False Positives, and False Negatives for the Apprehended Group Using SSAPO.15 and CAP.28

Prob. Level	Correct Event	Incorrect Event	Correct %	Sens. %	Spec. %	% False	
						Pos.	Neg.

0.010	11	90	73.0	100.0	72.0	89.1	0.0
0.025	10	63	80.8	90.9	80.4	86.3	0.4
0.030	9	59	81.7	81.8	81.7	86.8	0.8
0.350	9	50	84.4	81.8	84.5	84.7	0.7
0.050	9	45	85.9	81.8	86.0	83.3	0.7
0.100	8	22	92.5	72.7	93.2	73.3	1.0
0.50	1	1	96.7	9.1	99.7	50.0	3.0

Concordant = 94.7%

Table 44

Classification Table: Probability Level, Sensitivity, Specificity, False Positives, and False Negatives for the Nurse Expert Group Using SSAPQ.15 and CAP.28

Prob. Level	Correct Event	Incorrect Event	Correct %	Sens. %	Spec. %	% False Pos.	% False Neg.
<hr/>							
0.010	33	131	60.7	100.0	56.3	79.9	0.0
0.025	32	101	69.4	97.0	66.3	75.9	0.5
0.030	31	95	70.9	93.9	68.3	75.4	1.0
0.050	31	81	75.1	93.9	73.0	72.3	0.9
0.100	28	60	80.5	84.8	80.0	68.2	2.0
0.150	27	47	84.1	81.8	84.3	63.5	2.3
0.50	10	9	90.4	30.3	97.0	47.4	7.3

Concordant = 92.2%

specificity decreased to 73.0%.

Next, apprehended and nurse expert groups were used as dependent variables separately with SSAPQ.15 as the only independent variable. The results are in Logit Classification tables (see Tables 45 and 46).

Table 45 - page 124

Table 46 - page 125

The model using only the SSAPQ.15 improved the level of significance of the results; both models were significant at $p < .000$.

In the Classification Tables 45 and 46, a variety of probability levels are presented. Again, an attempt was made to balance the competing 'at-risk' cases while not identifying too many false positives. In Table 45, the most advantageous probability level for predicting subjects in the apprehended group remains at the 0.05 probability level. Eleven of the 12 apprehended subjects were correctly classified with a sensitivity and specificity of 91.7% and 82.9% respectively, and a correct classification rate of 83.3%. This finding supports the decision that any subject who receives a score of six or more on the SSAPQ.15 should be considered to be in the at-risk group. As a result, secondary screening should be done. One problem is that the 55 false positives will increase the cost of screening. The CAP.28 could be used but adding the CAP.28 to the SSAPQ.15 reduces the odds ratio from 2.26 to 1.88; chi-square decreases from 16.22 to 7.72; and the p value from 0.000 to 0.006. The difference in the concordant percent for the apprehended group is an increase from 90.8% (SSAPQ.15 only) to 94.7% (SSAPQ.15 and CAP.28), that is an increase of 3.9%.

In the nurse expert at-risk group, the most acceptable decision -rule/probability level may be 0.10. At this level, 31 of the 34

Table 45

Classification Table: Probability Level, Sensitivity, Specificity, False Positives, and False Negatives for the Apprehended Group Using SSAPO.15

Prob. Level	Correct Event	Incorrect Event	Correct %	Sens. %	Spec. %	% False	
						Pos.	Neg.
0.010	11	112	66.2	91.7	65.2	91.1	0.5
0.025	11	87	73.7	91.7	73.0	88.8	0.4
0.050	11	55	83.2	91.7	82.9	83.3	0.4
0.100	10	28	83.2	91.7	82.9	83.3	0.4
0.50	1	0	96.7	8.3	100.0	0.0	3.3

Concordant = 90.8%

Table 46

Classification Table: Probability Level, Sensitivity, Specificity, False Positives, and False Negatives for the Nurse Expert Group Using SSAPO.15

Prob. Level	Correct Event	Incorrect Event	Correct %	Sens. %	Spec. %	% False Pos.	% False Neg.
0.010	34	141	57.8	100.0	53.0	80.6	0.0
0.025	33	110	66.8	97.1	63.3	76.9	0.5
0.050	33	91	72.5	97.1	69.7	73.4	0.5
0.100	31	67	79.0	91.2	77.7	68.4	1.3
0.150	27	39	86.2	79.4	87.0	59.1	2.6
0.50	10	7	90.7	29.4	97.7	41.2	7.6

Concordant = 89.7%

subjects are correctly classified, while 67 false positives are designated. The sensitivity at this level is acceptable at 91.2% while the specificity is 77.7%. The difference in the concordant percent for the nurse expert at-risk group increases from 89.7% (SSAPQ.15 only) to 92.2% (SSAPQ.15 and CAP.28), an increase of 2.5%. As the SSAPQ.15 is a new instrument using the CAP.28 or the CAP as secondary screening instruments would be advisable even though the improvement in the concordant percent is minimal. Another important secondary screening measure is an interview by a nurse using an established database.

In addition, a modified ordinary least squares (OLS) procedure was performed. To be confident that no test was missed the OLS was used even though it violated the assumptions that the data was continuous (Aldrich & Nelson, 1988). The CAP.28 and SSAPQ.15, and the apprehended and nurse expert groups were used. As the OLS results were not significant the weighted least squares (WLS) test was used next. The WLS is a procedure for valid estimation of a linear regression equation in the face of a dichotomous dependent variable. The WLS analysis proceeds based on the coefficient estimates of the intercept and the variables from the OLS. For the apprehended group, the WLS t ratios were: CAP.28 = -3.433 ($p < .0007$), and SSAPQ.15 = -3.640 ($p < .0003$). For the nurse experts group, the results indicated that the t ratio for the nurse expert group was CAP.28 = 1.863 ($p < .064$, N.S.), therefore the CAP.28 had minimal influence on the possibility of predicting the 'at risk' group. However, the SSAPQ.15 had a t ratio of 7.40 ($p < .0001$). Thus SSAPQ.15 had a positive influence on the chance of predicting those mothers in the 'at risk' group. The overall results of the WLS procedure were similar to the logistic regression results. Aldrich and Nelson (1988) pointed out that, although researchers using regression analysis are often interested in the R-squared value as the proportion of the variance in the dependent variable that is explained by exogenous variables, the R-square, even a pseudo R-square, is not universally used

or accepted. The R-square as a summary measure can be easily misinterpreted; therefore Aldrich and Nelson recommended that the R-square value be used with caution if at all.

Finally, the logistic regression analysis was performed using all the individual variables in the SSAPQ.15. Age was a significant predictor with chi-square (12, $N = 301$) = 4.56, $p < .0327$). However, none of the other individual variables were significant predictors. This finding supports the view that child abuse is not a univariate model but is based on a multivariate interactional model as suggested in Appendix B. On the advise of the statistician (J. Sloan), other statistical procedures, such as discriminant function analysis, over-dispersion, and negative binomial statistical procedures were explored to ensure that no useful analysis or model had been omitted.

One of the limitations in the study was that some slight bias may exist in the results as the data used to check the prediction model was the same data that was used to create the model. However, the decision-rule used in this model took this problem into account so the true test of the model will have to wait until further data are available.

Discriminant Analysis. The major purpose of discriminant analysis is to predict group membership from a set of predictors. The choice of predictor variables are based either on theory or on pragmatic considerations, such as, expense or convenience (Tabachnick & Fidel, 1989). In addition, the sample size of the smallest group should exceed the number of predictor variables. As the apprehended group is only 12 subjects, the ideal number of predictor variables is 12 or less. In this study, the choice of variables to predict group membership were based upon the review of the abuse literature. As the dependent and independent variables are binary, and the assumption of normality is violated, discriminant function analysis is not the analysis of choice. However, as discriminant function analysis has been used in similar studies, the procedure was performed.

Twelve selected significant SSAPQ variables were entered into the computer. A hierarchical discriminant function analysis was performed to assess the prediction of membership in the apprehended and the non-apprehended groups. The predictors were age, education, residence, number of children under five, beaten, ever abused, single, on welfare, smoking, alcohol, lack of support, dissatisfied with support. A model with high predictability was not found (Wilk's Lambda = .8129). Wilks' Lambda is the multivariate extension of the R-squared, varying from one to zero but interpreted opposite to the R-squared. Values near one imply low predictability, while values close to zero imply high predictability (Hintze, 1990). Next, four variables with F -probabilities between $p < .0001$ and .0141 were entered into the discriminant function analysis. The Wilk's Lambda was 0.7250, a slight improvement but still not close enough to zero to be have high predictability.

In addition, the total SSAPQ.15 and the CAP.28 scores were used as predictor variables and the apprehended group as the dependent variable, followed by SSAPQ.15 alone. The Wilk's Lambda were 0.8771 and 0.8953, respectively. Using the nurse expert group with the SSAPQ.15, the Wilk's Lambda was 0.7544, still not an acceptable level of predictability. The above findings support the hypotheses of Press and Wilson (1978) that, under nonnormality, the logistic regression model is the preferred model.

Over-dispersion Model. In order to be sure that all avenues had been explored and to assess whether or not the most suitable model had been found, an over-dispersion analysis was performed. The reason for considering the over-dispersion procedure was based on the fact that over-dispersion occurs when the binomial variance is almost a negligible component of the total variance. As the apprehended group (12 subjects or 3.4% of the total sample) was considered to be small, a model designed to manage small sized clusters was sought. McCullagh and

Nelder (1989) stated that over-dispersion means that the variance of the response variable exceeds the assumed binomial variance. The incidence and the degree of over-dispersion depends on the field of application. As an example, they cited a large-scale epidemiological study concerning geographical variation in the incidence of disease and where the binomial variance may be a negligible segment of the total variance. Therefore, in studies with small outcome or response variables, McCullagh and Nelder suggested that researchers assume that over-dispersion is present unless shown to be absent. In the current study the response variable is the apprehended group, consisting of only 12 subjects (3.4% of all subjects); therefore, the assumption that over-dispersion exists is logical and defensible and reasonable to explore.

Over-dispersion was performed using SAS by the statistician (Dr.J. Sloan). First, an initial test was performed to determine if the sample was an example of over-dispersion. The results indicated that over-dispersion was not a factor. Even so, the over-dispersion analysis was performed. The model was not predictive and therefore not useful.

A new procedure by Hilbe (1994) was used. This procedure involved the negative binomial distribution. However, the model was seen to be a poor fit to the data in this study. For the apprehended group, the deviance/DF was 0.0614 and Pearson chi-square/DF was 0.0332 indicating an underdispersion rather than overdispersion. Also for the apprehended group, the chi-square for the CAP.28 was 0.3082 ($p < .5788$) and for SSAPQ.15 was 0.2625 ($p < .6084$). Neither of these results were usable. Similarly, for the nurse experts group, deviance/DF was 0.1642 and the chi-square/DF was 0.0981 again indicating underdispersion. The chi-square for CAP.28 was 0.0126 ($p < .5845$) and for SSAPQ.15 was 3.9254 ($p < .0476$). This latter result was the only result that tended toward significance. This interpretation of the negative binomial model was confirmed by the procedure's architect (personal communication, J. Hilbe, Toronto, August 18, 1994).

In summary, the most effective model was the model produced by the logistic regression procedure, specifically the logit. This model supported the hypothesis that the SSAPQ.15 would be a beneficial screening instrument for prenatal women in either a physician's office or a hospital clinic.

Discussion

The discussion is organized into four main sections following consideration of the limitations of the study. In the first section, the purposes of the study and the hypotheses are reviewed. The second section discusses results of the modelling exercise and its proficiency in predicting potential to abuse. In the third section, significant features of the characteristics of the sample are examined. The fourth section discusses other significant findings. Finally, suggestions for future research and implications for clinical practice are considered.

Limitations. The sample of pregnant women was a convenience sample solicited from both physicians' offices and a hospital clinic. The sample was not representative of the Winnipeg population in general. No attempt was made to randomize the women or to have a separate control group, except the naturally evolving not at-risk groups. The convenience sample was without extensive inclusion/exclusion criteria. For the most part the sample was drawn from an urban population and had an over-representation of core-area residents as the hospital and the physicians' offices were core-area facilities.

The administration of the CAP Inventory and the SSAPQ was not always done in privacy. Significant others often accompanied pregnant women to their medical appointments. The data collector attempted to isolate the women but was not always successful. The study was limited to these pregnant women and did not include their significant others in the data collection. This approach simplifies the problem and eliminates approximately half of the population involved. Bradley and Lindsay (1987) referred to the sexist bias in this approach, perpetuating the stereotype that only women are responsible for child care, are to blame for poor parenting, or are the only persons having the potential to abuse.

Although the study was primarily related to physical abuse, potential to abuse may include actual physical, emotional, and sexual

abuse. Physical abuse alone in families is the exception rather than the rule (Mash and Wolfe, 1991). Some of the questions necessitated historical recall and this recall may be subject to substantial error. The sample size was considered adequate but the apprehended group was small. Part of the data was collected retrospectively from the postpartum chart. As Mash and Wolfe (1991) point out, some of this information is unstandardized and may be biased or incomplete. However, one strength of the study was its multimethod approach and the variety of instruments used.

The study was cross-sectional and not longitudinal. Mothers were not contacted following the birth of their babies to assess their parenting skills and whether or not actual child abuse had occurred. The outcome measurement of abuse was not actual incidents of abuse but apprehension or placement of mother and baby in a foster or group home or under the direct supervision of CFS. Although abuse had not occurred, the mother was considered unable to care for her child or the potential risk to the child was considered unacceptable. Monaghan et al. (1986) used relinquishment, permanent or temporary over six months, that occurred over a two year period as an outcome criterion to confirm potential to abuse. Other negative outcome criteria used by Monaghan et al. were referral to: the Department of Social Work, Child Protection, Family Court, a written negative report from the community nurse, and long-term involvement with medical social work. Therefore, although a two year follow-up was not included in this dissertation, the outcome criteria available in the immediate postpartum period are strikingly similar to the criteria in Monaghan's study in Australia. Similarly, Browne and Saqi (1988) and Browne (1994) emphasized the role of the health visitor in Britain in assessing the quality of parenting and the safety of newborns and young children in the community. The current study used the assessment of the hospital nurses who referred mothers for early CHN visits and the assessments of a panel of nurse experts in

addition to apprehension. Referral to social work or CFS alone were not considered a sufficient outcome criteria.

Another outcome criterion was a score of 215 or more on the CAP Inventory. In several studies by Milner and associates (Ayoub et al., 1983; Milner, 1994; Milner & Ayoub, 1980; Milner, Gold, & Wimberley, 1986; Milner & Wimberley, 1980; Mollerstrom, Patchner, & Milner, 1992) this cut-off had been reported as useful in pointing to high abuse potential. In other studies (Robitaille et al., 1985; Stringer & Greca, 1985) a score over 215 on the CAP Inventory was considered an indicator of potential to abuse. Therefore, although actual abuse has not been used as an outcome criteria in the current study, those measures selected are appropriate and adequate.

Hypotheses

The study was based on five hypotheses. The first hypothesis stated that the scores of the SSAPQ and the CAP215 Inventory would be positively related. The correlation coefficient was 0.49 ($N = 339$, $p < .0000$) thus confirming that the CAP215 and the SSAPQ.21 are correlated.

Also, Table 40 demonstrates the relative association between the at risk groups, the CAP, and the revised SSAPQ.15 and the CAP.28 instruments. The use of SSAPQ.15 as an initial screening tool during the antenatal period was supported. In addition, the SSAPQ.15 manifested an edge as the chi-square results related to the three criterion groups were equal or higher than the CAP Inventory or CAP.28. An additional advantage of the SSAPQ.15 is that the tool is self-administered and requires only about five minutes of the patient's time. Many of the women found the CAP Inventory tedious, accounting for the number of incompletes and/or the elevated lie scores. Even though some improvement in the presentation of the SSAPQ.15 questions is necessary, the level of the language was appropriate.

The second hypothesis stated that the SSAPQ variables would

distinguish potential to abuse equally as well or better than the CAP and would have comparable sensitivity and specificity. In the study, both instruments were able to distinguish between the mothers at risk in the four criterion groups (see Table 40). The revised SSAPQ.15 provided slightly stronger differentiation between the groups.

Similarly, the results in Table 39 demonstrated that using the apprehended group the SSAPQ.15 had a slightly better sensitivity, specificity, and percent correctly classified than the CAP.28. The SSAPQ.15 had considerably better sensitivity than the CAP215 Inventory with its 160 items but the CAP had fewer false positives and a slightly better specificity. However, the CAP215 missed six of the eleven mothers in the apprehended group. The overall classification rate for the SSAPQ.15 was 88.7% and this compared favorably to the 85.4% rate reported by Milner (1986).

Within the CAP Inventory is a lie scale. Robertson and Milner (1985) studied the detection of conscious deception and found that the CAP lie scale was effective in determining those subjects who lied and were faking good. In examining the results of the lie scale for the apprehended group, 4 of the 12 in the apprehended group lied on the CAP and faked their answers in a positive direction. If the results of all those who lied were discarded, the CAP215 remained significant (χ^2 (1, $N = 146$) = 14.78, $p < 0.0001$). The sensitivity improved to 66.6% and the specificity to 88.1%. Unfortunately, the resulting apprehended group was small and this limitation may interfere with the accuracy of the CAP Inventory.

On the other hand, pregnant women are often uncomfortable and their ability to concentrate may have affected their commitment to completing the CAP Inventory accurately. As well, some mothers may have felt a need to provide a positive image of themselves, especially if they felt others may view their skills as new parents with some doubt. Analogously, mothers who had previous contact with CFS and had other

children apprehended may have been afraid to be honest for fear of losing their baby after birth. Therefore, they may have lied in a positive direction, that is 'faked good'.

Other researchers (Browne & Saqi, 1988) using their tool reported an 82% sensitivity rate, with 12% false positives and a specificity of 88%. The SSAPQ.15 with 91.7% sensitivity rate, 16% false positives, and a specificity of 83.9% compares favourably with the Browne and Saqi results.

Thirdly, the SSAPQ did identify child abuse potential in the nurse expert group equally as well as the CAP. A positive relationship existed between the assessments of the nurse experts and the SSAPQ and the CAP. More specifically, for the group of mothers who were identified by the nurse experts as at-risk, the SSAPQ.15, the CAP215, and the CAP.28 were demonstrated to differentiate between those assessed at-risk and the remaining mothers (see Tables 39 and 40). Thus, the hypothesis that the SSAPQ was able to differentiate the at-risk groups from the remaining group as well as the CAP215 was confirmed. Again, the fact remains that the length of the CAP prohibits its use as an initial screening tool with pregnant women. However, using the CAP.28 as part of follow-up screening was demonstrated to improve slightly the screening results (see Logistic Regression section). Milner and Ayoub (1980) had found that sufficient overlap existed between the results of their 'At Risk' criteria and elevated CAP scores that either could be used to obtain an at risk sample. However, they suggested that a combined approach could be used. In addition, an interview with the nurse in the clinic would still be required to assess the patient and to plan with the patient the subsequent care.

The fourth hypothesis postulated that hospital postpartum nurses would not identify and refer mothers with potential to abuse for early CHN visits as efficaciously as the assessments made by the nurse experts or using the CAP Inventory or the SSAPQ.15 checklist. This hypothesis

was not confirmed. Rather, the assessments of the hospital nurses (early CHN group) and the nurse experts were positively related (chi-square (1, $N = 339$), $= 88.16$, $p < .0000$). The hospital nurses referred mothers with social problems for early CHN visits appropriately. However, as the study was a cross-sectional study and not longitudinal, the researcher did not follow mothers into the community to determine if CHN visits were completed as requested or if the mothers actually had problems with parenting or abused their children. CHNs have a unique opportunity to help and support families at a primary prevention level (Browne, 1994).

The referrals by the hospital nurses for early CHN visits and the SSAPQ.15 were significantly associated (chi-square (11, $N = 330$) $= 71.72$, $p < .0000$). The nurses' early referrals were related to the CAP215 but with a lower chi-square value (1, $N = 327$) $= 4.59$, $p < .0323$. The CAP215 is basically a psychological tool, whereas, the hospital nurses and SSAPQ.15 assess the woman's potential to abuse from a broad eclectic and multivariate-interactional perspective.

One of the problems with the hospital nurse early CHN referrals was that the referrals were sent at the time the mother and/or baby were discharged. Although the study illustrated that the nurses effectively assessed mothers for social risk factors and indicated on the referral that a priority visit within 24 hours was indicated, the referral was postpartum, not prenatal. In many instances this was the first referral to a CHN and often the prenatal 'window of opportunity' was lost. Some women had been known to CFS and others had been referred to social work in the antenatal period but those included only women who were attending hospital clinics. The study reinforces the need to screen all pregnant women during their prenatal period so that appropriate resources can be assessed and provided. If pregnant women complete the SSAPQ.15 on the initial visit either in the physician's office or the clinic, the process of assessment, support, and education can begin earlier. If the

SSAPQ.15 is elevated and/or a problem is identified, a referral to the CHN and/or the CFS would be more valuable in the prenatal period than just postnatally.

Finally, the fifth hypothesis proposed that high risk mothers who were in the apprehended group would score differently on the SSAPQ than the remaining mothers whose babies were not apprehended. Table 38 demonstrated that SSAPQ.15 was able to distinguish between the apprehended and non-apprehended groups, the early CHN referral/non-referral groups, the nurse expert groups with and without abuse potential, and the high and low CAP groups.

The apprehended group was known to CFS and would be followed by them. However, the more important group for early detection and intervention were the mothers assessed as at-risk by the hospital nurses and the nurse experts. This larger group or wider net of subjects is important so that pregnant women at-risk who require services will receive those services in a timely fashion. By selectively assessing pregnant woman who have positive SSAPQ.15 scores, nurses can interview these women, assess their needs, and provide appropriate intervention. For example, existing support systems may be strengthened to increase the woman's ability to cope with untoward events before these become unmanageable. Similarly, advocacy activities that support women and families can contribute to primary prevention of child abuse and neglect (Howze, Kotch, 1984). Olds et al. (1988) studied a program of prenatal and infancy home visitation by nurses as a method of preventing child abuse in at-risk groups. The mothers visited by the nurses were more successful in changing their approach to parenting, with the results that fewer accidents and hospitalizations occurred and their interaction with their children improved. Murphy et al (1991) reported that parents who failed to change their life style, such as substance abuse, are unlikely to change their parenting behaviour or provide a safe environment for their children. However, if parents do change their

lifestyles they are more likely to be successful in caring for their children. Thus identifying parents with problems early and referring them for treatment and monitoring their success are the first steps toward prevention. Thus at risk women may be able to successfully change their behaviour and reduce their potential to abuse.

However, the mother must first seek prenatal care before assessment and intervention can occur in the prenatal period. Barriers to pursuing prenatal care include poverty, age, education, and lack of support (Lia-Hoagberg et al, 1990). On the other hand, Lia-Hoagberg et al. found that the main motivator to seeking prenatal care despite social problems was encouragement from a partner, mother, friend, or professional. In addition, when the family supports are lacking the support provided by a concerned and caring professional may have a profound effect on sustaining prenatal care and reducing abuse potential. If lifestyle changes are substantive enough, CFS may support the mother and allow her to attempt to care for her baby in the community under supervision.

Predictive Models. *One purpose of the research was to attempt to develop a succinct self-administered tool that would predict potential to abuse in a population of pregnant women in busy congested settings. The SSAPQ.15 demonstrated the ability to predict those mothers who would have their babies apprehended or closely monitored by CFS from the remaining mothers. Using a decision rule with a classification probability level of 0.05, and a cut-off score of six out of 15, the SSAPQ.15 had a sensitivity of 91.7%, a specificity of 82.9%, and an overall correct classification rate of 83.2%.*

The problem with the SSAPQ.15, as with other screening tools, is the number of false positives. The false negatives were negligible (1 miscoded in 11) and should not create a problem but, for every 351 pregnant women screened using a cut-off score of six, 55 false positives will result. However, screening more than those mothers whose babies

will be under CFS is not a problem providing those screened include the mothers who are at risk. In fact, other mothers do abuse their children and those are the pregnant women that need early detection and intervention to attempt to either change their lifestyles or meet their educational or support needs. Every year approximately 4,000 babies are born at the hospital. Therefore, based on the findings of this study approximately 137 babies will be apprehended or placed under CFS supervision. But only 125 will be identified by the SSAPQ.15, that is 12 mothers will be missed in the prenatal period. However, based on the results of this study all the mothers in the apprehended group had been referred to social work and were known to CFS. Therefore, if the SSAPQ.15 misses some of the women and some women do not seek prenatal care, the assumption is that these women will be seen by the time of discharge from hospital. Unfortunately they will not receive early intervention. In 1990, the hospital reported that approximately 107 newborns had been apprehended by CFS. If all 4,000 women were screened, the SSAPQ.15 should predict the majority (91.7%) of those but also will identify 627 other women for early secondary screening. However, not all 4,000 mothers would be screened prenatally in the hospital clinic, as some will not have prenatal care, others will only be referred to a consulting obstetrical hospital for obstetrical problems, and others will have physicians who do not refer patients for prenatal social assessment. Therefore, the expectation that all 627 pregnant women will be screened and identified early is unrealistic. However, by the time of delivery all 4,000 women will have a nursing database and be referred to CHN for a routine visits and a few will receive early CHN visits. Some of the more fortunate pregnant women will be identified early and have interventions, such as referral to the Adolescent Pregnancy Centre or the CHN, that are aimed at preventing parenting problems before the baby is born. The SSAPQ.15 has an important part to play in screening and therefore assisting health care professionals to intervene early and

reduce potential to abuse.

Pregnant women who would be screened, using the SSAPQ.15 and perhaps the CAP.28, are differentiated into an initial at-risk group, and would be expected to have early follow-up interviews by a nurse using a maternal nursing database. Depending upon the results of the interview, the pregnant woman would be referred to a CHN and/or a social worker for additional assessment of her social problems, prenatal and parenting education, and support. In addition, the CHN in the community or the social worker in the clinic may refer the woman to CFS during her pregnancy or in the postpartum period. In many instances arrangements for apprehension are not made until after the baby's birth, thus missing the opportunity to help the mother early. In some instances, bonding and breastfeeding have been established for two to three days before a discussion of apprehension occurs in hospital. A pregnant woman may or may not have had an opportunity to change her lifestyle and may lack the insight to recognize her difficulties. In other cases, previous children may have been apprehended and the mother remains inert and antagonistic toward any efforts to assist her. Berthier, Oriot, Bonneau, Magnin, and Garnier (1993) implemented a program that reduced institutional placements for children under three years of age by 20%, and they experienced a major reduction in hospitalization for abuse. However, despite their efforts at detecting risk factors at birth, and initiating follow-up by social workers, a child died. They realized that this incident emphasized the difficulty with prediction and the limits of any attempts at prediction. Similarly, even though CFS, social work, and CHN were involved with one of the subjects in the current study, a well newborn baby died in unusual circumstances within a few weeks of discharge from hospital.

Another purpose of this study was to describe the similarities and differences between the pregnant women from the apprehended group and those in the non-apprehended group and those referred by hospital nurses

for early CHN visits for social problems and those who received routine referrals. The study was designed to permit the researcher to examine the lifestyles and pregnancy outcomes of the various groups of mothers. The mothers in the apprehended group were the most poignant mothers in the total sample. The majority of these mothers were young, aboriginal, poorly educated, and on welfare. They drank and smoked, lacked a supportive network of family or friends, were dissatisfied with the support they received, and suffered from lack of self-esteem. Nine of the 12 mothers had not attended prenatal classes and were unlikely to have participated in any form of parenting instruction. Many reported being beaten by their parents and over 50% had at some time been abused, but only one reported presently living in a situation of family violence. In the clinic setting, the pregnant woman was not separated from her significant other when she completed the SSAPQ or the CAP Inventory. If the significant other was violent, she probably would have been reluctant to signify this situation. In future studies or in a clinic setting, the SSAPQ.15 should be completed in privacy, not an easy task in the crowded clinic setting.

All the mothers in the apprehended group were known to CFS and had a social work referral. However, not all the mothers were referred for early CHN visits. Among those mothers who were not referred for early visits was: a mother who was returning to jail; one whose place of delivery was unknown; and two women who had histories of unstable social situations and, although their babies were apprehended they may have benefitted from an early CHN visit.

The other group that was identified in the purpose was those mothers referred by the hospital nurses for early CHN visits for social problems. This group of mothers was similar to the apprehended group. Significantly more of the mothers were adolescent, had less than 12 years of schooling, were aboriginal, single, on welfare, smoked, had been beaten by their parents, and had a history of abuse. More of the

early CHN referred group had problems with self-esteem and were dissatisfied with the support they received. However, they did not report that they lacked support more often than the routine-referred group. Similar to a study by Milner (1991) pregnancy outcome was not a factor in distinguishing between the groups. Milner reported that the stress of childbirth did not affect the abuse scale.

A significant number of the mothers were known to CFS and had been referred to social work. Browne (1994), Gilardi (1991), and MacMillan and Thomas (1993) all emphasized the role that CHNs can play in the prevention and early detection of abuse. Gilardi (1991) discussed the importance of the involvement of the health visitors in identifying and referring child abuse cases to other health professionals in the community. She recommended that all health visitors receive special training in all aspects of child abuse intervention and prevention and even court proceedings. Browne (1994) recommended that health visiting services could be used to prevent child abuse and neglect at the primary and secondary level. However, he reminded us that few countries have used home visitation practices in this way and fewer have evaluated their effectiveness on the incidence and prevalence of child maltreatment. MacMillan and Thomas (1993) studied the feasibility of using CHN home visitations for tertiary prevention of child maltreatment. This pilot study found that using CHN for prevention was feasible but that outcome evaluation required a longitudinal study.

Another aspect that is important is that early referral must be interpreted to mean referral for pregnant women and not just postpartum mothers. In some health districts in Manitoba, referrals for prenatal care are not accepted by the public health department, therefore missing an important opportunity to prevent problems early.

Sample. The mothers ranged from 12 to 41 years of age and 9.4% of the pregnant women were 17 years or under. Age was associated with abuse and this finding supported the results of other researchers

(Anderson, 1987; Browne & Sagi, 1988a; Connelly & Straus, 1992). One of the several hospital prenatal clinics enrolled only adolescents but other physicians also had adolescents in their clinics.

The mean years of education were 12.13 years and 12% of the women had university degrees. Education differentiated between the apprehended and the non-apprehended group, thus supporting the findings of other studies (Crittenden & Morrision, 1988; Whipple & Webster-Stratton, 1991). Rather surprising, 10.6% of the women had no access to a phone where they lived. Welfare recipients comprised 33.9% of the sample and 17 of the 32 adolescents reported being on welfare. Welfare was a significant variable in differentiating between the at-risk groups. This finding supported earlier research (Dubowitz et al., 1987; Gelles, 1989; Herrenkohl et al., 1984) that a relationship exists between socioeconomic status and abuse. Eighty-three pregnant women were single and marital status tended to be related to apprehension but was a significant variable in the other at-risk groups, confirming the findings of other research (Altemeier et al., 1982; Ferleger et al., 1988; Sack et al., 1985).

Lifestyle issues were problematic in a segment of this sample of women. Similar to other findings (Larson et al., 1987), a number (41.8%) of pregnant women reported smoking since becoming pregnant. A disproportionate number of women on welfare smoked (57.5%), while 83.5% of the women not on welfare did not smoke. The stress of living in poverty may contribute to the continuation of the smoking habit during pregnancy. Sixty-five percent of the adolescents smoked compared with 39.5% of the adult women ($\chi^2(1, N = 351) = 8.14, p < .0043$). To protect the unborn child as well as the newborn infant, increased health education related to smoking, and including stress management aimed at the young female population, should be considered imperative.

The use of alcohol and drugs was reported by fewer women than the number who smoked. Age was not a factor in drug use but 60% of the drug

users were on welfare. Although less dramatic a problem, substance abuse is an even more acute and destructive problem for both mother, the unborn baby, and the newborn child who may experience drug withdrawal at birth.

Some (4.4%) women reported that there were adults in their homes who hit, punched, slapped, bit, or scratched when they were angry. The question does not ask if they have ever been physically abused by their husband, boyfriend, or common-law, and therefore was not adequately designed to clearly extract an answer that would reflect the state of violence in the home. Thus, this current study does not confirm the results of others (Browne & Sagi, 1988a; Daniel et al, 1983; Mollerstrom et al., 1992; Stark & Flitcraft, 1988; Whipple & Webster-Stratton, 1990).

On the other hand, similar to other studies (Browne & Sagi, 1988a; Caliso & Milner, 1992; Egeland et al., 1988; Oliver, 1985) intergenerational abuse was related to abuse potential and abuse. In the current study, 9.4% of women reported being beaten by their parents, whereas, 17.4% reported ever being abused. No significant differences between adolescents and adults reporting of violence, parental beatings, or being abused ever, was found. However, a disproportionate number of pregnant women on welfare reported ever being abused ($\chi^2(1, N = 351) = 7.77, p < .0053$); and beaten ($16.94, p < .0000$). Similarly, significantly more aboriginal pregnant women reported ever being abused ($\chi^2 = 6.26, p < .0124$). As aboriginal women were more likely to be on welfare, this finding is not surprising. However, being beaten by their parents or experiencing violence in their home was not significant.

Few (3.2%) of the women had ever been hospitalized for depression. Depression was not a variable that differentiated between at-risk and those not at-risk. Perhaps the question should have been "Have you ever felt so depressed that you visited a counsellor or

physician?" as so few patient are admitted to hospital for psychiatric problems.

A surprising number (113, 33.8%) of the pregnant women did not want their infant to grow up to be like them. Significantly more aboriginal, adolescents, and women on welfare had low self-esteem as reflected by their desire not to have their infant grow up to be like them. This is expected as their life situations are stressful and they recognize the difficulties their children will encounter if they have the same lifestyle. However, no difference in self-esteem was found in women who used drugs; such women may not be cognizant that their lifestyle is problematic.

Finally, support may be a significant factor in influencing the outcome of the pregnancy. Women with less support may be more vulnerable to poorer adaptation during pregnancy, less favourable pregnancy outcomes, and have more postpartum difficulties (Brown, 1986; Lia-Hoagberg et al., 1990). Only 4.5% of the sample in the current study indicated that they had no support, while 6.6% were dissatisfied with the support they received. Significantly more of those who had no support were dissatisfied than those who had support. However, neither the lack of support nor dissatisfaction with the support they received was related to the start of prenatal care, type of delivery, nor the well-being of the infant at birth (type of nursery care required). Over 60% of the pregnant women had planned their pregnancies and had or were attending prenatal classes.

However, unlike Lia-Hoagberg et al. (1990), prenatal care was associated with economic status. The start of prenatal care after 12 weeks gestation was related to whether or not the woman was on welfare (chi-square (1, $N = 309$) = 12.73, $p < .0004$) and to whether or not she had completed at least 11 years of schooling (chi-square (1, $N = 324$) = 17.39, $p < .0000$).

Other findings. One of the potentially most controversial

variables in the study was ethnicity. A high percent (30.2%) of the sample were aboriginal. However, this was expected as the hospital and physician's clinic are situated in the core area of the city. Pregnant women were asked to indicate their ethnicity on the SSAPQ questionnaire. The women in the sample identified their ethnicity, such as aboriginal or Inuit and were not labelled by others. Seventeen (53.1%) of the 32 women 17 years and under were aboriginal. Being aboriginal was a significant variable in differentiating between all the groups and their controls. This finding confirmed earlier studies (Benedict et al., 1990; Connelly & Straus, 1992; Dubowitz et al, 1987). However, Hampton and Newberger (1988) cautioned that bias by race and income may exist in child abuse. As many of the aboriginal population suffer from poverty, limited education, and having pregnancies at a young age, the relationships were re-examined. Ethnicity was found to be related to age, years of schooling, and living on welfare. Next, age, years of schooling, and living on welfare were held constant and the relationship between ethnicity (aboriginal status) and the apprehended, early CHN, nurse expert, and the CAP groups were examined. The results indicated that aboriginal status did not differentiate between the at-risk pregnant women and the remaining groups when age, schooling, and welfare variables were controlled.

The causes of child abuse and the potential to abuse are multiple and interactive (Spinetta, 1978; Wolfe, 1985). Zuravin (1988) also believes child abuse and neglect are complex phenomenon with multiple causes with different levels of severity. The eclectic, multivariate model described in Appendix B has been confirmed in this current study. The SSAPQ.15 consists of variables from the realm of demographic, psychological, family relationship, and mother-child clusters. However, the latter cluster is related to the postpartum period more closely than the antenatal period, especially if the mother is primiparous.

Caliso and Milner (1992) reported that high levels of violence

existed in the abusive and nonabusive mothers with a childhood history of abuse. They confirmed the hypothesis that child abuse is multifaceted postulated on the fact that a history of child abuse was not sufficient to predict child abuse. Surprisingly, family violence was not related to the at-risk groups. Self-reporting may be the problem in this study as no consistent follow-up was part of study. Campbell et al. (1992) found that battering during pregnancy occurred in approximately 7% of the women, whereas in the current study the rate of women living in home where violence was occurring was only 4.4%. Questions related to violence must be ask more than once. Also, women battered during pregnancy were less likely to have adequate prenatal care.

Ethical concerns. Browne (1994) asks the question whether it is ethical to identify families as high risk without the resources to offer them help and support to reduce their problem? In the prenatal clinic setting, especially in hospital clinics, both nursing and social work resources are available to help pregnant women with parenting and to support them. Referrals to CFS will help mothers with financial needs and adolescents with continuing their schooling in a protected environment. Postnatally, every mother is contacted by the CHN; however, the early referral program provides additional support and surveillance within 24 hours of discharge for mothers who are at risk to abuse. Jointly with the Children's Hospital mothers are invited to a postpartum support group within the hospital. Parents are welcome to come with their infants and any significant others for as long as they feel the need. Numerous volunteers and professionals are available to provide information and/or emotional support. Although, many challenge whether or not the resources to help these families are available, a retort might well be that without identification no resources are required. Numerous community resources exist that provide parenting education and knowledgeable staff refer mothers to these resources. If

we believe that child abuse potential is eclectic then many forms of intervention to meet the needs of the family may be designed and evaluated.

To defer to those who want perfection, before action, is to give up on all mothers who have potential to abuse, limited resources, little or no support, and limited parenting knowledge and/or skills, before they have had a chance to find and use the resources that are available. Many of the apprehended group were mothers who had other children apprehended; for those mothers prevention was too late. The important group are the mothers with potential to abuse as assessed by the hospital nurses, the nurse experts, or the SSAPQ.15. Primary prevention or at least secondary intervention such as monitoring, education, and support in the postpartum period may help these mothers to become resilient to abuse.

Implications for Future Research.

Much research related to child abuse has appeared in journals and books especially over the last 10 to 15 years. However, further research is needed, especially related to (either primary or secondary) prevention. Testing the use of the SSAPQ.15 in a clinical setting to evaluate whether pregnant women will complete the form and if the nurses will use the results to intervene is recommended prior to introducing the instrument in the clinical setting. Evaluative research to determine the most appropriate intervention to implement with different individual mothers would be beneficial to enhance their parenting skills and knowledge. The SSAPQ.15 needs to be validated in other settings and with other prenatal populations.

Longitudinal studies are difficult to organise especially in the core area with its transient populations but the actual outcome of the parental behaviour can be assessed adequately only over time. Following mothers and babies in the community for four years would be a challenge. The SSAPQ.15 could be validated using a variety of setting and outcome

measures.

As the SSAPQ.15 can identify a group of pregnant women with the potential to abuse that include numerous false positives, then further research is required to determine the most appropriate secondary screening procedures. Milner (1991b) reiterated the importance of using more than one test as a diagnostic criterion, suggesting that several tests, client interviews, direct observations, and case histories, be used. For example, screening interviews by a nurse using the routine maternal nursing database or a new database that examines the areas of concern, such as family violence, substance abuse, intergenerational abuse, followed by referrals to CHNs and /or social workers or CFS. Fay and Jones (1988) developed the Childcare Attitude Inventory and determined that it was correlated with the CAP Inventory. A study to examine the relationship and usefulness of the Childcare Attitude Inventory as a secondary screening tool would be prudent. This type of secondary measure may assist in reducing the number of false positives.

Evaluative research is required to establish the value of specific programs designed to prevent or reduce abuse. Olds, Henderson, Chamberlin and Tatelbaum (1986) studied prenatal and infancy visits by nurses and found that those mothers visited by the nurse had fewer instances of verified child abuse and neglect during the first two years of the child's life. Determining how many visits are effective and whether prenatal and/or postnatal visits are the most effective and cost-efficient has implications for future research. Were pregnant women at-risk referred to CHN in the antenatal period? If so, was the support they received episodic or sustained? Was any effort made to provide parenting education or were attempts made to improve their parenting skills?

Wolfe, Edwards, Manion, and Koverola (1988) studied a group of mothers under supervision from a child protection agency and who had an elevated CAP Inventory scores. One group received information only; the

other group received a behavioral parent training program in addition to the information. Home assessments and training, by graduate students in psychology, were included. The parents, who received the enhanced program, were rated by the caseworkers as managing significantly better than the parents who received information only. The researchers recommended that the diverse needs of at-risk families be addressed by a combination of family support and individual assistance in effective child management. Continued studies that would examine the role of nurses, social workers, and psychologists in prevention rather than in treatment only would be beneficial.

The hospital offers mothers the opportunity to attend a volunteer group that meets once per week. The group has the services of professionals and volunteers who answer questions and provide support to the families. Longitudinal evaluative research to determine if the group called Cradle Chat has a role to play in prevention of abusive parenting is needed. Evaluative research related to early or late prenatal and/or postpartum parenting education programs as a primary approach to prevention is recommended.

Donnelly (1991) examined the challenges of the next decade. Research related to programs to: (a) reduce substance abuse during pregnancy and in families; (b) eliminate poverty with an emphasis on job training, improved housing and support programs; (c) reduce the violence children and parents see on television; (d) reverse the trend that community services are investigative only and demonstrate the worth of providing support and help to families.

Most studies include only women, excluding significant others who may become the actual perpetrator (Margolin, 1992). On the other hand, Milner and Gold (1986) did investigate the spousal abusers using the CAP Inventory. They found that over 36% of the spousal abusers had an elevated CAP score. However, research studies are needed that include significant others in studies of child abuse. This is an important and

critical area in future research. Similarly, studies of battering during pregnancy (Campbell, Poland, Waller, & Ager, 1992) and the relationship between battering and child abuse potential are crucial to the welfare of mother and baby.

Not all pregnant women that have been assessed as having potential to abuse will abuse their children. Studies that examine the role that support plays in resiliency and the effect of having a supportive person available, are suggested. Many of the at-risk women will be resilient. McCubbin, Hamilton, and McCubbin (1988) found that resilient families appeared to create a climate of predictability and continuity. Werner and Smith (1989) studied resilient children and recommended that further studies be launched that would examine the effects of variables that contribute to resiliency and invulnerability. Assessing pregnant women who are at-risk will provide an opportunity to qualitatively study the differences between those women who actually abuse as opposed to those who are at-risk but are resilient and do not abuse. Some issues related to resiliency that may be studied include: sibling caretaking as a method of developing nurturing and responsible behaviour; the role of grandparents as abuse resistance resources for example, as foster parents until mothers are able to function as responsible non-abusing parents; the role of other support persons available in the home; and age, family size, and birth order as factors in resilient behaviour of mothers (Werner & Smith, 1989). Studies to evaluate the type and role of support that may be effective in promoting resiliency are necessary to determine whether professional support or family/friends is most effective and under what circumstances.

Other areas of suggested research include qualitative studies of mothers who have little or no prenatal care, as well as, those who have substance abuse problems. What are the characteristics of mothers who receive four or less prenatal visits and the relationship to apprehension and later child abuse? How do mother who use cocaine deal

with their babies and the possibility of apprehension or vigilant observation of their lifestyle and their parenting skills.

One area that is often not addressed is the educational needs of professional staff and the most effective methods of ensuring that professionals are continually alert to abuse in all situations and within all socioeconomic strata. Several researchers examined the role physicians (Johnson, 1993; Warner & Hansen, 1994), psychologists (Brosig & Kalichman, 1992), and other professionals (Zellman, 1992) play in reporting child abuse and neglect. However, a dearth of studies exist that examine the role and effectiveness of physicians and nurses assessing and referring pregnant women at-risk to abuse to resources that may be effective in improving their lifestyle and preventing abuse. The development of educational programs that increase the awareness of professionals and the public about physical child abuse, and evaluative research of such programs are suggested.

Finally, Mash and Wolfe (1991) called for more collaboration between researchers, professionals, to the benefit of the children, families, and the community. To date minimal research has been devoted to the prenatal at-risk women. Physicians, nurses, social workers are in an excellent position to participate in studying the effectiveness of programs designed to prevent abuse of children.

Implications for Clinical Practice.

In the clinical area, training programs for clinic nursing staff, the CHNs, and postpartum nurses in using the SSAPQ.15 and in identifying potential or actual abuse in the clinical setting in hospital and in the community are needed. Gilardi (1991) recommended multidisciplinary training so that all professionals are exposed to the same knowledge and skills. In addition, training should be provided for staff to improve their assessment and interviewing skills in the area of family violence including child abuse potential, actual child abuse, and spousal, family violence, and substance abuse.

Caliso and Milner found that rigidity and unhappiness were significant factors in child abusive mothers. They suggested that cognitive treatments that focus on thinking patterns related to children's behaviour and skill training that will increase the parent's ability to form intimate adult relationships be offered. They believed that by increasing the ability of the parent to develop and maintain intimate adult relationships may decrease their abuse potential. Hopefully, such a skill training program may counteract early social learning related to early childhood experiences of abuse.

Ayoub, Willett, and Robinson (1992) recommended one strategy to reduce child abuse, developing prevention programs that assist and support potentially problematic families. Support programs that last for at least four to six months should be developed and continually evaluated to ensure child safety and should be viewed as an integral part of a treatment program. They emphasized that, just as a complex combination of factors affect the potential for child abuse, using one intervention format will not work for all families.

Werner and Smith (1989) found that support from an informal network of kin and neighbours and the advice of ministers and teachers were sought more often and highly valued. They emphasized that in many situations, strengthening the available informal ties to kin and community rather than introducing additional layers of bureaucracy into the delivery of social services is probably more appreciated, effective, and less costly. Similarly, Browne (1989, 1994) recommended that the health visitor who visits in the community be prepared to assess, educate, and support parenting endeavour. He pointed out that the abusive pattern is set in the first year. The CHNs have an obligation to contact every new mother in Manitoba. If the hospital nurse identifies mothers with potential to abuse that CHN has an important opportunity to prevent child abuse. Resources such as parenting support groups, well-baby clinics, social workers, continuing visits from the

CHN, are available in the community. Pregnant women in Britain have the advantage of receiving home visits in the prenatal period from nurses/midwives. Their role is concerned with health education and the promotion of the families health over an extended period of time. The health visitor is educated to identify relationship problems and to initiate action at an early stage in the prenatal period.

Unfortunately, Manitoba has not found the resources to match the quality or quantity of early care provided in Britain. The health and well-being of the family and the children, in particular, are considered as secondary priorities. Child poverty continues to be a problem as does abuse.

In addition, Browne (1994) studied child abuse in Britain and suggested the need for: a second screening procedure using the health visitor (in Canada, the CHN) as the most appropriate health care worker; improving the knowledge and skill of the health visitor in observing of parental childcare skills, parents responses to stress, and the quality of parent/child attachment. Using a broader focus, Garbarino and Kostelny (1992) studied community characteristics related to child abuse and emphasized the influence of poverty and social disorganization in abuse. They recommended that "prevention zones" be identified and then become the target for comprehensive, sustained intervention by a wide range of agencies. Although, the value of this approach is acknowledged, the resources required may not always be applied appropriately.

Spinetta (1978) asked the question " Why do the majority of parents not abuse their children?". More specifically, " Why do most deprived families not abuse their children even though they are in the same economic, social, and stressful situations as families who abuse?. Most importantly we may learn from those resilient mothers, many of whom are the false positives in this study, as they do not abuse but have the characteristics related to the potential to abuse. Resilient mothers

may become important supports for other mothers who are at-risk. Together they may form a bond and a network of support to replace the often lost kinship network. The nurses in prenatal clinics, in hospitals, and in communities have a responsibility to encourage the bonding and building of support systems for the new mothers and their babies. Support groups such as Cradle Chat provide a safe link for these mothers to other families and to the staff they know and trust; a bridge between hospital and community.

The current study has demonstrated that there appears to be a cluster of reasonably easily obtained measures, reflected in the SSAPQ, that are known to be associated with potential to abuse. Armed with this information the time has arrived for health care professionals and governments to take more forceful steps in primary prevention of child abuse.

Finally, the SSAPQ was developed to assist nurses to identify mothers who are at-risk to abuse so that they may help mothers to learn new parenting skills so that they will become resilient and protect, not abuse their children. The SSAPQ was effective in differentiating the at-risk mother in the three criterion groups. The SSAPQ was equally as effective as the CAP in this group of prenatal women and was easier to administer in a busy clinic, as well as less costly. Other instruments exist and each is valuable in certain situations (Browne & Sagi, 1988; Browne, 1994; Monaghan & Buckfield, 1981). For prenatal women, at a time when the health care dollar is limited, the SSAPQ is an important new development that may provide an additional method of early detection and may lead to earlier intervention.

In summation, Balan (1971) reminded us that "A society that cares for its children and thus also teaches those children to care for their children in turn thrives indefinitely. A society that neglects or abuses its children exists precariously" (p.120). Therefore, the SSAPQ.15 may be one of the most important assets we have in caring for

our children, decreasing the abuse potential of parents 'at risk', and ensuring that our society thrives.

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Appendix A

Statistics 1982-1989: Children's Hospital Child Protection Centre

**CHILDREN'S HOSPITAL
CHILD PROTECTION CENTRE STATISTICS**

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	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
<u>INITIAL REFERRALS:</u>	372	522	616	796	837	942	1082	1079	1156	1221	1201	1037
REFERRED AS PHYSICAL ABUSE	258	345	287	375	360	399	493	434	502	564	577	500
REFERRED AS SEXUAL ABUSE	114	117	329	421	477	543	589	645	680	725	660	564
TOTAL CLIENT VISITS.....	924	1040	1226	2416	3009	2871	2871	2496				

FINAL DIAGNOSIS

PHYSICAL ABUSE	137	198	138	204	186	224	229	261	244	267	245	223
SEXUAL ABUSE	95	132	243	297	339	410	428	472	453	453	402	353
EMOTIONAL ABUSE	3	5	5	0	0	2	2	1	5	4	4	2
NEGLECT	55	46	48	73	80	95	134	74	125	127	122	107
ACCIDENT	28	34	27	25	26	26	22	18	22	17	36	21
UNKNOWN	50	64	111	133	136	141	186	165	225	244	327	280
NON-CASE	4	43	41	56	63	53	90	97	91	101	58	48
PREVENTION	0	0	3	8	7	6	8	2	17	39	35	19

Appendix B

Review of the literature on child abuse

The purpose of this appendix is to give a brief review of the literature related to the characteristics of parents who abuse or have the potential to abuse their children. This review is selective and is not an exhaustive panorama of the literature in the field. The reader is referred to numerous other reviews (Alfaro, 1988; Augoustinos, 1987; Dubowitz & Egan, 1988; Kaufman & Zigler, 1987; Newberger, Newberger, & Hampton, 1983; Pellagrini, 1990; Prodders, 1984; Spinetta & Rigler, 1972; Widom, 1989; Wolfe, 1985; Wolock & Horowitz, 1984) that have been instrumental in the development of this field of study. As a result of examining the literature, several groups/clusters of variables were identified. These clusters consisted of: (a) demographic; (b) family relationship; (c) psychological; and (d) maternal-child interaction variables.

Demographic Variable Cluster

What variable/s were included in the demographic cluster literature review? Certainly, income is one of the most frequently cited variables. In addition, occupation is viewed as a major determinant of income. Both occupation and income are closely tied to the amount of formal education and skill an individual acquires. Similarly, employment and income are related to housing (ownership of property) and the stability of that housing. Many individuals who have minimal education and skills and lack employment live in conditions of poverty. Other variables reviewed were age and ethnicity.

Socioeconomic Status (SES). Several researchers studied the relationship between income and abuse. For example, Herrenkohl, Herrenkohl, Toedter, and Yanushefski (1984) found that the higher the income, the more positive the overall interaction between mother and child. On the other hand, the lower the income the more hostile and negative the interactions between mother and child and the greater the

negative influences on child development. In a study of 6,000 households, Gelles (1989) reported a trend between family structure (single-parent families) and families living below the poverty line.

Other researchers (Ferleger, Glenwick, Gaines, & Green, 1988; Herrenkohl, Herrenkohl, & Toedter, 1983; Oldershaw, Walters, & Hall, 1989; Trickett, Aber, Carlson, & Cicchetti, 1991) studied various groups of abusing parents and control groups and found a significant relationship between income and abuse. Unemployment in a family tended to increase both mild and severe abuse (Sariola & Uutela, 1992).

Dubowitz, Hampton, Bithoney, and Newberger (1987) studied a group of abused children and children with accidents. They reported that mothers of abused children were far more impoverished than families with children with accidents. Next, only subjects who were on welfare were examined. In this subgroup, families of abused children still emerged as more impoverished, with a lower income, living in fewer rooms and less likely to own a car. Similarly, Benedict, White, Wulff, and Hall (1990) studied maltreatment in children with multiple disabilities. They reported that children whose parents lacked stable employment were more likely to have substantiated abuse reports.

Researchers (Whipple & Webster-Stratton, 1991) studied abusive and nonabusive families with conduct-disordered children. Parental stress was an important component of abusive families. Physically abusive families were significantly more often low income than the control group. Finally, Anderson (1987) studied a small group of abusive and nonabusive mothers and reported that income was a significant variable. Discriminant functional analysis demonstrated that income was among five variables that were the best predictors of abusive behavior.

Polansky, Ammons, and Gaudin (1985) studied low-income black and white, rural neglectful, and control families, and their neighbours. Significant finding were: a higher mean number of children in the neglectful families; greater and more frequent feelings of loneliness;

less affective and instrumental support; less group affiliation; more feelings of helplessness; children were more isolated; and mothers were less socially participant. The researchers concluded that like poverty, isolation may not cause abuse but it does not help to solve the problem.

On the other hand, two research groups (Famularo, Barnum & Stone, 1986; Steele & Pollock, 1974) found no significant relationship between abuse and income. For instance, Steele and Pollock found that the subjects from their clinical practice of abusing families were from all strata of society and they argued that no relationship existed between abuse and income. However, due to lack of control groups and comparisons to the incomes of the general population, their conclusion was questionable. Famularo et al. (1986) studied two groups of abusive parents, one group of parents had custody of their children, the other group did not. No significant difference was found related to income but again the result was suspect as no control group was used.

In conclusion, the evidence is strong to support the view that poverty plays an important role in predicting abusive behavior.

Education. Researchers (Altemeier, O'Connor, Vietz, Sandler, & Sherrod, 1982; Dublowitz, Hampton, Bithoney, & Newberger, 1987; Friedrich & Boriskin, 1980) found education was not related to child abuse. However, Altemeier et al. chose their subjects and controls from the same community prenatal clinic, thus limiting possible variation in education. Similarly, Friedrich and Boriskin used a small sample of mothers who had abused or neglected their children and a low income control group. As expected, they reported that neither education nor income were significant variables.

However, other researchers (Anderson, 1987; Benedict, White, Wulff, & Hall, 1990; Crittenden & Morrison, 1988; Egeland & Brunnuquell, 1979; Whipple & Webster-Stratton, 1991) using multivariate statistics to analyze the data found that education was a significant variable. Kugler and Hansson (1988) used control groups and found that abuse was

significantly related to both lower levels of education and income. Also others (Anderson, 1987; Hunter, Kilstrom, Krayhill, & Loda, 1980) indicated a significant relationship between income, education, and abuse. Income, occupation, and education are usually referred to as socioeconomic status (SES).

Employment/living conditions/transiency. Employment status of the mother and/or spouse was studied by some researchers (Anderson, 1987; Browne & Sagi, 1988; Oates, Peacock, & Forrest, 1984). In these studies, both income and under-employment or lack-of-employment were found to be related to abuse. Robarge, Reynolds, & Groothuis (1982) examined abuse and twins, while Zuravin (1988) studied the fertility patterns of abusive and control group mothers. The link between income and employment was evident as were the variables transiency and living conditions. Abusive families tended to be more mobile (Creighton, 1985; Daniel, Hampton, & Newberger, 1983; Oates et al., 1984) living approximately 8.2 months in their present neighbourhoods (Kugler & Hanson, 1988). More of the abusive families lived in less than ideal conditions. Significantly ($p < .001$) fewer abusive mothers owned a car or house, or had a telephone (Dubowitz et al., 1987).

Socioeconomic status, education, employment status, and transiency are highly interrelated; therefore, finding one of these variables and not the others associated with abuse would be surprising. Unfortunately, in North America this set of variables is related to ethnicity and thus more reports of abuse in aboriginal Canadians and black or hispanic Americans have occurred.

Ethnicity. Several groups of researchers (Famularo et al., 1986; Hunter et al., 1980; Siegel, Bauman, Schaefer, Saunders, & Ingram, 1980; Steele & Pollock, 1974) found race not to be related to abuse. These studies consistently had small sample sizes; one descriptive study (Steele & Pollock, 1974) had no control group.

On the other hand, more recent studies (Benedict et al., 1990;

Connelly & Straus, 1992; Dubowitz et al., 1987; Hampton & Newberger, 1988) reported race to be significantly related to abuse. Minority group (AFRO-American and Hispanic in USA) children are at greater risk of physical abuse (Connelly & Straus, 1992). However, in a study to examine bias in child abuse reporting, Hampton and Newberger (1988) found that child abuse reporting was biased by race and income status. Race was differentiated by whether the subjects were white, black, hispanic, or other. Native or First Nations were not identified as a separate group. Unfortunately, in our society ethnic groups often suffer from the additional stigma of poverty.

Age. Zuravin (1988) envisioned teen motherhood as an example of "deviation from their normative life script". Thus, immediate effects result from the pregnancy as well as delayed adverse effects including child abuse and neglect. Whether or not age and child abuse are related is controversial. Siegel et al. (1980) studied 237 mothers who received extended care or routine care and also found that age was not a significant factor in identifying abusive families. Similarly, in a study to investigate personality, psychophysiological, and cognitive appraisal variables, Friedrich et al. (1985) using small samples of abusive, neglectful, and control mothers established that age was not significant.

On the other hand, more recent studies have indicated the opposite conclusions. Gelles (1989) using a large sample of dual and single caretakers found that the age of the mother tended to be related to abuse by the caretakers. Whipple and Webster-Stratton (1991) revealed that the age of the mother was significant, while the age of the father or child was not. Similarly, Anderson (1987) and Connelly and Straus (1992) found that age at first birth was related to abuse. Age at marriage was also significant (Anderson, 1987) but not at the time of the abuse (Connelly & Straus, 1992). Similarly, Browne and Saqi (1988) using a Stepwise Discriminant Function Analysis found a significant

difference between the abusive and control families related to maternal age. As a result of examining the studies, a definite tendency exists towards including maternal age as a variable to consider in studying maternal potential to abuse.

Summary of Demographic Variable Cluster. Income, education, employment status, living conditions, age and ethnicity/race are related to child abuse in varying degrees. In North America employment and ethnicity are closely related to SES (income and education). Although the type of employment is directly related to education and income, ethnicity also plays a role in the scenario. The type of ethnicity may vary depending on the country but the results of poverty plus ethnicity can create acute stress for mothers.

Other variables such as, living conditions, transiency, and age are clearly related to SES. Lower levels of income and education may affect the quality of living conditions and increase unwanted transiency. The resulting increased stress parents experience can have a negative effect on the way they cope with their children. In general, if parents lack education and/or income or a combination of these, a correlation may exist with unemployment, poor housing, or living conditions. Stress related to these problems can increase the potential for child abuse by parents who see no end to their dilemma and have learned violence as a way of coping.

Family Relationship Variable Cluster

The cluster of family relationship variables consisted of marital status, intergenerational abuse, foster care of mothers as children, and family disruption, including spousal abuse.

Marital status. Closely related to the demographic variables was the family relationship variable marital status. Three studies (Famularo et al., 1986; Oldershaw et al., 1989) reported no significant differences between abusive and control families related to marital status. Hunter et al. (1980), studying abuse in babies who had been born

prematurely, found that marital status was nonsignificant. However, whether or not the baby's mother lived with her own mother or the father of her child was a significant variable. The support of a mother or significant other seemed to be an important deterrent to abuse. Marital maladjustment, separation, and divorce were significantly related to abuse.

In several other studies (Altemeier et al., 1982; Benedict et al., 1990; Browne & Saqi, 1988; Ferleger, Glenwick, Gaines, & Green, 1988; Sack, Mason, & Higgins, 1985) marital status was found also to be a significant variable. Creighton (1985) found that children placed on an abuse registry were more likely to be illegitimate. In a study (Dubowitz et al., 1987) of children with inflicted injuries and non-inflicted injuries, parents of children with injuries not inflicted were more likely to be married. Egeland and Brunnequell (1979) found 74% of inadequate mothers were single.

Researchers (Gelles, 1989; Kimball, Stewart, Conger, & Burgess, 1980; Sack, Mason, & Higgins, 1985) studied child abuse in single-parent families in a diversity of setting. Kimball et al. studied single and two-parent families classified as abusive, neglectful, and controls. They found a total lower frequency of positive Parent-Child interactions in single-parent families, despite the finding that single mothers interacted with their children more often than mothers in intact families. A similar result was found with physical contacts. The children in the single-parent family directed physical behavior toward their mothers more often than children in two-parent families. The greatest difference between single and intact families was the significantly higher frequency of negative behavior in the single-parent families. Children in single-parent families interacted negatively with each other at a higher rate than those in intact families. A higher rate of positive than negative interactions was found in intact families. The results were consistent with the view that the absence of

the father or mother places undue stress on the remaining parent, increasing the likelihood of abusive behavior.

Sack et al. (1985) surveyed 802 noninstitutionalized adults. The results indicated that, as suspected, abuse frequencies were nearly twice as high for single-parents (9%) than for two-parent families (5%). In households broken by divorce, frequency of abuse was higher than in households broken by separation or death (14%, 9% and 3%), respectively. Other findings were: sex of the single parent was not related to abuse; parent-child punishment patterns established prior to a breakup persisted after the divorce; and no abuse was reported where the father was said to be the most compatible parent.

Gelles (1989, 1993) used a probability sample of 6,002 households from the 1986 Second National Family Violence Sample to study 528 single-parent and 2,707 dual-caretaker families. The rate of abuse in single-parents was higher than in the dual-caretaker families and also the rate of severe and very severe violence toward children was greater in single-parent families. Economic deprivation and age contributed significantly to increased child abuse in single-parent families. Poverty, a characteristic of single-mother families intensifies the incidents of child abuse in these families. No statistically significant difference in the rates of overall and severe violence between single-mothers and dual-caregivers mothers was found but single mothers reported a 71% ($p < .06$) greater rate of very severe violence toward their children. Rates of severe and very severe violence were actually slightly higher in homes where other adults were present. Living alone does not in itself explain the higher rates of violence and abuse in single-parent homes. The high rate of abusive violence among single mothers appeared to be a function of poverty characterized by mother-only families. The rate of severe and very severe violence toward children was higher among single fathers than single mothers. Children whose single fathers earned income below the poverty line faced

the highest risk of severe violence ($p < .02$). Numbers of single-fathers was small and little was known about them.

Intergenerational abuse. Kaufman and Zigler (1987) and Widom (1989) reviewed research studies related to the hypothesis that abuse breeds abuse. Widom agreed with Kaufman and Zigler that the magnitude of the relationship between abuse experienced by parents who abuse their children remained difficult to interpret. Problems with the methodology of the studies were reviewed and included: definitions of abuse and neglect; retrospective design; use of second-hand information from records; convenience or opportunity sampling; correlational studies; treating abused and neglected children as one group; lack of control groups; lack of longitudinal studies. They concluded that not all children succumbed to abuse and neglect or as adults abused their children. Kaufman and Zigler (1987) argued that although the rate of abuse among individuals with a history of abuse (intergenerational abuse 30%) was approximately six times higher than the base rate (5%) of the base population, unqualified acceptance of the hypothesis that 'abused abuse' was unwarranted.

Researchers (Famularo et al., 1994; Meadow, 1990; Nealer, 1992; Parens, 1987; Steele & Pollock, 1974) studied various aspects of intergenerational abuse. Many abusive mothers, as children experienced severe punishment in the form of physical beatings, emotional abuse, sexual abuse, and harsh and protracted experiences of unpleasantness. Oliver (1985) identified 147 abusive families who had a history of abuse over two generations. Of the 147, 50 (34%) families had a pattern of abuse that spanned over three or more generations, with five examples of five-generation abuse. However, no control group was used and the sample was small. Black child abuse cases differed from their controls (matched on race and SES) in terms of maternal history of corporal punishment extending through adolescence (Daniel et al., 1983). In another study of 114 mothers not abused as children, and 47 mothers who

had been abused, significantly more of the abused mothers who had not abused their children again, had a supportive adult available during childhood (Egeland, Jacobvitz, & Sroufe, 1988). More mothers who had suffered abuse, abused their children, more of those who admitted to using abusive techniques perceived of themselves as abused in childhood, and the proportion of those who harshly disciplined or abused their children increased as the number of abusive caretakers in their own lives increased (Herrenkohl et al., 1983). In a study of abused children who had been premature infants, more of the mothers had a history of family abuse or neglect (Hunter et al., 1980).

Similarly, Anderson (1987) found that significantly more abusers had been moderately to severely disciplined during their childhood. Mothers of children who had been abused were more likely to have received harsh discipline at the hands of their parents (Dubowitz et al., 1987). In another study (Whipple & Webster-Stratton, 1991) of families with conduct-disordered children, physically abusive families significantly more frequently reported a family history of abuse.

Browne and Saqi (1988) listed a history of family violence as one of the 13 predictors of abuse in a Stepwise Discriminant Function Analysis. Caliso and Milner (1992) administer the CAP Inventory and the Conflict-Tactic Scale to three groups of mothers; abusive and nonabusive mothers with a history of being abused as children and nonabusive mothers without a history of abuse. The results demonstrated a relationship between an elevated CAP score and a history of abuse for those mothers who had a history of abuse whether or not they had abused their children. However, the mothers who abused their children received the highest CAP Inventory scores. In another study, Milner, Robertson, and Rogers (1990) using the CAP Inventory and the Childhood History Questionnaire demonstrated a correlation between physical child abuse potential and a childhood history of abuse. Experiences of child abuse in early childhood produced higher abuse potential scores than abuse

that occurred after puberty.

The problem solving skills and motivation of abused and non-abused women was examined by Launius & Lindquist (1988). The abused women were significantly less skilled at problem-solving and identified fewer options and spent less time on the task. The researchers based the study on the theory of learned helplessness, and concluded that battered women were simply less able to solve interpersonal problems effectively and deal assertively with their male partners. These mothers would have limited ability to prevent abuse. On the other hand, Martin and Elmer (1992) found that adults abused as children tended to be resentful and suspicious as adults. Early abusive trauma seemed to have no simple relationship to adult functioning.

Main and Goldwyn (1984) examined the hypothesis that: (a) a mother's experience of her own mother rejecting her was related to her rejection of her own infant, and (b) that the distortion of the mother's view of her parent may play a role in perpetuating child abuse. Parents were interviewed using the Berkeley Adult Attachment Interview protocol. The researchers found that the mother's rejection by her mother was strongly related to her own infant's avoidance of her. Mothers who expressed their anger and resentment toward their mothers freely during the interview, and if they were coherent about their feelings and experiences, their infants were unlikely to avoid them.

Researchers (Egeland & Brunnuell, 1979; Egeland et al., 1988; Herrenkohl, Herrenkohl, & Toedter, 1983; Kaufman & Zigler, 1987; Steele & Pollock, 1974) also investigated trigenerational abuse. Steele and Pollock found that abusive parents had a history of having been raised in the same style that they recreated in rearing their own children. This did not necessarily mean physical abuse but was described as a feeling of intense, pervasive, and continuous demand from their parents. The abusive parents had a sense of righteousness and they expected obedience and submission. They found that all of the parents as infants

and children were deprived of basic mothering. Steele and Pollock (1974) indicated that abusing parents lacked confidence-producing experiences as children. As a result, they did not believe that they could look to others for help or that they were worthy of help and they tended to lead lives that were described as alienated, asocial, or isolated.

In 1983, Herrenkohl et al. studied 251 child abusing families on welfare and 278 non-abusing welfare families from local preschool programs. They found that 56% of those who admitted to child abuse had themselves been abused as compared with 38% of those who did not abuse their children. Number of children, socially desirable responses, and income were associated with child abuse. The less positive the climate, the more severe discipline used by the respondent. The greater the number of family stresses, as the respondents grew up, the more severe the discipline index. Respondents who were abused as children reported more negative perceptions of childhood: maltreatment, neglect, stresses on the family, number of caretakers and children, income, and nurturing index. Abused respondents who do not abuse their own children reported fewer stresses on the family of origin. The less supportive a parent perceived their childhood, the more severe the discipline used by the individual as a parent.

Oliver (1985) found that abuse was trigenerational and in some instances, 4th and 5th generational. The researchers concluded that 10% of the total child abuse and neglect cases in the health district of 200,000 people were accounted for by parents who usually had severe personality disorders and/or criminal tendencies. These parents tended to be from families with serious mental and social derangements over two, three, or more generations. Oliver (1988) while studying families who had abused their children and who had been abused themselves found that abuse had been reported for two to five generations in 147 families who currently abused at least two children. The death rate for children

(1 month to 1 year) in this group was 47.1 per 1,000 as compared with 6.3 expected for the most deprived SES group. Some of the deaths and the 11 violence-induced mental handicap (VIMH) were caused by violent shaking and throwing of infants, and secret suffocating practices. Of the 560 children, 519 had survived until 1980, and 24 were known to have IQs in the severe subnormality range, and 53 were categorized as subnormal. These rates were six times the rates in the normal populations.

Egeland et al. (1988) studied mothers who were abused as children. Twelve of the mothers had broken the cycle and eight mothers had abused their children. Significantly more of the nonabusive mothers reported a supportive relationship with some adult in their own childhood and/or had received therapy. These mothers had intact relationships with their current partners and had emotional support. The abusive mothers had more stressful life events and scored higher on the anxiety and depression scales. Social desirability of the self-reports were not measured, but the investigators were confident that mothers who reported being abused were abused.

On the other hand, Nealer (1992) failed to find a link between child abuse potential and the family of origin functioning. However, the study did emphasize the importance of current family functioning, depression, parental income, and education as they relate to child abuse potential. In another current study, Weston et al. (1993) studied nonorganic failure to thrive children and found that the mothers of these children had a higher incidence (80%) of child abuse in their childhood experiences than mothers of the control group. The researchers emphasized the importance of early recognition and support for these mothers.

Miller et al. (1991) studied a group of black high school students to determine if the potential to abuse was to having been abused or witnessing abuse. Both were significantly related to significant CAP

Inventory scores but a history of witnessing abuse had a greater effect than a history of having been abused. Recognition of the influence that abuse and witnessing abuse can play during adolescent in the potential to abuse later is critical. Education and support must begin early before pregnancies occur.

Family disruption. Researchers (Carter & Easton, 1980; Daniel et al., 1983; Lealman, Haigh, Philips, Stone, & Ord-Smith, 1983; Mollerstrom, Patchner & Milner, 1992; Parens, 1987; ; Steele & Pollock, 1974; Stark & Flitcraft, 1988) studied various aspects of family disruption. In the earliest of these studies, Steele and Pollock found that the incidence of broken marriages was not significant. However, more recently Stark and Flitcraft (1988) found that 42% of abusive mothers had a history of battering while only 5% had a history of marital conflict. Carter and Easton reported that in 11 percent of families of abused children, the mother had been assaulted by the father. Daniel et al. (1983) indicated that abusive families described their life situations as being less happy than the controls but no actual spousal abuse or marital disruption was recorded. Following a case study of an abused child whose mother had been abandoned by her husband, Parens concluded that hostility was not inborn but provoked by experiential events. Lealman et al. (1983) found that 29.1 percent of families studied, identified as at-risk to abuse, had problems with family relationships.

Altemeier et al. (1982) studied 23 low-income abusive mothers and 1400 control mothers. No significant association was found between the groups due to divorce or separation (marital disruption) from their husbands. On the other hand, in a longitudinal study of 6,532 children placed on an abuse registry, Creighton (1985) found that marital discord was the most frequently quoted stress factor over the entire period (1977 to 1982). However, no other statistical information was reported. Monane, Leitcher, Lewis (1984) studied psychiatrically hospitalized non-

abused and abused children. The prevalence of household violence toward family members other than the child (e.g., mothers and siblings) was significantly greater in the households of abused children. Oates et al. (1984) studied abusive and control mothers of similar social status. Questions were asked related to family problems. No significant differences related to marital relationships were found between the groups. Self-reporting may have created bias due to the sensitivity of the questions. No social desirability scale was reported.

Other researchers (Anderson, 1987; Browne and Saqi, 1988; Dubowitz et al., 1987; and Friedrich et al., 1985) using multivariate design examined marital disruption and child abuse. Dubowitz et al. used logistical regression to assess the differences between groups of abused and non-abused injured children. Although 59% of the abusive parents reported violent disagreements as compared with 46% of the non-abusive parents, the result was non-significant. The other three studies were analyzed using Discriminant Function Analysis. Browne and Saqi found that a history of family violence was a significant characteristic of abusive families. Of 949 families with newborns, and who were considered high risk to abuse their children, only 17 actually abused their children. Thus, the researchers concluded that background influences and situational stress factors associated with 'high-risk' families were not sufficient causal explanations for child abuse and neglect. Why did the majority (94%) of the families exposed to marital disruption not abuse their children?

On the other hand, a study by Mollerstrom, Patchner and Milner (1992) demonstrated a strong positive correlation between family conflict and abuse potential. Family cohesion, expressiveness, and family satisfaction were inversely related to abuse potential.

Past spousal abuse and difficulty communicating with family members were also significant variables in abusive families (Anderson, 1987). However, these variables were not among the five predictor

variables identified using Discriminant Function Analysis. Whipple and Webster-Stratton (1990) used a marital adjustment test to measure the quality of marital relationships but no reference to spousal abuse was included. However, the abusive mothers indicated significantly more marital distress than mothers in the control group. Based on significant bivariate relationships, a Stepwise Discriminant Function Analysis was used to determine a set of predictor variables that would most clearly differentiate between the abusive and control families. Marital adjustment was used in the analysis but was not a significant variable in the final predictive model.

Battering of women during pregnancy was studied by Campbell, Poland, Waller, & Ager (1992). The correlates of battering during pregnancy included anxiety, depression, housing problems, inadequate prenatal care, drug and alcohol abuse, and lack of support. As a result of their study, they recommended that the newborn baby of a woman battered during pregnancy be considered at risk for child abuse after birth.

Research supported the inclusion of family disruption as an important but not a particularly robust variable. Family violence is also an important variable that can alert the professional to the possibility of future child abuse.

Foster Care. Another variable in the family relationship cluster was the placement of the mother, as a child, in foster care. Altemeier et al. (1982) found that the incidence of living in foster care was eight times as frequent among mothers of abused children. Similarly, Oates, Forrest, and Peacock (1985) verified that seven of 33 abusive mothers had not been raised by their natural parents. These studies indicated that family disruption of some type had necessitated removal of the mother from her home of origin

Summary of Family Relationship Cluster. In considering the variables, marital status appears to be at the heart of the Family

Relationship Cluster and significantly related to potential to abuse. Intergenerational abuse is less portentous but important. Foster care is a less robust variable but often linked with intergenerational abuse. Marital status may change as a result of family disruption and the unhappy, stressful situation may relate to an increased potential to abuse. Single-parent families who lack support may become increasingly lonely and isolated. The interrelationships of marital disruption and marital status is evident as marital disagreements and unhappiness often result in a change in marital status from two-parent to one-parent families. Also, family disruption and intergenerational abuse in the parents' family of origin may influence the parents' coping behavior. Without a break in the cycle of violence, child abuse can be expected to continue from generation to generation. Foster care of the mother as a child often results from intergenerational abuse and family disruption. Intergenerational abuse may result in feelings of lack of support, especially if foster care of the mother as a child resulted from a disruptive and abusive family situation. Foster care may result from abuse in previous generations or from family violence in this generation. Abused children are usually removed from their parents. Today authorities may remove children even prior to the occurrence of abuse. The decision to apprehend may be based on the mother's history of previous parenting problems. Notification of birth alerts are sent to hospitals during a mother's pregnancy. If Child and Family Services have just cause to be concerned about an infant's welfare that newborn may be apprehended prior to discharge and placed in a foster home.

Psychological Cluster of Variables

This group of variables includes mental illness, mental retardation, self-esteem, hostility, loneliness/isolation, life change, drugs and alcohol, and criminality. Stress was not considered as a variable but as an outcome of the relationship between the individual and the variables.

Mental Illness. Spinetta (1978) and Steele and Pollock (1974) examined the role of psychological factors related to child abuse. Steele and Pollack, using a psychological clinical case method, reported that "with few exceptions our patients had emotional problems of sufficient severity to be accepted for treatment had they presented themselves at a clinic or psychiatrist's office" (p.95). Spinetta demonstrated that personality, although only one of many factors, did play a role as a determinant of child abuse. Brunnquell, Crichton, and Egeland (1981) examined personality and attitudinal variables in high risk and controls mothers prenatally and at 3 months. The significant psychological factors focused on the mother's lack of integration of the experiences of childbirth and childrearing, specifically the understanding and awareness of her infant, and her negative reactions to her pregnancy and her infant.

Greenland (1984) studied child abuse deaths in Ontario from 1973 to 1982. Of the 56 male perpetrators, two (4%) had mental illness. Of the 65 women perpetrators of abuse, seven (11%) had been formally diagnosed as mentally ill. No attempt was made to assess the significance of the data; however, the incidence appears to coincide with population norms for mental illness. Kluft (1987) studied abusive mothers with multiple personality disorders. Sixteen percent of the mothers were grossly abusive and 75 percent were psychologically abusive. Similarly, Kugler and Hansson (1988) found a relationship between depression and the risk of abuse. Meadow (1990) reviewed the cases of children who had been suffocated, nine of whom had died. Eight of the 27 mothers had a history of abnormal behaviour. In a study of families with a history of inter-generational abuse, Oliver (1985) found that 69% of the mothers and 39% of the fathers had received some type of psychiatric care. On the other hand, Hunter et al. (1980) found no relationship between major psychiatric illnesses and abusive families.

Egeland et al. (1988) found that anxiety and depression were

related to the inability of mothers who had abused their children to break the "cycle of abuse". In 1977, Lynch and Roberts found, in a study using a control group design, mental illness was a significant factor. Famularo et al. (1986) studied families of children who had been removed from their parents by court order, and a control group. No significant differences were found between the subjects and the controls on age, race, income, and marital status. Of the 50 subject parents, 16 (32%) showed a history of major affective disorders; of the 38 comparison parents, only five (13.2%) met the criteria for major affective disorders. Murphy et al. (1992) found that parents diagnosed as psychotic or having a character disorder were more likely to reabuse their children and return again to court. These parents failed to benefit from available services.

Estroff et al. (1984) studied psychiatrically referred and child maltreatment families. The child maltreatment mothers had more severe psychopathology. In a similar study of psychiatrically hospitalized children, Monane, Leitcher, and Lewis (1984) found that 69 of the 166 children had been abused. Parents of the abused children were reported to be significantly more psychiatrically impaired than the non-abusive parents.

Friedrich et al. (1985) studied a small sample of abusive and neglectful mothers and low-income controls. The control group tended to be less anxious, less hostile, more socialized, and reported less stress, emotional pain, and bizarre thoughts, and were less depressed, angry, and impulsive. The neglectful group was the most pathological of the three groups. Three other groups of researchers (Browne & Saqi, 1988; Leventhal, Gaber, & Brady, 1989; Whipple & Webster-Stratton, 1991) used Stepwise Discriminant Analysis. Browne and Saqi (1988) reported that a history of mental illness, drug, or alcohol addiction were predictive of abuse. However, this variable was only ninth on the results of the Stepwise Discriminant Function Analysis. Also Whipple

and Webster-Stratton (1991) found that depression and anxiety were significantly more prevalent in abusive than control group mothers.

In Munchausen Syndrome, a form of abuse, mothers fabricate their child's illness. As a result, incorrect diagnosis and treatment may follow, resulting in morbidity and even mortality for the child. Korbin (1987) interviewed 9 women and was a participant observer at a weekly self-help group. The retrospective design, small sample size, and self-reporting techniques were limitations of the study. However, the researcher found that many of these mothers had a distorted views of their children and their behavior; distorted perceptions of pregnancy; perceptions of rejections by the child; and instances of postpartum depression. Francis, Hughes, and Hitz (1992) attempted to develop a typology of psychological personality characteristics of abusive parents. Five clusters or types of abusers were: (a) shy, withdrawn, apprehensive, sober, and withdrawn; (b) normal in personality features; (c) compulsive and bold; (d) passive and submissive; (e) isolated, withdrawn, suspicious, tense, and apprehensive. No single psychological cluster was found that described all abusers.

Psychopathology, personality, or mental illness variables should be considered in planning a study to assess characteristics of abusive parents or the potential to abuse.

Mental retardation. Two studies (Leventhal et al., 1989; Oliver, 1985) included mental retardation of the parents as variables. In a cohort of abuse cases from 1979 to 1981, Leventhal et al. (1989) reported that mental retardation tended to be one of the frequently occurring characteristics of abusive mothers. However, only meagre descriptive data was included. Oliver (1985) studied 278 parents who had abused their children. They reported that 37 (13.3%) of the parents had subnormal intelligence (IQ's between 50 and 70); 28 were mothers. No statistics related to mental retardation in a control group or the larger population were included. Mental Retardation should be

considered when clinically assessing the potential to abuse and provisions made for continuing care for the mother and baby. However, the incidence of mental retardation in the population does not warrant inclusion of mental retardation as a separate predictive variable.

Hostility. Friedrich et al. (1985) studied hostility and abuse using the Multiple Affective Adjective Checklist. The abusive and neglectful mothers tended to be more hostile than the control mothers. In a Stepwise Discriminant Analysis, hostility was found to be a significant variable. In an observational study Oldershaw and Walters (1989) reported that hostile mothers were characterized by their high rates of ignoring and humiliating their children and frequently denying their child's request. Control mothers were significantly less hostile than the abusive mothers. In a similar study of maltreating adults and maltreated children, Herrenkohl, Herrenkohl, Toedter, and Yanushefski (1984) found that, after controlling for SES and personal characteristics, neglecting parents were found to be more hostile than non-neglecting, non-harsh parents. Similarly, Robitaille et al. (1985) found a relationship between authoritarianism and the rigidity subscale of the CAP Inventory but not the child abuse subscale.

Oates et al. (1985) studied mothers whose children suffered from child abuse and a group of mothers of similar social class but who had not been reported for abuse. No significant difference were found between the groups related to marital status, housing, financial problems or physical health. However, some significant differences were reported the abusive mothers: (a) were less likely to have been brought up by their own parents; (b) had more negative feelings toward their fathers; (c) were more likely to have received help for an emotional disorder; (d) had higher expectations for their children; (e) perceived a greater number of personality problems in their children; and (f) were more likely to have assertive, demanding, and suspicious personality traits. Oates and Forrest (1985) and Oates, Peacock, and Forrest (1984)

reported that, in the past and at the present time, significantly more abusive mothers had negative feelings toward their fathers. However, no significant differences were found related to negative feelings toward their own mothers.

Self-esteem. Self-esteem, experiences that teach a person that others can be asked for help and that oneself is worth helping, was lacking in abusive parents (Steele & Pollock, 1974). In some research related to self-esteem and abuse (Altemeier et al., 1982; Anderson, 1987; Oates & Forrest, 1985), no validated instruments were used. Anderson (1987) found that fewer of the abusers had positive self-esteem. Similarly, Oates and Forrest (1985) found that significantly more of the abusive group did not want their child to be like themselves or their partner. However, Altemeier et al. (1982) found that abusive mothers had only slightly less self-esteem. Mercer and Ferketich (1994) studied obstetrically high and low risk mothers. They found that self-esteem was a predictor of maternal competence for both groups.

In two other studies (Kugler & Hansson, 1988; Shorkey & Armendariz, 1985) the researchers used the Rosenberg Self-Esteem Scale. In the Kugler and Hansson study self-esteem scores were found to be lower for the abusive group of mothers. Shorkey and Armendariz (1985) did not find a difference between groups in self-esteem but rather in Rational Behavior Inventory scores. A group of abusing mothers were matched with respect to race, income, and education with control mothers of children in day care centres. Three variables (Rational Behavior Inventory (RBI), Negativism, and Anomia) significantly discriminated between the abuse and control groups. However, the RBI (the rationality of the subjects' belief system) was the most important contributing variable. At about the same time, Robitaille et al. (1985) found a relationship between child abuse potential as measured by Milner's CAP and abasement, a factor on the Edward Personality profile Schedule. Abasement consists of feelings of self-blame that tap into feelings of

poor self-esteem.

Loneliness/Isolation. Abusing parents have been described as tending to live lives that are alienated, asocial, and/or isolated (Steele & Pollock, 1974). Polansky, Ammons, and Gaudin (1985) and Kugler and Hansson (1988) studied parents using the Revised UCLA Loneliness Scale (Russell, Peplau, & Cutrona, 1980). The loneliness scale measures the subjects' perception of inadequate or dissatisfying social networks and intimate relationships. In both studies, the results of the Loneliness Scale were positive for mothers who had abused or were high risk to abuse. Polansky, Ammons, & Gaudin (1985) found that black and white, low income abusing mothers had significantly less affective, and instrumental support and were more lonely. However, Kugler and Hansson were unable to demonstrate any significant evidence of social isolation but attributed the result to the lack of a control group. Whipple and Webster-Stratton (1991) used the Marital Adjustment Test to assess parental social support in terms of the quality of the marital relationship. The results of the MAT were significantly different. The control "mothers' mother" relationship was reported to be significantly more supportive than the abusive mothers. Other researchers developed instruments to measure instrumental and affective support in relation to loneliness and abuse (Polansky, Gaudin, Ammons, & Davis, 1985). In addition, whether or not families were isolated was assessed by determining if they had access to a telephone and if their phone numbers were unlisted (Oates et al., 1984). Network size, frequency of contact, connections across subnetworks, and joint connection to the home subnetwork were found to be significantly related to abuse (Salzinger, Kaplan, & Artemyeff (1983).

Other researchers who included loneliness and/or lack of social support as variables, did not report the details of the instruments they used (Egeland & Brunnequell, 1979; Daniel et al., 1983; Hunter et al., 1980) or even information about descriptive data collection (Lealman et

al., 1983; Steele & Pollock, 1974). However, Egeland and Brunnequell and Hunter et al. had reported that a difference existed between control and abusive mothers related to social support.

Drugs, Alcohol, and Tobacco Use. The use of drugs, alcohol, and tobacco as variables was studied by several researchers (Browne & Sagi, 1988; Famularo et al., 1986,1992; Larson, Collet & Hanley, 1987; Murphy et al., 1991; Sumner, Mandoki, Matthews-Ferrari, 1993; Whipple & Webster-Stratton, 1991). In an early prospective study, Altemeier et al. (1982), using a sample of 23 abusive mothers from a study of 273 high-risk mothers, found no significant difference in the use of drugs and alcohol. However, Larson et al. used two Stepwise Linear Regressions procedures and found that the mother's education, attendance at prenatal classes, and smoking discriminated (cumulative R-squared = .34) parental dysfunction in the early prenatal period.

Famularo et al. (1986,1992) reported that alcoholism was a significant variable in physical child abuse whereas cocaine was a factor in sexual but not physical child abuse. Whipple and Webster-Stratton (1991) found that more abusive parents had a history of alcohol and drug use. Browne and Sagi (1988) used a larger sample and a Stepwise Discriminant Function analysis and reported that drug and alcohol addiction were significant variables.

Murphy et al. (1991) studied the compliance to court orders by 157 abusive parents, and 181 who either had their case dismissed or the child removed. The results demonstrated that drug or alcohol abuse were significant variables in whether or not parents rejected or accepted services or had their case dismissed or their child removed. Famularo et al. (1992) found that alcohol and drugs were related to whether mothers reabused their children after treatment. Similarly, Butler, Radia, & Magetta (1994) in a retrospective study noted that abusive parental risk factors included use of alcohol, substance abuse, and spousal violence, and these were associated with non-compliance with

court-orders for assessment.

Also, with the increasing use of drugs such as cocaine, Sumner et al. (1993) recommended that children exposed to cocaine prenatally should be identified as early to provide essential early intervention. Cocaine-exposed children whether detected prenatally or at birth appear to manage much better socially and emotionally.

Criminality. Several researchers examined abuse and criminal activity. Murphy et al. (1991) studied 206 cases of serious child abuse that involved court appearances of the parents. No reports of the parents previous involvement with the law were included. Oliver (1985) reported that 217 (78.1%) of 278 parents in a study of successive generations of child maltreatment had known criminal convictions. Similarly, Leventhal et al. (1989) reported that among the characteristics of mothers of children referred to the abuse registry was a history of jail confinement. In two studies (Anderson, 1987; Monane et al., 1984) the researchers used control groups and found that involvement with the law was significantly more prevalent in the abusive group. Altemeier et al. (1982) studied 1400 prenatal mothers; 23 of the mothers had abused their children and no criminality among the mothers was reported. Meadow (1990) studied 27 children who had been suffocated by their mothers (nine were dead). They found that none of the mothers had a criminal record. The retrospective design of the study and the small sample size may have been problematic.

Life Changes. Life events and change were studied by Conger, Burgess, and Barrett (1980). Abusive and control parents were matched on age, income, number of children, and education. Parents were requested to complete the Social Readjustment Rating Scale and the Cornell Medical Index (CMI). The abusive parents had higher scores on the life change scale, especially the personal injury or illness item. The researchers noted that life crisis had the most significant impact on respondents with a punitive history. The findings were consistent

with a social learning interpretation that abusers who had punitive parents probably experienced higher levels of punishment when their parents were faced with stressful situations. Clearly, the data suggested that a combination of abusive childhood experiences together with rapid life change may influence the occurrence of child abuse. Other variables closely related to stress were loneliness and lack of social support.

Stress. Is stress a predictor variable or an outcome response? Mikhail (1985) defined holistic stress as "a state which arises from an actual or perceived demand-capability imbalance in the organism's vital adjustment actions and which is partially manifested by a nonspecific response" (p.37). Mikhail proposed that if an imbalance is perceived between the demand and perceived capability, and the demand is important to the individual, then stress will occur. Individual differences compose a key component of Mikhail's theory of stress. The coping or adjustment of each individual is deemed to vary and is based upon the individual differences that exist within each person. Individuality contributes to the explanation of resilience. Not every person who experiences stress from poverty, abuse, or social isolation, abuses their children, experiences negative pregnancy outcomes, or fails to develop either physically or emotionally.

What are the stresses that can create an imbalance in the individual? One of the main sources of stress is poverty. Pelton (1981) pointed out that, although child abuse has been found in all social classes, "the vast majority of the families...live in poverty or near-poverty conditions" (p.26). Pelton added that public scrutiny cannot explain why child abuse and neglect were related to degrees of poverty, even within that same lower class and why the most severe injuries occurred in the poorest families. Lack of education, unemployment, poor and overcrowded housing, insufficient money, food, recreation, or hope, provide stressful environments.

In an early study (Gaines, Sandgrund, Green, & Power, 1978) three groups of low-socioeconomic mothers including those who were confirmed abusers, neglectful, and a control group researchers demonstrated that everyday stress was a factor. The abusive mothers scores higher on stress and neglectful mothers scored even higher. These mothers have difficulty meeting emotional needs and have retained a sense of coping failure. Egeland and Brunnuquell (1979) studied high-risk mothers who provided good quality care and mothers who abused their children. No difference in the amount of stress experienced by the two groups of mothers was found. This finding was questionable. For although equal numbers were on welfare, the majority of abusive mothers reported problems with welfare. Only two control mothers reported such problems. The abusive mothers experienced more stress of a chaotic and disruptive nature (family relationships), such as physical fighting, heavy drinking, abuse, or breakup with boyfriend. One area where the control mothers reported more stress was related to money problems as many of them had been working. Perry, Wells and Doran (1983) reported that perpetrators of abuse experienced more anxiety, impact of life stress, and both the perpetrating and non-perpetrating spouses experienced family conflict.

Famularo et al. (1986) reported that, although both the control group and the subjects had psychiatric problems, stress was not a direct factor but rather the outcome of individual differences. Hunter et al. (1980), in a retrospective study of 10 abusive and 245 non-abusive parents of graduates from a neonatal intensive care nursery, found that the incidence of major life changes during pregnancy was not a significant variable. However, marital status, precarious financial situations, and psychological problems were among the significant variables. Life changes had less impact or resulted in less stress than constant everyday predicaments.

One of the problems that existed in the selected studies was the

lack of a definition of stress and identification of the instruments used to measure stress. Friedrich et al. (1985) reported that the parents in their control group had less stress and emotional pain than abusive parents. Creighton (1985) indicated that marital discord was the most frequently quoted stress factor in their study. Finally, in a study of 1,209 cases of child abuse and 209 controls, black child abuse cases differed from their controls in several ways, including a generally more stressful living situation (Daniel et al, 1983).

However, none of these studies identified the instruments of measurement. Similarly, Anderson (1987) found that stress and life crisis were among the significantly discriminating characteristics of the abuse sample but no information was included about the instrument.

Whipple and Webster-Stratton (1991) used the Parenting Stress Index and found that Total Life change and Negative Life change were related to abuse. Herrenkohl et al. (1983) asked abusive mothers and controls to indicate the number of stresses they experienced. The abusive mothers reported more stresses. With an increased number of stresses, the discipline index became more severe. Finally Egeland et al. (1988) measured life stress using a 44-item checklist designed to assess the amount and degree of stressful life events in a group of mothers who had broken the abusive cycle and a group of mothers who had not. Life stress was significantly different between the groups at 18, 30, 42 and 64 months but not at 12, 48, and 54 months. Stress may be considered as a variables, however, I have chosen to consider stress as a possible outcome rather than a predictor variable.

Summary of the Psychological Variable Cluster. The Psychological Cluster was complicated to assess. Mental illness such as depression or schizophrenia was an important significant variable. However, psychological variables such as self-esteem and hostility were also considered to be related to abuse. Other researchers (Milner & Wimberley, 1979, 1980; Monaghan et al., 1986) referred to psychological

variables (mental illness, including mental retardation, self-esteem, and hostility) under the heading emotional distress. The impact of emotional distress may result in individually different responses but can be correlated with abuse. Emotional distress can be related to variables in other clusters such as intergenerational abuse, low SES, separation, and parity. Loneliness/isolation are also closely associated with emotional distress. As well, mothers who experienced intergenerational abuse may be hostile and angry, lack social support, and cope with their children as they were taught. Variables in other clusters such as family disruption and separation can impact on emotional distress, and increase the isolation and loneliness of mothers. In turn, isolation and loneliness in difficult and disruptive family situations can limit an individual's access to help and are related to an increased potential to abuse.

Drug, alcohol, and tobacco use may be linked to emotional distress and correlated with the individuals' potential to interact with their children in an abusive way. Criminality, abuse of drugs and alcohol often represent ways of coping with difficult situations. These patterns of coping may lead to isolation and loneliness as they violate the accepted values of the majority of society. Parents who learn to cope with their problems in this recalcitrant way may develop a lack of emotional control and an increased potential to batter their children.

Not only are variables within this cluster related to emotional distress, to each other, and to abuse but also to variables from other clusters such as SES, family disruption, and interference with maternal-child attachment. As increasing numbers of variables impact on a mother, her feelings of stress increase and her potential to abuse increases.

Maternal-Child Variable Cluster

The final cluster of variables consists of maternal and child interaction variables. These variables, cited in the selected studies,

included: attachment, separation, unwanted pregnancy parity, prenatal care, type of delivery, breastfeeding, child developmental problems, birth weight, length of hospital stay, age of child/gestation, APGAR, sex, and parental expectations.

Attachment. Attachment, or a positive mother-child relationship and parental expectations was studied. Browne and Saqi (1988a, 1988b) found that abusers had significantly more negative perceptions of their children and fewer positive interactions and were more likely to have an insecure attachment with their children than low-risk or high-risk mothers. Whereas Altemeier et al. (1982) reported that abusive mothers had not overestimated or underestimated any of their child's milestones compared to control group mothers. Egeland and Brunnuell (1979) found that mothers who provided good quality care were significantly more understanding of the psychological complexity of the infant and of their relationship with the infant. Kimball et al. (1980) compared family interaction in single and two-parent abusive, neglectful, and control families. Single-parent families exhibited a rate of negative behavior over 70% higher than that of two-parent families. However, this difference was especially noticeable within both the abusive and control families. In social interactions, abusive mothers displayed strikingly more power assertive parenting techniques, while the control mothers used significantly more positively-oriented interactions (Oldershaw et al., 1989). Similarly, control group mothers engaged in more tactile and auditory stimulation and a greater variety of tactile and vestibular strategies than the abusive mothers (Dietrich, Starr, & Kaplan, 1980).

Other researchers (Drotar, Eckerle, Satola, Pallota, & Wyatt, 1990) found that the behaviour of mothers of failure-to-thrive infants one month after hospitalization was rated as having less than optimal sensitivity, accessibility, acceptance, cooperation, delight, and emotional expression. In addition, mothers of these failure-to-thrive infants demonstrated more arbitrary termination of feedings than mothers

of healthy children.

In studies by Browne and Saqi (1987,1988) significantly more abusing parents were indifferent, intolerant, or overanxious than non-abusing parents. Non-abusing mothers had less coercive styles of interaction with their children than the abusive mothers who acted intrusively.

Lynch and Roberts (1977) found that 22 abusive mothers expressed concern about their ability to cope with their baby's physical or emotional needs as compared with only three control mothers. The Ainsworth strange situation procedure was used and the results demonstrated a significant difference in mother-infant attachment at 12 months. However, by 18 months the difference had improved (Egeland & Sroufe, 1981). Parents of neonates admitted to an intensive care nursery and later abused, were reported to have visited their infant significantly less frequently than parents of non-abused babies, even though the percentage of families living at a distance was similar (Hunter et al., 1980).

Multivariate studies confirmed differences between abusive, neglectful, and control mothers on measures of maternal physical and verbal aggression (Bousha & Twentyman, 1984). Mothers of abused children found their children more "difficult", punished and praised their children less often, and were less apt to feel guilty after punishing their child (Dubowitz et al., 1987). An infant's cry that lasts for 60 seconds could be irritating, a sign of distress, and demanding (Friedrich et al., 1985). The results of a Discriminant Function Analysis demonstrated that the mothers' ratings of the cry as irritating, angry, and demanding significantly distinguished between the abusive, neglectful, and control groups. In two groups of non-parent adults, Crowe and Zealand (1992) found that adults in Milner's high Child Abuse Potential group responded to infant crying in similar ways to those of parents with histories of physically abusive interactions

with their infants. Interactions between mothers and babies are important variables to observe.

Separation. A closely related variable that could conceivably interfere with attachment between mother and child was separation (Steele & Pollock, 1974). Using a Stepwise Discriminant Function Analysis Browne and Sagi (1988) demonstrated that infants in abusing families were more likely to be separated from their mothers for greater than 24 hours after delivery. In a sample of 28 abused children without siblings, 52 abused children with siblings, and 102 controls, the abused children experienced more separations in their first year than the control group (Carter & Easton, 1980). Neonatal illness was a distinguishing factor that necessitated separation between mother and child. Lynch, Roberts, and Gordon (1976) found that 59% of 29 abused children but only 24% of 55 non-abused children had been in a special care nursery after birth. Groothuis et al. (1982) pointed out that twins had longer nursery stays and were more likely to be abused than singletons.

Two additional studies (Hunter et al., 1980; Leventhal et al., 1989) supported the hypothesis that separation of mother and infant was associated with abuse. Hunter et al. found that infants who remained in hospital more than 40 days were at risk for abuse. Leventhal et al. cited an increased risk of abuse for infants who remained more than five days.

However, as a contrast, Troy (1993) reported that feelings of attachment began when the infant was held regardless of how long after delivery the holding occurred. Benedict and White (1985) found that length of hospital stay at birth was not related to later abuse. Although no length of stay was included, Siegel et al. (1980) found that whether or not infants were placed in the observation nursery provided no data to support a relationship between reports of abuse and early separation of mother and infant. Even though some differences exist in

determining the significance of separation, this variable should be considered in attempting to determine predictors of abuse.

Unwanted Pregnancy. For a variety of reasons, unplanned pregnancy can be an added stressor. As a result, a mother may abuse her unwanted child as a way of coping with that stress. In one of two univariate studies Altemeier et al. (1982) found that: (a) abusive mothers didn't want the baby when the pregnancy was confirmed; (b) the pregnancy was definitely not planned or planned primarily for selfish purposes; (c) and abusive mothers wished they were not pregnant. Hunter et al. (1980) found more of the mothers who abused their infants had seriously considered abortion.

In one of two multivariate studies, Egeland and Brunnequell (1979) using Discriminant Function Analysis found that 'negative reactions to pregnancy' were included in the predictive model for abuse. A correct classification was achieved 85% of the time. Zuravin (1988) used logistic regression to demonstrate that unplanned pregnancy was one of five significant fertility patterns that reflected differences between abusive and control mothers. However, when the groups were compared using four and five fertility patterns plus relevant demographic characteristics, unplanned pregnancy was the only variable that failed to retain its individual effect.

We should be sensitive to the fact that an unplanned pregnancy may or may not be an unwanted pregnancy. A couple may be surprised when the wife becomes pregnant but may be ecstatically happy, while another couple may find that the child will be a burden and increase their daily stress. Although, the unplanned pregnancy can be a problem, the unwanted pregnancy is a variable that should be considered in future abuse research.

Parity. Parity is the number of living children a mother has. In a descriptive study, Oliver (1985) examined intergenerational abuse in 147 abusive families and reported that each mother averaged 4.2

children. Using a univariate design, Leventhal et al. (1989) found that more of the comparison mothers were primiparous, and that abusive families had at least three children less than five years of age at home (39%). Similarly, Zuravin (1988) revealed that more abusive and neglectful mothers spaced their first two children closer together, had their first child earlier, and had more unplanned live births. In seven other univariate studies, researchers reported differences between abusive and control group mothers related to parity at more robust levels of significance: more than one child under the age of five (Altemeier et al., 1982); more than one child in the family (Herrenkohl et al., 1983); inadequate child spacing (Hunter et al., 1980); abused children were three times as likely as the national average to be living in families with four or more children (Creighton, 1985); and the mean number of children in neglected families was 4.6, in controls 3.11 (Polansky, Ammons, & Gaudin, 1985).

Parity before the birth of the study infant was significantly higher in the twin than in the singleton group (Groothuis et al., 1982), and twins were significantly more likely to be abused (Nelson & Martin, 1985). On the other hand, researchers (Lynch & Roberts, 1977; Lynch et al., 1976; Dietrich et al., 1980; Siegel et al., 1980) found that parity was not significantly related to abuse. Greenland (1984) studied deaths of children due to child abuse and neglect. He reported that the size of the 100 families studied corresponded to the expected distribution shown in the 1981 census data.

In several multivariate studies (Anderson, 1987; Browne & Saqui, 1988; Friedrich et al., 1985) parity was included as a variable. Although Friedrich et al. verified that the total number of children was a significant variable in abuse, parity was not used in subsequent multivariate analysis. No significant relationship was confirmed using multivariate statistical procedures to indicate a positive role for parity as a predictor of abuse. However, enough evidence (Altemeier et

al., 1982; Groothuis et al., 1982; Polansky, Ammons, et al., 1985) existed to consider the inclusion of parity in future research. Parity, the mother's attachment to her child, and her propensity to abuse were related to differing degrees.

Prenatal Care. Three researchers (Anderson, 1987; Egeland & Brunnuquell, 1979; Hunter et al., 1980) examined prenatal care as a variable. Hunter reported that abusive mothers of premature infants had fewer than three prenatal visits. In a prospective study, Egeland and Brunnuquell found that 100% of control mothers and only 30% of abusive mothers attended prenatal classes. Similarly, Anderson reported that prenatal care was different for abusive and control mothers. However, neither Anderson nor Egeland and Brunnuquell found that prenatal care was a significant predictor variable in Discriminant Functional Analysis. Lack of prenatal care, including prenatal education, may be a predictor of a mother's attachment to her unborn child and her propensity to abuse.

Type of Delivery. Researchers (Egeland & Brunnuquell, 1979; Groothuis et al., 1982; Hunter et al., 1980; Oates et al., 1984) found no significant differences between the abusive and control group mothers related to type of delivery or complications. However, Rourke (1991) reported that significantly more abusive mothers had delivered their babies vaginally. A logistic regression using significant variables including type of delivery the correct classification rate was 84.16 percent (model R-squared = .3602).

Birth Weight/Gestational Age. Birth weight and gestational age are closely related; the lower the gestational age (weeks of pregnancy), the lower the birth weight. Benedict and White (1985) found that abusive mothers had a higher proportion of low birth weight babies and were more likely to have babies delivered at less than 32 weeks than non-abusive mothers. Browne and Saqi (1988) and Hunter et al. (1980) reported that low birth weight premature infants were significantly more

likely to have lower gestational age and to be abused than normal weight infants. In a study that controlled for social class, Creighton (1985) found that abused children had a lower birth weight than the national distribution. On the other hand, several researchers (Benedict & White, 1985; Egeland & Brunnuquell, 1979; Leventhal et al., 1989) found no difference between birth weight and gestational age of abused and non-abused infants. Birth weight and gestational age may be examined in future studies to replicate or reject the results of previous studies.

APGAR Scores. APGAR scores, used to assess the well-being of the infant at birth, were included in some studies. In their study of twins and singletons, Nelson and Martin (1985) reported that a number of the twins had low five minute APGARs, were born prematurely, had low birth weights, and had long nursery stays. Groothuis et al. (1982) and Robarge et al., (1982) agreed that five minute APGAR scores and birth weight were significantly lower in twins than in control groups. However, they concluded that the impact of twin status on abuse was greater than the impact of APGAR scores, parity, length of nursery stay, or birth weight. Similarly, Dietrich et al. (1980), Benedict and White (1985), Benedict et al., (1990) found no significant association between APGAR scores and abuse. No serious evidence was included to support the inclusion of APGAR as a predictor variable of abuse.

Breastfeeding. Egeland and Brunnuquell (1979) found that 73% of control mothers intended to breastfeed, compared to only 27% of the abusive/neglectful mothers. The actual feeding practices at three months indicated 59% of the control and 9% of the inadequate mothers breastfed their children. Larson et al., (1987) included the source of infant feeding/breastfeeding as a variable in a tool (Positive Predictive Value of 0.53) to identify mothers at risk to abuse their children. How breastfeeding and attachment might be correlated with each other and abuse should be considered in future research to predict potential to abuse.

Developmental Problems. The developmental problems included developmental disability, congenital defects, and retardation. Three studies that had relatively large samples of disabled children were cited. Benedict et al. (1990) reported that child functional and developmental characteristics were not confirmed as risk factors. Contrary to expectations, more severely disabled children appeared less at risk than did disabled children functioning at a more age-appropriate level, for example, eating patterns. No significant differences were found between abused and non-abused children based on mental or physical handicaps (Browne & Sagi, 1980) or the presence of malformations (Benedict & White, 1985).

Dietrich et al., (1980) studied 14 abused and 14 control mother-infant dyads. The results of developmental examinations revealed that the abused infants scored significantly less on the developmental index. Dubowitz et al., (1987) studied 25 abused and 90 non-abused children injured due to accidents. The abused children were significantly less likely to be reported as enjoying good health and were below age in general self-help skills whereas no differences were found related to locomotion and communication. Hunter et al. (1980) found that families ($n = 10$) reported for abuse were significantly more likely to have infants with congenital defects than the non-reported group ($n = 245$). Inconclusive evidence existed supporting developmental problems as a significant variable in child abuse research.

Sex of Child. Several researchers (Leventhal et al., 1989; Oakes et al., 1984; Oates & Forrest, 1985; Oldershaw et al., 1989; Stringer & La Greca, 1985) studied the relationship between child abuse and/or child abuse potential and the sex of the child. Stringer and La Greca (1985) in a study of mother-child dyads that mothers' reports of their sons' anxiety-withdrawal and conduct-disorder behavior problems were related to abuse potential.

On the other hand, Hampton and Newberger (1988) studied the

reporting patterns of hospitals and other agencies and found no difference with respect to sex of the child and abuse. Similarly, sex as a variable was included in other studies (Daniel et al., 1983; Egeland & Brunnuquell, 1979; Herrenkohl, Herrenkohl, Toedter, & Yanushefski, 1984; Hunter et al., 1980; Murphy et al., 1991) but no significant association with abuse was authenticated. In more recent studies (Hampton & Newberger, 1988; Murphy et al., 1991), sex of the child was not a robust variable, and was of questionable value as a predictor of abuse.

On the other hand, Creighton (1985) studied 6,532 children placed on the abuse registry in England between 1977 and 1982. Boys were overrepresented among physically abused and neglected children. Similarly, Muller and Hunter (1993) found that boys especially those with provocative behaviour received more abusive parenting than girls.

Age of child. Several researchers found an association between age and abuse. Children under 18 months were more likely to be abused (Dubowitz et al., 1987). Victims of abuse were significantly younger (55% were under one year of age) than the victims of an accident group (Daniel et al., 1983). Creighton (1985) reported that 57% of 4329 abused children were between zero and four years and the mean age of fatally injured children was one year, seven months. Similarly, Kotch et al. (1993) found that more of the children who had died from physical abuse were between less than one year and under four years of age. Murphy et al. (1991) studied parents who abused alcohol and drug abuse. The risk-rated abuse sample had a higher percentage (49%) of children zero to two years of age than the group not-at-risk for abuse. On the other hand, Friedrich et al., (1985) found no significant differences between the abusive, neglectful, and control mothers related to the age of the child. Even so, the majority of studies indicated the vulnerability of young children.

Summary of Maternal-Child Relationship Variable Cluster. Some of the variables cited (APGAR scores, and sex of the child) are not included due to lack of significant correlation with abuse. Age of the child is not significant if the proposed research is related to potential to abuse in the perinatal period. However, abuse of young children is a reason for studying pregnant woman and their potential to abuse so that high-risk mothers can learn about and improve their parenting skills prior to the birth of their baby.

The Maternal-Child Variable Cluster is another complex cluster. Without attachment, prevention of abuse would be difficult to achieve, and abuse would seem likely to increase. The mother and child relationship focuses on closeness/attachment. Variables from other clusters such as family disruption, mental illness, lack of support, and low SES can interfere with attachment and increase stress. Loneliness and isolation can hinder the attachment of mother and child and possibly increase the hostility of the mother toward the child. A mother with low self-esteem may not feel capable of caring for her child, may neglect her child, and even lose the child to foster care. Thus tentatively destroying any attachment that may exist. Similarly, separation of the family members and especially the mother and baby has potential psychological effects on individuals within the family. Another attachment problem is unwanted pregnancy. If a mother rejects her baby before its birth, problems of attachment may continue and potential to abuse increases.

Another important variable is parity. The number of children or parity has the potential to increase stress, decrease strong attachment to the new infant, increase family expenses, and increase family disruption. Both separation and parity are related to attachment and to the potential to abuse. The greater the number of children a mother has, the less time she may have to develop her attachment to the new baby. If the new baby is separated from its mother due to problems at

birth, the more vulnerable their relationship will be and the higher the risk of abuse.

Lack of prenatal care, low birth weight/ gestational age, disinterest in breastfeeding, and developmental problems emerge and are related to abuse less portentously. Separation of mother and baby may be related to other variables such as, lack of prenatal care and education, low birth-weight, and developmental problems. Similarly, a lack of interest in breastfeeding may be related to an unwanted pregnancy and/or the mother's already large number of children. These variables may individually or in any of many combinations interfere with attachment and increase the potential for abuse.

Although not included in any studies, the relationship between prenatal maternal attachment to the fetus and later child abuse might be a variable to consider. Unwanted pregnancy, lack of prenatal care, and disinterest in breastfeeding may be indicators of a problem with attachment to the fetus in the prenatal period. Babies born at an early gestational age will have lower birth weights, and are more likely to have developmental problems. In addition, these babies will probably be separated for varying lengths of time from their mothers due to their health problems at birth, thus interfering with attachment. The potential of mothers to abuse their infants may be augmented as separation increases, attachment decreases, and other stresses are added.

Conclusion

The purpose of the paper was to critically review variables related to the potential to abuse. Four clusters of variables were identified: Demographic, Family Relationships, Psychological, and Maternal-Child Interaction Clusters (see Appendix A). A summary of the variables is presented in Table 1. The most common variables identified by multivariate statistical procedures are marked with an asterisk. Most of the variables are appropriate for inclusion in future research.

Insert Table 1 about here

Prevention of child abuse should begin long before a child is born. The prenatal period provides an opportunity to enhance the knowledge that a mother may need to cope with the stress of life and to protect her child. The clusters of variables is a path for the researcher and clinician to follow in their search for answers and solutions to the prevention of child abuse. Thus, the earlier we can predict potential to abuse, teach parents how to love and care for their children, and ensure that protection is available for the children, the greater our chance of eliminating the abuse of our children.

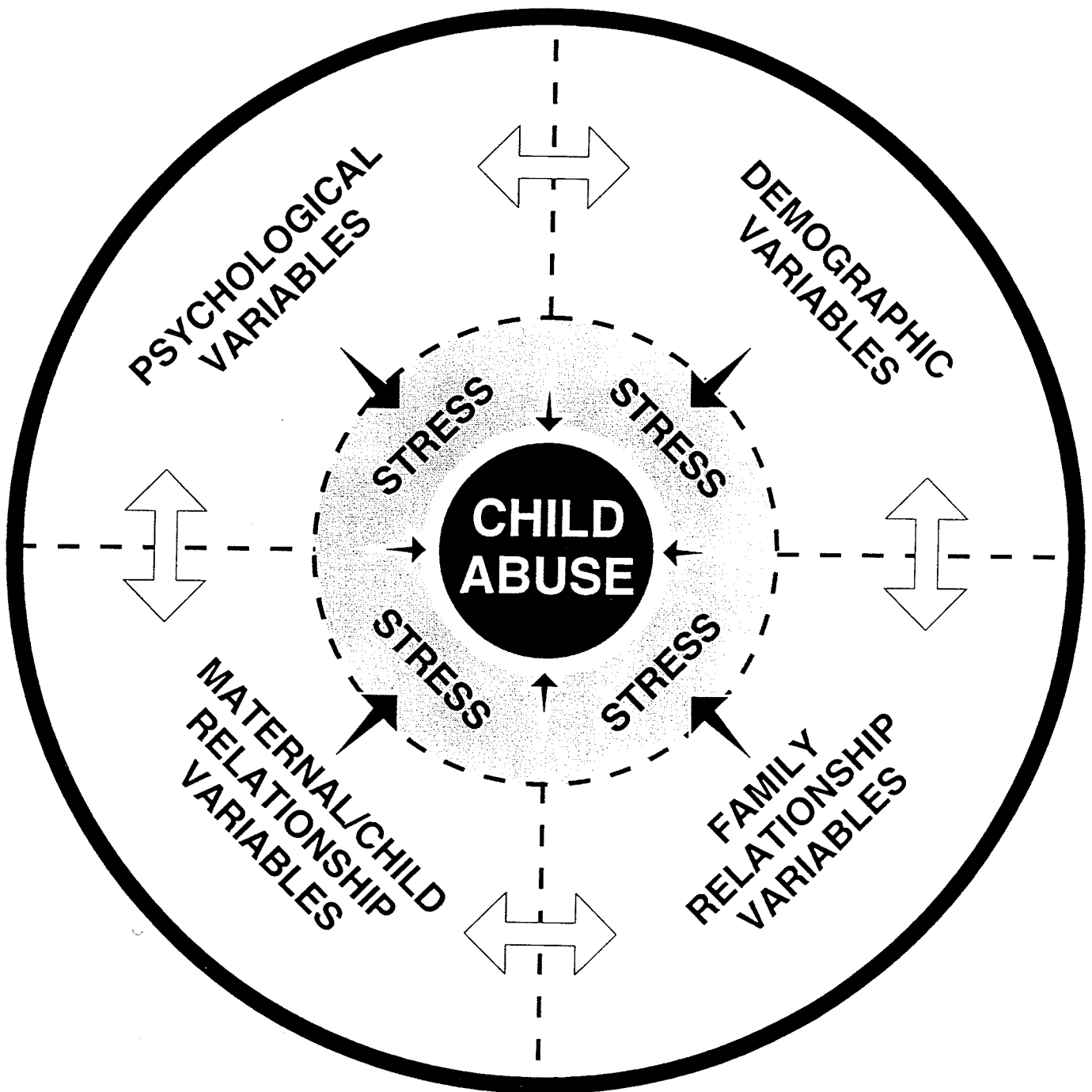
Table I

Summary of Clusters of Variables

Cluster	Variable
Demographic Cluster	SES (income and education)* Employment Ethnicity* Living conditions Age Transiency
Psychological Cluster	Emotional Distress (mental illness/retardation; self-esteem; hostility)* Isolation/loneliness* Life Change Events Criminality Drug, Alcohol, and Tobacco Abuse
Family Relationship Cluster	Marital Status* Intergenerational Abuse Foster Care Family disruption/violence*
Maternal-Child Cluster	Attachment (separation, unwanted pregnancy)* Parity* Lack of prenatal education/care Birth weight - gestational age Disinterest in breastfeeding

Appendix A

Antecedents of Child Abuse



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APPENDIX C- The Child Abuse Potential Inventory (abuse 221-225)

Appendix C
The Child Abuse Potential Inventory
(Milner, 1986)

QUESTIONNAIRE

Joel S. Milner, Ph.D.
Copyright, 1977; Revised Edition, 1982; Form VI
Printed in the United States

abuse 222

File #: _____

Date: _____
 year mo. day

Birthdate: _____
 year mo. day

Age: _____ Sex: Male _____ Female _____

Marital Status: Sin _____ Mar _____ Sep _____ Div _____ Wid _____

Highest Grade Completed: _____

Race: Black _____ White _____ Hispanic _____ Am. Ind. _____

Other (specify) _____

List by age and sex all children living in home:

1. _____	Male _____	Female _____
age		
2. _____	Male _____	Female _____
age		
3. _____	Male _____	Female _____
age		
4. _____	Male _____	Female _____
age		
5. _____	Male _____	Female _____
age		
6. _____	Male _____	Female _____
age		
7. _____	Male _____	Female _____
age		

INSTRUCTIONS: The following questionnaire includes a series of statements which may be applied to yourself. Read each of the statements and determine if you **AGREE** or **DISAGREE** with the statement. If you agree with a statement, circle **A** for agree. If you disagree with a statement, circle **DA** for disagree. Remember to read each statement; it is important not to skip any statement.

●0000

- | | | |
|---|---|----|
| 1. I never feel sorry for others | A | DA |
| 2. I enjoy having pets | A | DA |
| 3. I have always been strong and healthy | A | DA |
| 4. I like most people | A | DA |
| 5. I am a confused person | A | DA |
| 6. I do not trust most people | A | DA |
| 7. People expect too much from me | A | DA |
| 8. Children should never be bad | A | DA |
| 9. I am often mixed up | A | DA |
| 10. Spanking that only bruises a child is okay | A | DA |
| 11. I always try to check on my child when it's crying | A | DA |
| 12. I sometimes act without thinking | A | DA |
| 13. You cannot depend on others | A | DA |
| 14. I am a happy person | A | DA |
| 15. I like to do things with my family | A | DA |
| 16. Teenage girls need to be protected | A | DA |
| 17. I am often angry inside | A | DA |
| 18. Sometimes I feel all alone in the world | A | DA |
| 19. Everything in a home should always be in its place | A | DA |
| 20. I sometimes worry that I cannot meet the needs of a child | A | DA |
| 21. Knives are dangerous for children | A | DA |
| 22. I often feel rejected | A | DA |
| 23. I am often lonely inside | A | DA |
| 24. Little boys should never learn sissy games | A | DA |
| 25. I often feel very frustrated | A | DA |

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- | | | |
|--|---|----|
| 26. Children should never disobey | A | DA |
| 27. I love all children | A | DA |
| 28. Sometimes I fear that I will lose control of myself | A | DA |
| 29. I sometimes wish that my father would have loved me more | A | DA |
| 30. I have a child who is clumsy | A | DA |
| 31. I know what is the right and wrong way to act | A | DA |
| 32. My telephone number is unlisted | A | DA |
| 33. The birth of a child will usually cause problems in a marriage | A | DA |
| 34. I am always a good person | A | DA |
| 35. I never worry about my health | A | DA |
| 36. I sometimes worry that I will not have enough to eat | A | DA |
| 37. I have never wanted to hurt someone else | A | DA |
| 38. I am an unlucky person | A | DA |
| 39. I am usually a quiet person | A | DA |
| 40. Children are pests | A | DA |
| 41. Things have usually gone against me in life | A | DA |
| 42. Picking up a baby whenever he cries spoils him | A | DA |
| 43. I sometimes am very quiet | A | DA |
| 44. I sometimes lose my temper | A | DA |
| 45. I have a child who is bad | A | DA |
| 46. I sometimes think of myself first | A | DA |
| 47. I sometimes feel worthless | A | DA |
| 48. My parents did not really care about me | A | DA |
| 49. I am sometimes very sad | A | DA |
| 50. Children are really little adults | A | DA |
| 51. I have a child who breaks things | A | DA |
| 52. I often feel worried | A | DA |
| 53. It is okay to let a child stay in dirty diapers for a while | A | DA |
| 54. A child should never talk back | A | DA |
| 55. Sometimes my behavior is childish | A | DA |
| 56. I am often easily upset | A | DA |
| 57. Sometimes I have bad thoughts | A | DA |
| 58. Everyone must think of himself first | A | DA |
| 59. A crying child will never be happy | A | DA |
| 60. I have never hated another person | A | DA |
| 61. Children should not learn how to swim | A | DA |
| 62. I always do what is right | A | DA |
| 63. I am often worried inside | A | DA |
| 64. I have a child who is sick a lot | A | DA |
| 65. Sometimes I do not like the way I act | A | DA |
| 66. I sometimes fail to keep all of my promises | A | DA |
| 67. People have caused me a lot of pain | A | DA |
| 68. Children should stay clean | A | DA |
| 69. I have a child who gets into trouble a lot | A | DA |
| 70. I never get mad at others | A | DA |

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- | | | |
|---|---|----|
| 71. I always get along with others | A | DA |
| 72. I often think about what I have to do | A | DA |
| 73. I find it hard to relax | A | DA |
| 74. These days a person doesn't really know on whom one can count | A | DA |
| 75. My life is happy | A | DA |
| 76. I have a physical handicap | A | DA |
| 77. Children should have play clothes and good clothes | A | DA |
| 78. Other people do not understand how I feel | A | DA |
| 79. A five year old who wets his bed is bad | A | DA |
| 80. Children should be quiet and listen | A | DA |
| 81. I have several close friends in my neighborhood | A | DA |
| 82. The school is primarily responsible for educating the child | A | DA |
| 83. My family fights a lot | A | DA |
| 84. I have headaches | A | DA |
| 85. As a child I was abused | A | DA |
| 86. Spanking is the best punishment | A | DA |
| 87. I do not like to be touched by others | A | DA |
| 88. People who ask for help are weak | A | DA |
| 89. Children should be washed before bed | A | DA |
| 90. I do not laugh very much | A | DA |
| 91. I have several close friends | A | DA |
| 92. People should take care of their own needs | A | DA |
| 93. I have fears no one knows about | A | DA |
| 94. My family has problems getting along | A | DA |
| 95. Life often seems useless to me | A | DA |
| 96. A child should be potty trained by the time he's one year old | A | DA |
| 97. A child in a mud puddle is a happy sight | A | DA |
| 98. People do not understand me | A | DA |
| 99. I often feel worthless | A | DA |
| 100. Other people have made my life unhappy | A | DA |
| 101. I am always a kind person | A | DA |
| 102. Sometimes I do not know why I act as I do | A | DA |
| 103. I have many personal problems | A | DA |
| 104. I have a child who often hurts himself | A | DA |
| 105. I often feel very upset | A | DA |
| 106. People sometimes take advantage of me | A | DA |
| 107. My life is good | A | DA |
| 108. A home should be spotless | A | DA |
| 109. I am easily upset by my problems | A | DA |
| 110. I never listen to gossip | A | DA |
| 111. My parents did not understand me | A | DA |
| 112. Many things in life make me angry | A | DA |
| 113. My child has special problems | A | DA |
| 114. I do not like most children | A | DA |
| 115. Children should be seen and not heard | A | DA |

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116.	Most children are alike	A	DA
117.	It is important for children to read	A	DA
118.	I am often depressed	A	DA
119.	Children should occasionally be thoughtful of their parents	A	DA
120.	I am often upset	A	DA
121.	People don't get along with me	A	DA
122.	A good child keeps his toys and clothes neat and orderly	A	DA
123.	Children should always make their parents happy	A	DA
124.	It is natural for a child to sometimes talk back	A	DA
125.	I am never unfair to others	A	DA
126.	Occasionally, I enjoy not having to take care of my child	A	DA
127.	Children should always be neat	A	DA
128.	I have a child who is slow	A	DA
129.	A parent must use punishment if he wants to control a child's behavior	A	DA
130.	Children should never cause trouble	A	DA
131.	I usually punish my child when it is crying	A	DA
132.	A child needs very strict rules	A	DA
133.	Children should never go against their parents' orders	A	DA
134.	I often feel better than others	A	DA
135.	Children sometimes get on my nerves	A	DA
136.	As a child I was often afraid	A	DA
137.	Children should always be quiet and polite	A	DA
138.	I am often upset and do not know why	A	DA
139.	My daily work upsets me	A	DA
140.	I sometimes fear that my children will not love me	A	DA
141.	I have a good sex life	A	DA
142.	I have read articles and books on child rearing	A	DA
143.	I often feel very alone	A	DA
144.	People should not show anger	A	DA
145.	I often feel alone	A	DA
146.	I sometimes say bad words	A	DA
147.	Right now, I am deeply in love	A	DA
148.	My family has many problems	A	DA
149.	I never do anything that is bad for my health	A	DA
150.	I am always happy with what I have	A	DA
151.	Other people have made my life hard	A	DA
152.	I laugh some almost every day	A	DA
153.	I sometimes worry that my needs will not be met	A	DA
154.	I often feel afraid	A	DA
155.	I sometimes act silly	A	DA
156.	A person should keep his business to himself	A	DA
157.	I never raise my voice in anger	A	DA
158.	As a child I was knocked around by my parents	A	DA
159.	I sometimes think of myself before others	A	DA
160.	I always tell the truth	A	DA

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Appendix D

Short Self-Administered Prenatal Questionnaire

SHORT SELF-ADMINISTERED PRENATAL QUESTIONNAIRE (SSPQ)

CODE NO. _____ HOSPITAL NO. MOTHER _____ HOSPITAL NO. BABY _____

Circle your answer or fill in the space

1. How old are you (in years)? _____ [] [] []

2. How many years did you go to school?

a) Grade School/High School

Number of years completed

[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] [11] [12] [13]

b) Trade School/Community College

[0] [1] [2] [3] [4]

c) University

[0] [1] [2] [3] [4] [5] [6] [7] [8] [9]

Degrees obtained

[] [] []
[] [] []
[] [] []

3. What is your ethnic background?

[1] White

[2] Aboriginal/Native

[3] Inuit

[4] Asian

[5] Black

[6] Other (explain) _____

[]

4. Number of places where you have lived in last two years?

[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] []

[] [] []

5. Have you a phone where you live?

[1] Yes [2] No

[]

6. Your present marital status.

[1] Never Married

[2] Married

[3] Common Law

[4] Separated

[5] Divorced

[6] Widowed

[]

7. How many prenatal classes have you ever attended during this or other pregnancies?

[0] [1] [2] [3] [4] [5] [6] [7] [8] [9] [10] [11] [12] [more]

[] [] []

8. How many children live with you in your home?

[0] [1] [2] [3] [4] [5] [6] [7] [8]

[]

Number of Children

_____ Under 5 years of age

_____ 5 to 13

_____ 14 to 18

[]

9. What is your family income?

[1] 0 to \$9,999

[2] Social Assistance/Welfare

[3] \$10,000 to \$19,999

[4] \$20,000 to \$39,999

[5] \$40,000 & over

[]

10. Have you ever felt sad or upset for a long period and had to spend time in hospital for this?

[1] Yes [2] No

[]

11. Did you plan to be pregnant?

[1] Yes [2] No

[]

12. Are there any adults in your home who hit, punch, slap, bite, or scratch when they get angry?

[1] Yes [2] No

[]

13. Were you ever beaten or injured by your parents?

[1] Yes [2] No

[]

Have you ever been physically abused, neglected or sexually abused as a child?

[1] Yes [2] No

[]

14. Have you drank alcohol since you became pregnant?

[1] Yes [2] No

[]

If yes, approximately how many drinks per day?

[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] [more]

[][]

Have you used tobacco since you became pregnant?

[1] Yes [2] No

[]

If yes, approximately how many cigarettes did you smoke per day?

[____] cigarettes per day

[]

Have you used drugs since you became pregnant?

[1] Yes [2] No

[]

If yes, which drugs? Circle one or more:

Cocaine

Heroin

Methadone

Speed

Marijuana

Gas/Glue

Other (list) _____

If yes, approximately how many times per day?

[____] times per day

15. Would you like your baby to grow up to be like you?

[1] Yes [2] No

[]

16. Who helps you when you need help? Write their initials and how they are related to you.

☐ No one

Person

Relationship

Satisfied with support

[]

A _____

Yes No

B _____

Yes No

C _____

Yes No

D _____

Yes No

How satisfied are you overall with the support you receive?

[0] Very Satisfied

[1] Fairly Satisfied

[2] A Little Satisfied

[3] A Little Dissatisfied

[4] Fairly Dissatisfied

[5] Very dissatisfied

[]

Thank you for your time and effort

Appendix E

Information Letter to Physicians

Re: Study of Prenatal Assessment of Parenting Potential.

Thank you for agreeing to allow me to discuss my doctoral dissertation with patients in your office. I appreciate the opportunity to solicit their participation in my study. Patients will be asked to read and sign an informed consent to participate in the study. They may withdraw at any time without jeopardizing their care at Women's Hospital. Their identity will be protected and data coded to ensure confidentiality.

I have attached for you a copy of the Consent Form and the Explanation of the Study to Potential Participants sheet.

If you have any questions about the study, please leave a message at 787-3987 and I will return your call.

Thank you for your assistance in my data collection. I will send you an abstract of the results of the completed study.

(Mrs.) Myrna E. Rourke, R.N., M.Ed., M.N.

Appendix F

Explanation of Study to Potential Participants

Prenatal Assessment of Parenting Potential

Invitation to Participate

My name is Myrna E. Rourke. I am a nurse and a doctoral student in the Interdisciplinary Program in the Faculty of Graduate Studies at the University of Manitoba. You are invited to participate in a study of pregnant women. I am interested in studying the parenting potential of pregnant women. Your participation in this study will help health care workers identify parents who may have problems with parenting. If we can identify these parents early in the prenatal period, we can begin to assist them with learning new and additional parenting skills. Nurses want to improve the care they provide to mothers and children.

If you agree to participate in this study, your answers will be in a coded form and completely confidential. You may withdraw from the study at any time. Your care will not be affected in any way by your withdrawal.

If you agree to participate in the study you will be asked to sign a consent form and complete two questionnaires about yourself and your feelings about parenting. This will take about 20 minutes. You will be asked to allow the researcher to examine your chart and your baby's chart to determine the outcome of your pregnancy. You will be asked to indicate your willingness to be contacted for a follow-up study.

If you have any questions, you may leave me a message at 787-3987.

Thank you for considering to participate in this study.

(Mrs.) Myrna E. Rourke R.N., M.Ed., M.N.

Appendix G

Consent Form

Prenatal Assessment of Parenting Potential

You are invited to participate in a study to examine the potential of parents to care for their children. These questionnaires are designed to help health care workers identify parents who may find parenting a problem. If we can identify those parents who require help with parenting, we can begin to help them in the prenatal period to improve their parenting skills. Women who are planning to have a baby at Women's Hospital are being invited to participate in the study. You are among over 300 pregnant women who will be asked to participate in this study.

If you decide to help with this study, you will be asked to complete two questionnaires. Completing these questionnaires will take approximately 20 minutes. The questionnaires will ask you about stresses in your life, your support person/s, information about yourself, and your feelings about parenting. You will be asked to indicate the name of your physician. Following the birth of your baby, information will be collected from your chart and your baby's chart related to the outcome of your pregnancy. At no time will you be exposed to any risks or discomfort, other than the time and inconvenience involved in completing the questionnaires.

Results of the study will be presented as group data only. Any information that is obtained will be confidential. Any articles or presentations that result from this study will be presented as group data and will not identify individual subjects. If you decide not to participate your decision will not in any way affect your present or future relationships with this hospital. If you decide to participate, you may withdraw from the study at any time without prejudice.

If you wish to have a copy of the results of the study, please include your current address.

*If you have any questions, please leave a message at 787-3987
Women's Hospital and I will return your call.*

You may have a copy of this form if you wish.

Date _____

Physician's Name _____

Baby's Due Date _____

Signature of participant -----

If you wish a copy of the results. Yes No

Your address: _____

Signature of Witness _____

Appendix H

Pregnancy Outcome Data Form

Code Number _____	Hospital Number _____
1. Gravida	[] []
2. Para	[] []
3. When did prenatal care begin? (weeks gestation)	[] []
4. Type of delivery Vaginal (0) Caesarean section (1)	[] []
Baby's Condition	
5. Gestation _____ weeks	[] []
6. Weight _____ gms	[] [] [] []
7. Sex male (0) female (1)	[]
8. APGAR 1 min.	[] []
9. APGAR 5 min.	[] []
10. Baby in normal nursery (0) NICU (1) Intermediate Care (2)	[]
11. Breastfeeding: yes (0) no (1)	[]
12. Was mother referred to social work? yes (0) no (1)	[]
If yes, indicate reason _____	
13. Were mother and baby discharged together? yes (0) no (1)	[]
If no, was baby apprehended by CFS?	
14. Was mother known to CFS? yes (0) no (1)	[]
15. Was mother referred for early visit for special needs? yes (0) no (1)	[]
If yes, indicate reason _____	

Appendix I
Maternal Nursing Database

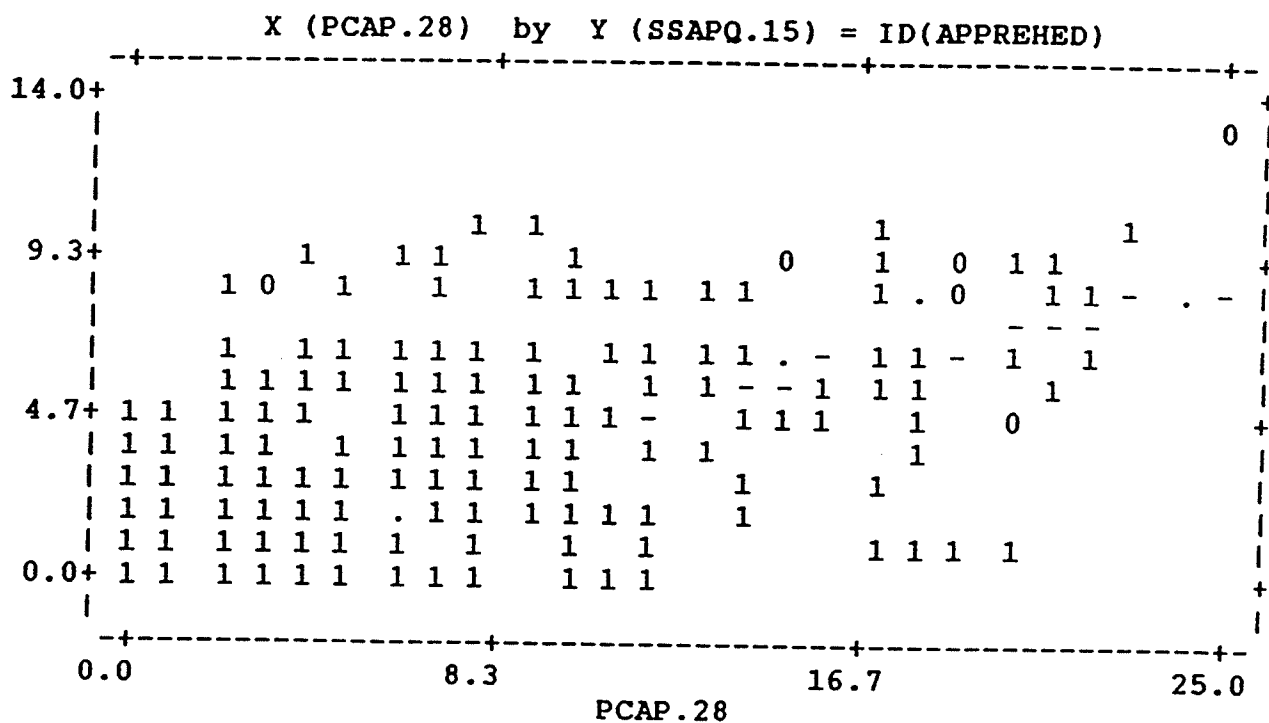
MATERNAL NURSING DATABASE

PRESENT PREGNANCY		HISTORY OF PREVIOUS PREGNANCIES																																																																																																																							
<p>First Language _____</p> <p>Interpreter Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Patient's Presenting Problem _____</p> <p>_____</p> <p>_____</p> <p>Prenatal Care Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>G _____ P _____ EDC _____ wks _____</p> <p style="margin-left: 40px;">D M Y</p> <p>LNMP _____ Ultrasound Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p style="margin-left: 40px;">D M Y</p> <p>Date Done _____</p> <p>Bleeding _____</p> <p>_____</p> <p>Social History</p> <p>S <input type="checkbox"/> M <input type="checkbox"/> W <input type="checkbox"/> Sep. <input type="checkbox"/> Div. <input type="checkbox"/> C.L. <input type="checkbox"/></p> <p>Support person _____</p> <p>Keeping baby Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Infant's Physician _____</p> <p>Home Situation</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>No. of children at home _____</p> <p>Child Care _____</p> <p>Economic Concerns Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>_____</p> <p>Recent family stress _____</p> <p>_____</p> <p>Consult to social worker needed</p> <p>Yes <input type="checkbox"/> No <input type="checkbox"/> To be reassessed <input type="checkbox"/></p> <p>Exposures</p> <p>Smoking _____ cigs./day</p> <p>Alcohol/drugs (amount) _____</p> <p>_____</p> <p>Communicable diseases _____</p> <p>_____</p>	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr style="background-color: #cccccc;"> <th>No.</th> <th>Year</th> <th>Sex</th> <th>Gest. Age (Wks.)</th> <th>Birth Weight</th> <th>Dur. of Labour</th> <th>Place of Birth</th> <th>Comments:</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table> <p>Allergies</p> <p>_____</p> <p>Type of reactions _____</p> <p>_____</p> <p>Previous Surgery and/or Anesthesia</p> <p>_____</p> <p>_____</p> <p>Hx of postpartum depression _____</p> <p>_____</p> <p>Prenatal Classes Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Breastfeeding</p> <p>Yes <input type="checkbox"/> No <input type="checkbox"/> Undecided <input type="checkbox"/></p> <p>Previous Experience Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p style="text-align: center; background-color: #cccccc; margin-top: 10px;">REVIEW OF SYSTEMS</p> <p>Cardiovascular <input type="checkbox"/> No Difficulty</p> <p>Ess. hypertension _____</p> <p>Heart disease _____ DVT _____</p> <p>Varicosities _____</p> <p>_____</p> <p>Respiratory <input type="checkbox"/> No Difficulty</p> <p><input type="checkbox"/> Asthma <input type="checkbox"/> T.B. <input type="checkbox"/> Other _____</p> <p>_____</p> <p>Hematological <input type="checkbox"/> No Difficulty</p> <p>Anaemia _____</p> <p>Bleeding Disorder _____</p> <p>Rh _____ Last WinRho Inj. _____</p> <p>Previous blood transfusions Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>_____</p> <p>Neurological <input type="checkbox"/> No Difficulty</p> <p>Seizure disorder _____</p> <p>_____</p> <p>Endocrine <input type="checkbox"/> No Difficulty</p> <p>Diabetes Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Treated: Diet <input type="checkbox"/> Pills <input type="checkbox"/> Insulin <input type="checkbox"/> units _____</p> <p>Thyroid disorder _____</p> <p>Genito-Urinary <input type="checkbox"/> No Difficulty</p> <p>UTI _____ Kidney disorders _____</p> <p>_____</p> <p>Gastro-Intestinal <input type="checkbox"/> No Difficulty</p> <p>_____</p> <p>Musculo-Skeletal <input type="checkbox"/> No Difficulty</p> <p>_____</p> <p>Infections / Immunological</p> <table style="width:100%;"> <thead> <tr> <th></th> <th>Neg.</th> <th>Pos.</th> <th>Treated (when)</th> </tr> </thead> <tbody> <tr><td>Group B Strep</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>_____</td></tr> <tr><td>GC</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>_____</td></tr> <tr><td>Syphilis</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>_____</td></tr> <tr><td>Chlamydia</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>_____</td></tr> <tr><td>Hepatitis B</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>_____</td></tr> <tr><td>Rubella</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>_____</td></tr> <tr><td>Herpes</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>_____ Last outbreak</td></tr> </tbody> </table> <p style="text-align: center; background-color: #cccccc; margin-top: 10px;">COMMENTS</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>Signature: _____</p> <p>Date: _____</p>	No.	Year	Sex	Gest. 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Appendix J

Scatter Plot: (a) CAP.28 by SSAPO.15 for the Apprehended,
Nonapprehended Group

Scatter Plots



Scatter Plot: (b) CAP.28 by SSAPQ.15 for the Nurse Experts Group (Abuse 100) and the Remaining Group of Mothers

Scatter Plots

