Final Report
Factors That Influence the Decision Not to Substantiate a CPS Referral

Phase I: Narrative and Empirical Analysis

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I. Introduction

The purpose of Phase I of this study is to replicate, refine, and extend preliminary findings of an earlier study on Child Protective Services (CPS) decision-making (See English, Marshall, Brummel, & Coghlan 1998). The current study was specifically designed to examine the CPS finding decision. The primary focus of the study is to identify factors associated with the decision *not* to "find" (or to "unsubstantiate") abuse/neglect after a CPS investigation. Terms used to document the decision regarding whether maltreatment did or did not occur vary in the research literature and in practice. Terms such as founded and substantiated are used interchangeably to indicate that maltreatment did occur. Likewise, terms such as unfounded and unsubstantiated refer to the decision that child maltreatment did not occur. In this report, the term *substantiated* refers to a finding that maltreatment did occur, and *unsubstantiated* refers to a finding that maltreatment did not occur. Inconclusive refers to a finding where there is no significant evidence to reasonably conclude abuse/neglect did or did not occur. In order to understand the factors associated with the decision *not* to substantiate, the decision to find or substantiate and the decision to classify an investigation as inconclusive also are examined.

The specific objectives for Phase I of this study are: 1) to identify the factors that influence the decision *not* to substantiate a CPS referral; and 2) to identify the characteristics of CPS referrals that are more likely to be unsubstantiated or inconclusive (indicated) compared to those that are substantiated (founded). In addition to these specific exploratory objectives, we also proposed to test several specific hypotheses related to the CPS finding decision. The hypotheses tested specified interrelationships of variables representing *case history* (multiple priors), *case features* (type of maltreatment, presence or absence of physical evidence, dangerousness of the acts alleged), *case decisions* (finding, placement), *risk* (child abuse and/or neglect or "CA/N potential"), and *outcomes* (service engagement, and re-referral, including the type of maltreatment alleged in the re-referral, its severity, and the finding).

In order to carry out the objectives of Phase I of this report, two different approaches were developed:
1. In the first approach, in order to extend the findings from the previous CPS decision-making study (English et al., 1998), a more refined empirical analysis was undertaken, based on a multivariate analysis of *numeric* data fields in CPS case management records. This we refer to as the *initial multivariate approach*.
2. The second approach involved the collection and coding of data from the *narrative* portion of CPS electronic case records. These data provide greater detail on factors associated with investigation and the finding decision than is available from numeric data fields in CPS case management records. In addition to hand-coding CPS social workers' summary narrative documentation, data also were coded on specifics of each child's alleged maltreatment, utilizing a modified version of the Maltreatment Classification System (MMCS) developed by Barnett, Manly & Cicchetti, (1993). These data were used to inform and extend the initial multivariate findings, in this *narrative coding approach*.

In the course of this report, we begin by providing a summary of the findings about the CPS finding decision discovered in the research literature and through the earlier CPS Decision-Making Study. We then report the descriptive and bivariate findings from the narrative coding part of this study. Third, we report the findings from the multivariate analyses, including an integration of the narrative data. Fourth, we present the findings from the tests of the hypotheses. Finally, we conclude the Phase I report with a summary of findings across the four sections, including a discussion of policy and practice implications.

II. Summary of Findings about the CPS Finding Decision

A. Background

In 1994, the National Center on Child Abuse and Neglect (NCCAN) funded a three year research study to examine the characteristics of decision-making in child protective services (CPS) cases. The purpose of the 1994 study was to examine criteria used in CPS decision-making at different points in the "life" of a CPS case, from referral to case closure. Decision points examined include decision to investigate, (including assignment of response time, assessment of risk of imminent harm, assignment of risk at intake, and investigation standard), assessment of risk after investigation, finding decision, and decision to open a case for service. The primary focus of the 1994 study was on the decision associated with the assignment of level of risk after investigation (associated with CPS worker assessment of likelihood of recurrence of maltreatment) and the decision to substantiate. These decisions were examined quantitatively and qualitatively. The quantitative phase of the study included empirical analysis of over 150 variables in 12,978 referrals. A qualitative analysis was based on in-depth interviews with 200 randomly selected CPS social workers. The findings from the 1994 study are available in two reports (English et al., 1998a & b), and several publications (Marshall & English, 1999; English, Marshall, Coghlan, Brummel, & Orme, 1999; English, Marshall, Brummel & Orme, 1999). For the purposes of this report, a brief summary of the literature on CPS findings will be reiterated, as well as a brief summary of the specific findings related to the finding decision from the earlier study.

B. Summary Review of the Literature

For the past two decades there have been a number of studies that have examined factors that are believed to influence the decision to "found" or "substantiate" an allegation of maltreatment as "having occurred." Sometimes the research focuses on factors associated with "finding" and sometimes it focuses on "not finding or unsubstantiation." the research on substantiation or CPS findings is important because of the ongoing debate about the role and purpose of CPS. Child protective services have been characterized as overly intrusive and unnecessarily invasive in families lives (Besharov, 1985; Robin, 1991; Hutchison, 1993; Drake, 1996; and Waldfogel, 1998). The explicit and implicit assumption is that if there is not a finding of maltreatment upon investigation, the referral was inappropriate and should not have been made (Zuravin, Watson & Ehrenschaft, 1987; Eckenrode, Powers, Doris, Munsch & Bolger, 1988; Wells, Downing, & Fluke, 1991; Drake, 1995; 1996). Some CPS detractors have argued that unsubstantiated reports can be based on false accusation and malicious intent, and as such, should not be the basis of governmental intrusion in family life (Besharov, 1990). Available data do not necessarily support the contention of overly intrusive government interference in family life. While there may be some false accusations or malicious reports, emerging evidence indicates that if the goal of CPS is child protection, CPS systems may not be intrusive enough (Flango, 1991; Drake, 1996; Trocme, McPhee & Tam 1995, Hasket, Wayland, Hutchison, & Tavana, 1995; Giovannoni, & Meezan, 1995).

A review of research on CPS decision-making readily reveals problems in the scope, design, and methodology utilized in the research on CPS decision-making. These limitations are indicative of research in the child welfare field in general. Much of the research in child welfare is descriptive and exploratory in part because of the "newness" of the field of child welfare research, limited funding for research, and because of limitations in the availability of data. While early research on CPS decision-making is limited, it is useful to recognize the limitations, and to use the findings as building blocks for future research (NRC, 1998).

In the earlier CPS decision-making study (English et al., 1998), we examined the research literature and found common variables that appeared to be associated with, and/or influenced

individual CPS decisions. Specifically, variables associated with the substantiation decision include factors associated with the child (alleged victim), family/caregiver characteristics, incident factors, and the context surrounding decision-making in general and the substantiation decision in particular. A summary of the research related to child, family, and incident characteristics associated with the finding decision are presented below. A summary of research related to context variables is presented in Phase II of this series of reports on the finding decision (*Mail and Telephone Surveys of Child Protection Service Social Workers*).

Factors associated with the child include age, gender and ethnicity. Older children can more clearly articulate their experiences, make better witnesses and cases are therefore more likely to be substantiated (Eckenrode et al., 1988; Winefield & Bradley, 1992; Trocme & Tan, 1994). Girls are more likely to be substantiated for sexual abuse, although no gender differences for other types of abuse have been identified (Winefield & Bradley, 1992; Hasket et al., 1995). Data on the influence of ethnicity and child behavior are inconclusive (Eckenrode et al., 1988; Winefield & Bradley, 1992; Hasket et al., 1995). Several caregiver characteristics have been identified as associated with the likelihood of substantiation. These characteristics include the alleged perpetrator's relationship to the child, substance abuse, and whether or not the act of maltreatment was assessed as intentional. The primary caregiver's socio-economic status, (e.g., receiving TANF and living in poor or hazardous conditions) has been associated with the likelihood of substantiation of maltreatment (Wolock, 1982; Winefield & Bradley, 1992). Finally, the caregivers interaction with the child, (i.e. attachment/bonding), level of cooperation with the investigation, and prior history with the agency have been associated with the likelihood of substantiating maltreatment (Alter, 1985; Giovannoni, 1989).

Incident characteristics associated with the likelihood of substantiating maltreatment include type of abuse, severity, multiple allegations in one incident, and referral source (Lieter et al., 1994; Zuravin et al., 1995). Referrals from professionals are significantly more likely to be substantiated compared to referrals from the community at large (Winefield & Bradley, 1992; Eckenrode et al., 1988; Drake, 1995). Finally, referrals with multiple allegations, (for example physical abuse with neglect, or neglect with emotional abuse), are more likely to result in substantiation of maltreatment compared to single allegation cases (Trocme & Tan, 1994 in Inkelas & Halfon, 1997).

The type of abuse and severity have been found to be associated with substantiation across 15 studies conducted in the past 20 years. The more serious the harm in terms of observable injury the greater the likelihood maltreatment will be substantiated (Leiter et al., 1994). Since observable injury is most typically associated with physical abuse, the finding rates (at least in the past) tend to be higher for this type of maltreatment (Winefield & Bradley, 1992; Zuravin et al., 1995; Groeneveld & Giovannoni, 1977). Physical abuse allegations absent evidence of physical injury are more likely to be substantiated if other types of child abuse/neglect (CA/N) are also alleged at the time of the report (Giovannoni, 1989). More recently, a national survey of data from 1995 revealed that twice as many children were substantiated and/or indicated victims of neglect (52%), than were victims of the next most common type of CA/N, physical abuse (25%). Thirteen percent of the substantiated/indicated victims were sexually abused, 5% were emotionally abused, 3% were medically neglected, and 14% were victims of "other" types of CA/N, such as abandonment, prenatal injury, and threats of harm to the child (U.S. DHHS, NCCAN, 1997). Unfortunately, this survey did not define the type(s) of CA/N alleged in the initial reports to each State's CPS system, so it is not possible from this data to determine individual substantiation rates for reports of different types of abuse, only what percentage of the pool of substantiated/indicated reports included specific types of CA/N.

Interestingly, much of the discussion on severity as a predictive factor for substantiation also focuses on the decreased likelihood of neglect cases being substantiated absent physical evidence of serious harm (Eckenrode et al., 1988; Winefield & Bradley, 1992; Cicchetti & Barnett, 1991; Trocme & Tam, 1994; Groeneveld & Giovannoni, 1977). There is increased likelihood of substantiation for neglect allegations if there is more than one type of neglect alleged, if emotional abuse is alleged at the same time, or if neglect is referred by law enforcement (Trocme & Tam, 1994; Giovannoni, 1989; Inkelas & Halfon, 1997; Eckenrode, Munsch, Powers, & Doris, 1988). Finally, issues associated with emotional harm have been identified in the research on incident characteristics. Trocme & Tam (1994) found 70 percent of substantiated cases had observable emotional harm indicated. If an emotional abuse dimension was identified children were considered to be at higher risk. The relationship of type of abuse is also associated with the decision to open a case for services post-investigation. Workers in several studies have indicated that failure to substantiate maltreatment does not mean families do not need services or that the child had not been abused (Giovannoni, 1991; Drake, 1996; Winefield & Bradley, 1992). Wells (1987) and Leiter et al., (1994) also found some cases were not substantiated if the worker assessed that needed services were not available. (for a more complete summary of the literature see English et al, 1998 Chapter 2 page 19 and English et al, 1999.)

C. Findings Related to CPS Substantiation Decision from 1994 CPS Decision-Making Study

1. Summary of Phase I: Quantitative Analyses

Phase I of the 1994, CPS Decision-Making Study (English et al., 1998a), is an empirical investigation of decision criteria utilized by CPS workers to make decisions regarding CPS cases. One part of the analysis specifically focuses on the substantiation decision. Variables of interest were identified from the research literature on CPS decision-making, as well as variables specified as relevant in the Washington State CPS decision protocols (See Appendix A for list of variables and Appendix B for a description of the Washington State Risk Assessment Model). In addition to descriptive characteristics, data were analyzed on bivariate and multivariate levels to identify associations and independent relationships between child, family, incident, and other case characteristics and the CPS substantiation decision. The empirical analysis for the 1994 study was conducted on a working data set of 12,978 (See the report itself for details on development of data set and analytical procedures utilized to conduct the research). In Washington State, CPS cases can be classified by one of three finding options: founded, unfounded, or inconclusive. Definitions for each of these finding categories (at the time of the study) are as follows:

Founded means: Based on the CPS investigation, there is reasonable cause for the social worker to believe that either the allegations on the referral are true or that sufficient evidence exists to reasonably support the conclusion that the child has been, *or is at-risk of being*, abused or neglected by a parent or caretaker.

Unfounded means: Based on the CPS investigation, there is reasonable cause for the social worker to believe that the allegations on the CPS referral are untrue or that sufficient evidence exists to reasonably conclude that the child has not been abused or neglected *nor is at-risk of abuse or neglect*.

Inconclusive means: There is not significant evidence for the social worker to reasonably conclude that a child has or has not been abused or neglected *or is at-risk of abuse or neglect*.

In the 1994 study, extensive analyses were conducted to examine similarities and differences between founded, inconclusive and unfounded cases. These analyses examined the relationship of types of variables across finding type decision, comparing founded to inconclusive/unfounded, unfounded to inconclusive/founded, and inconclusive to founded/unfounded. In addition, factors associated with findings for different types of abuse/neglect were examined.

The basic findings from these comprehensive analyses are presented in Table 2.1.Chronicity of child abuse/neglect (number of prior reports to CPS) is a key risk factor that is present in all substantiation models and for all types of abuse. The more prior referrals, the more likely a new referral is to be substantiated. Models for specific types of abuse also include incident factors (from the Washington Risk Assessment Model (WRM), Appendix B) related to that specific abuse (e.g., sexual abuse/ exploitation for sexual abuse cases, physical harm/injury for physical abuse cases, or basic needs for physical neglect).

Table 2.1
Key Substantiation Risk Factors for Each Type of Abuse

Risk Factor	Type of Abuse				
	Sexual Abuse	Physical Abuse	Physical Neglect	Medical Neglect	Emotional Abuse
Chronicity of CA/N	X	X	X	X	X
Sexual Abuse/Exploitation	X		X(-)		
Fear of Caretaker	X	X			
Supervision	X	X(-)	X	X	
Dangerous Acts	X	X		X(-)	
Physical Injury/Harm		X			
Emotional Harm	X	X	X		X
Recognition of Problem			X		
Parenting Skills			X		
Basic Needs		X(-)	X	X	
Behavioral Problems			X(-)		X(-)
Hazards in the Home			X		
Substance Abuse				X	X

"X (-)" indicates less likelihood that a factor will be used in the substantiation decision.

However, one of the most interesting findings associated with the finding decision is that risk factors over and above the incident factors are related to the substantiation decision. One would expect factors related to the incident to be the *key* determinants for the finding decision. The finding decision itself is to answer the question: "was this child abused and/or neglected or did this specific alleged incident occur?" One would expect the presence of physical injury (that was not accidental) to be the primary influence on the decision "did this happen or not?" The presence of observable harm, e.g., broken bones, burns, scalds, welts, torn labia, or failure to thrive makes the decision regarding maltreatment (yes/no) easier than when there is no observable physical evidence. In the 1994 study we found that incident factors associated with specific types of abuse/neglect had the strongest relationships; however, we also found "non-incident risk factor relationships" with the finding decision, especially for neglect cases. For all cases, prior history (chronicity) was related to substantiation. Child disclosure of fear of caregiver was particularly relevant in sexual and physical abuse cases. For neglect, caregiver risk factors associated with parenting skills and recognition of the problem were also related to the finding decision.

If a social worker rates a factor as unknown (doesn't have enough information to assess) those factors are more likely to be associated with inconclusive decisions. *There is more consistency*

in the use of particular risk factors to declare an allegation unfounded than to declare it either founded or inconclusive; a small percent of inconclusive cases in particular are not classified correctly using risk factors or any other variable available on the electronic case file data system. The variable indicating referent type was found to increase the probability that an allegation is determined founded over and above incident and risk factors.

Finally, in Phase I of the 1994 CPS Decision-Making Study, we tested specific hypotheses associated with the finding decision. Based on earlier research and the literature review we proposed testing four specific hypotheses related to the association between substantiation and demographics, evidence, type of abuse and risk factors. The three specific hypotheses regarding finding decision are presented below:

1. *Absent direct confession or physical evidence of abuse, caregiver functioning and referral source are significantly more likely to influence decision to substantiate than any other factor.*

Partially supported: Results from neural network modeling of the relationship between substantiation and Risk Matrix factors indicated that Chronicity of CA/N is a key risk factor that occurs across all substantiation models, for all types of abuse. Models for specific types of CA/N also included the severity of CA/N factors which were related to that specific type of abuse or neglect. In addition to Chronicity of CA/N and the severity of CA/N factors related to the specific type of CA/N, the following risk factors were important in the substantiation decision for specific types of CA/N: Child's Fear of Caretaker was important for sexual abuse and physical abuse; Recognition of Problem, Parenting Skills, and Child Behavior Problems were important for physical neglect; Substance Abuse was important for medical neglect; Substance Abuse and Child Behavior Problems were important for emotional abuse.

Insufficient ratings on some risk factors, especially severity of CA/N or evidentiary factors, were associated with the likelihood of an inconclusive finding decision. There was more consistency in the use of particular risk factors to declare an allegation unfounded, than to declare it either founded or inconclusive. In separate modeling using demographic and other variables, it was found that having a law enforcement referent on the referral increased the probability that an allegation would be founded, over and above the cumulative effect of the risk factors. See the 1994 Phase II report for additional findings related to the substantiation decision.

2. *Factors related to a child, such as age or developmental status, are significantly less likely to influence substantiation in neglect cases rather than physical appearance of the home.*

Partially supported: higher numbers of young children are substantiated for CA/N than older children, but their *rate* of substantiation is lower. Specifically for physical neglect cases, higher risk for individual risk factors associated with the severity of CA/N such as Adequacy of Supervision, Provision for Basic Needs, and Hazards in the Home, as well as the factors Chronicity of CA/N, Caretaker's Recognition of the Problem, and Parenting Skills are the key factors for substantiation. However, the Extent of Emotional Harm exhibited by the child and the Child's Age Risk Level were included in the neural network model for substantiation of physical neglect as important factors which *lowered* the probability that a case would be declared unfounded.

3. *Caregiver history of abuse will not be significantly related to substantiation but will be significantly related to re-referral for a new incident of child abuse and neglect.*

Supported: Caregiver History of CA/N as a Child is not related to the substantiation decision, but it is significantly related to the likelihood of re-referral, as revealed through both narrative and multivariate analyses.

As indicated in the general empirical analysis, chronicity and incident factors are most strongly related to the substantiation decision, but caregiver factors are strongly associated with the decision for neglect, absent physical evidence or a confession. Furthermore, factors associated with the child such as age (not developmental level) were associated with the substantiation decision. Caregivers' own victimization history was not associated with the substantiation decision in this study.

2.   Summary of Phase II: 1994 Social Worker Interviews
The qualitative interviews with CPS workers in Phase II of the 1994 study provided some contextual information to help understand these empirical findings and to clarify additional questions of interest. In general, CPS workers interviewed in the 1994 study told us that the level of agency support, workload and available resources affected their decision process in general. Seventy-eight percent of the workers told us that risk factors, in one form or another, influenced their decision to make a finding in a CPS case. Although the decision to substantiate was not the major focus of the 1994 study we did ask questions about the finding decision. Social workers identified specific risk factors that influenced their decisions, with individual risk factors associated with different types of abuse/neglect. For *sexual abuse* referrals, child's age, ability to self-protect and fear were important considerations. Caregiver recognition of the problem, substance abuse, response to disclosure, and protection were also of primary importance. Finally, incident characteristics associated with sexual abuse and other types of abuse, e.g., sexual abuse/exploitation, adequacy of supervision and extent of emotional harm were indicated as important. For *physical abuse* referrals, child's age, ability to self-protect and fear were again important, along with a child's behavior and a child's physical/mental/social development. In addition, dangerous acts and extent of physical injury/harm, frequency of CA/N, caregiver substance abuse and parenting skills were of high importance for physical abuse. Finally, for *physical neglect* referrals, child's age and ability to self-protect were again important, along with adequacy of supervision, provision of basic needs, physical hazards in the home, dangerous acts, extent of physical injury, frequency of abuse, caregiver substance abuse and mental/physical/emotional impairment of caregiver.

CPS workers report that they do use risk factors to support a finding decision, but many cases are classified as inconclusive or unfounded even if they believed that abuse/neglect occurred. Reasons associated with classifying a case as inconclusive or unfounded, even if they believed that abuse/neglect occurred, include lack of physical evidence or child disclosure, conflicting information from collaterals, absence of injury, credible statements, or alleged perpetrator denial. Also, other factors that influenced the finding decision included cooperative caregiver, assessment that the referral was based on custodial issues, insufficient time to complete investigation, good parent/child relationship, the condition of the home or the appearance of the child.

3.   Summary of 1994 CPS Decision-Making Study
The primary focus of research on the CPS finding decision in the past 15 years has been on the alleged incidents and severity. However, other factors such as child demographics, caregiver behavior and circumstances, and CPS context have also been studied. In the 1994 CPS Decision-Making Study, we examined child, caregiver, incident and context factors in greater detail. In the 1994 study we learned that the characteristics of the alleged incident, prior CPS history and

referent type were key determinants in the decision to find or substantiate CA/N. Two child factors, fear and behavior, were significant across CA/N types. Three key findings associated with caregiver risk factors were identified: 1) different risk factors were important for different types of maltreatment; 2) risk had stronger association with the inconclusive and unsubstantiated finding than with substantiation. 3) more risk factors were important in the physical neglect finding decision.

The qualitative CPS social worker interviews provided data about contextual factors such as resources and workload that impact the decision process, as well as greater specification of family-specific variables. Regardless of type, from the CPS social worker perspective, child age, child expression of fear, and child ability to self-protect were key factors. For physical abuse, child behavior and development were additional factors. Differential caregiver factors by type were found; e.g., substance abuse was cited for all three types, but caregiver recognition of problem and response were important for sexual abuse, parenting skills were important for physical abuse, and caregiver's mental/emotional health was important for neglect. Finally, a key finding in the 1994 study was that even though CPS social workers believed abuse/neglect had occurred in specific situations, they often classified a case as inconclusive or unsubstantiated. In this study we wanted to continue to explore the factors that influence the finding decision. The results from the earlier study served as a basis for the development of a more comprehensive study focusing specifically on the CPS finding decision. This new study clarifies and extends earlier findings.

III. Phase I Descriptive and Bivariate Analyses Based on Narrative Coding

A. Methods

1. Design and Sample

The Case and Management Information System (CAMIS) data set is a rich source of quantified data from CPS records. The data are entered by CPS workers as documentation of case activity associated with CPS investigation/assessment and service delivery. In CAMIS there are also narrative fields that are potential sources of information that can help inform our understanding of the CPS decision process related to CPS findings. To enhance the already quantified data developed for the replication of the earlier findings in the 1994 Decision-Making Study, we developed a narrative coding process to quantify data available in the narrative section of the CPS case record. Once quantified, these data are used for descriptive purposes. (See Appendix A for variable list of the numeric and narrative data used in Phase I of this study.)

A random sample of 3,000 CPS referrals was selected from the larger one-year cohort of referrals utilized in the Phase I initial multivariate analysis, with the goal of coding 2,000 cases. From this initial sample research analysts read 2,228 referrals and collected data on the cases' corresponding outcome information. Narrative text information associated with the cases was coded into numeric data. Cases excluded from review included those with administrative files (limited access), information only referrals, risk tag pending, licensing, third party perpetrators, sibling as perpetrator, duplicate referrals, and referrals where there was no identifiable victim. Table 3.1 provides the number and percent of referrals excluded by each exclusion criteria. As a whole, the excluded cases accounted for only 10% (228/2,228) of the sample of cases read; most of these (138) were records of sibling abuse.

Table 3.1
Percent of Referrals Excluded from Total

Excluded Referrals	N=228	%
Sibling Abuse	138	6%
Third Party Perpetrator	46	2%
Licensing Issue	17	0.8%
No Identifiable Victim	13	*
Administrative File	12	0.5%
Duplicate Referral	1	*
Data Anomaly	1	*

*Less than 1%.

For each referral reviewed, a victim was selected. In most cases, a single victim is identified by a code, however, sometimes there is no code, or there are multiple victims listed in the referral. In cases where a victim code was missing the analyst identified a "victim" by reading the narrative section of the referral and identifying the victim. In the situations where there was more than one potential victim, the youngest victim was selected as the victim.

2. Data Coding

The referral intake narrative fields (which include allegation text, narrative risk factor information, and basis for assignment of risk by the intake worker) were then reviewed for allegations of CA/N and other information which pertain to the victim and his/her caregivers. Likewise, the narrative fields of the associated summary assessment (consisting of text explanations of risk factor ratings on the risk assessment matrix, a text summary of CA/N, a discussion of major risk factors, the interaction of CA/N risk factors and strengths and findings)

were also reviewed and coded into quantifiable data. History of accepted CPS referrals for the family and any re-referrals accepted by CPS within one year of the sample referral receipt date were recorded. Placement information was also reviewed and recorded for the victim and his/her siblings. If there was a re-referral for the victim within one year, the allegations and substantiation information for the re-referral were also recorded for purposes of analysis. Table 3.2 provides a summary of the narrative variables quantified for this analysis.

Table 3.2
Variable List

Case Characteristics	
• Referent type	• Finding
• Source of allegation information	• Disposition
• CPS response time	• Risk factor (WRM) after investigation & finding
• Prior CPS history	• Evidentiary Factors
Victim Characteristics	
• Age	• Ethnicity
• Gender	• Risk issues
Caregiver Characteristics	
• Caregiver demographics	Substance abuse:
• Caregiver risk issues	• Present Y/N
• Caregiver strengths	• Characteristics
• Caregiver employment	

The procedure used to quantify *allegations* of child maltreatment from the intake and summary assessment narrative is called the Modified Maltreatment Classification System (MMCS). This coding system is a modified version of the System for Quantifying Child Protective Service Records developed by Barnett, Manly, and Cicchetti (1993). The coding system provides definitions, examples, and severity ratings for seven subtypes of maltreatment: physical abuse, sexual abuse, physical neglect-failure to provide, physical neglect-lack of supervision, emotional maltreatment, moral-legal and educational maltreatment.

Figure 3.1
Modified Maltreatment Classification System*
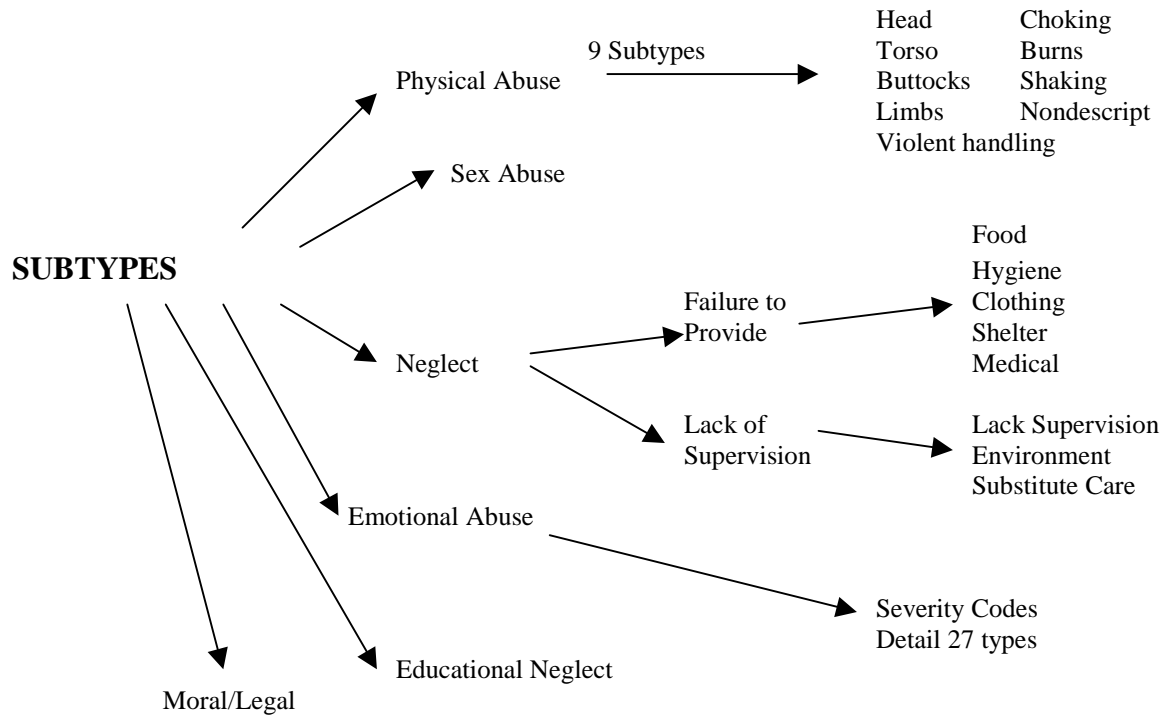
*Modified from Barnett, Manly, Cicchetti (1993)

A single CPS referral and record documentation may contain multiple allegations of maltreatment. The modified MMCS classification system provides codes for each individual allegation and provides a method for classifying each allegation by a severity level. All subtypes have five levels of severity (1 being the lowest, to 5 being highest severity), with the exception of physical abuse which has six levels of severity (level six classifies permanent disability/disfigurement/or fatality). Severity based on the MMCS refers to "the relative seriousness of the act with regard to the potential negative impact that a caregiver's act may have on the child's socio-emotional development" (Barnett et al., 1993).

Table 3.3 provides an example of the MMCS Severity Codes for physical abuse to the head/face/neck.

Table 3.3
Maltreatment Coding for Severity

Severity is coded on a scale of 1 (low) through 6 (high). Each severity code has specific meaning
Example: Physical abuse to the head/face/neck
Severity 1 = No marks indicated
Severity 2 = Minor marks
Severity 3 = Numerous or non-minor marks
Severity 4 = Emergency room or medical treatment
Severity 5 = Hospitalization for more than 24 hours
Severity 6 = Permanent disability or death

In addition to coding maltreatment allegations found in the CAMIS narrative, the presence of other types of information were quantified from the narrative fields. From the intake text, risk issues (such as substance abuse, caregiver domestic violence, child problems, child fear of caregiver, protective caregiver, etc.), other issues (such as presence of custody battle, caregiver cooperation, credibility of child, perpetrator not currently in home, etc.), and caregiver employment status were recorded if they are mentioned. From the summary assessment module text, the same risk issues and other issues as are recorded from intake screens are coded. In addition, information was coded from summary assessment narrative regarding mentioned "evidentiary" factors (such as physical evidence of injury, victim disclosure, perpetrator confession, observed condition of child and home, etc.) and other case outcome information (such as family referred to services, engaged in service, injury determined to be accidental, etc.). (See Appendix D for copy of the data collection instrument.)

The numerical coding of these narrative fields are dependent upon social worker documentation of the presence of specific issues and allegations in their narrative intake and summary assessment CAMIS records. The quantified narrative from the 2,000 referrals reviewed was entered into a database, fields were collapsed into numerical values, and this data was linked to the numerical data which was already captured about the cases in the main project database. Inter-rater agreement of the narrative data coding was established and maintained at a level of 95% on all tests.

B. Descriptive Characteristics of Narrative Sample (N=2000)

1. Case Characteristics and Child Characteristics

A majority of families in this sample of cases were referred by professionals in the community (58%), the remainder by the community at large (42%). Professional referents include teachers, social service providers, law enforcement, and doctors. Community at large referents include friends, neighbors, relatives, and parents. It is to be expected that a higher proportion of these cases would be from professional referents based on the initial case selection criteria. For cases to be included in the larger data set, and subsequently the narrative coding data set, they had to be classified as moderate or high risk at intake. Previous research has indicated that referrals from professional referents (e.g., doctors, teachers, other social service providers, law enforcement) are more likely to be classified at higher risk at intake (English et al., 1998a).

Table 3.4
Case Characteristics of Narrative Sample

Type of Referent	N	%
Education	395	10%
Friend/Neighbor/Relative	375	19%
Social Service	342	17%
Anonymous	215	11%
Legal/Justice	210	11%
Medical	180	9%
Parent	140	7%
Other*	102	5%
Child Care	41	2%
Sources of Information	**N**	**%**
First-Hand Information	992	54%
Victim Disclosure	372	20%
Second-Hand Information	363	20%
Judgment Based on Circumstantial Evidence	105	6%
Response Time	**N**	**%**
Emergent	403	20%
Non-Emergent	1,597	80%
Priors	**N**	**%**
None	725	36%
1 – 2	581	29%
3 – 5	409	21%
6+	285	14%
Prior referrals within 1 year of current referral for this study.	719	63%
Finding	**N**	**%**
Founded	664	33%
Unfounded	602	30%
Inconclusive	585	29%
No Summary Finding	149	8%

* Others (87), Victim (12), Self (2), and Perpetrator (1).

About half of the referents (54%) report having first-hand knowledge of the parental behavior being reported. Based on selection criteria for the study (assessed as moderate to high risk at intake), all the referrals in this sample received a high standard of investigation, that is, a face-to-face interview with child and caregiver. However, only 20% of the sample were considered emergent, requiring an investigation within 24 hours. The majority of the referrals were for physical neglect or physical abuse. For over one-third (36%) of the families the referral that brought them into this study was their first referral to CPS.

Of note is the number of families in this sample who had one or more prior referrals to this CPS agency (64%). One-third (35%) had three or more priors, and one-sixth (14%) had six or more priors. Of those with one or more priors, 63% had a prior referral within the previous 12 months before the referral that brought them into this study. One-third (33%) of the referrals were founded, that is, the child was found to be a victim of abuse and/or neglect at the end of the CPS investigation.

There is a differential finding rate by type of abuse (Table 3.5) for this study sample.

Table 3.5
Investigation Findings for Sample Referral by CPS CA/N Code (N=2000)

*CPS CA/N Code	*Substantiated	*Unsubstantiated	*Inconclusive	*Multiple Findings	*None Given
PA only N=625 (31%)	216 (35%)	192 (31%)	183 (29%)	N/A	34 (5%)
SA only N=151 (8%)	29 (19%)	54 (36%)	52 (34%)	N/A	16 (11%)
PN only N=724 (36%)	227 (31%)	240 (33%)	208 (29%)	N/A	49 (7%)
MN/PI only N=85 (4%)	36** (42%)	25 (29%)	20 (24%)	N/A	4 (5%)
EA only N=54 (3%)	23 (43%)	14 (26%)	13 (24%)	N/A	4 (7%)
Other Type only *(Abandonment, Exploitation)* N=17 (1%)	11 (65%)	2 (12%)	2 (12%)	N/A	2 (12%)
None Given N=26 (1%)	N/A	N/A	N/A	N/A	26 (100%)
Multiple CA/N Types*** N=318 (16%)	72 (23%)	75 (24%)	76 (24%)	81 (26%)	14 (4%)
Total for All CA/N Types N=2000 (100%)	613 (31%)	602 (30%)	554 (28%)	82 (4%)	149 (8%)

*N and % of each CA/N type.
**One of the referrals captured in this Founded column was actually a multiple CA/N referral with multiple findings (MN=Founded, PI=Inconclusive), however due to collapses it became a "single" type of CA/N referral.
*** If different finding codes are listed for different CA/N codes on a multiple CA/N referral, then that referral is captured in the multiple findings category. However, when a multiple CA/N referral has the same finding codes for some types, but is missing a finding code for another type, that referral would not be captured as multiple finding. (for example, SA=F, PA=F, but PN was missing a finding code, then the referral would be captured as Founded.)

Although medical neglect, emotional abuse, and other types (abandonment and exploitation) account for a small percent of the referrals they have the highest finding rate (42%, 43%, and 65% respectively). Sexual abuse referrals in this sample (and overall in the State) are the least likely to be founded.

Table 3.6
Child Characteristics for Narrative Sample

Gender	N	%
Female	1,036	52%
Male	960	48%
Ethnicity	**N**	**%**
Caucasian	1,496	75%
Not Caucasian	493	25%
Age	**N**	**%**
0 – 3	709	36%
4 – 5	321	16%
6 – 10	520	26%
11+	441	22%

Child characteristics are presented in Table 3.6. Male and female children are about evenly represented in this sample and in the referred population as a whole. The ethnic composition of the sample is representative of the CPS referral population as a whole, and the ethnic composition of the State. About one-half the children are under the age of six.

Table 3.7
Victim Risk Issues Mentioned in Summary Assessment Text (N=2000)

RISK ISSUE	N	%
Child Problems	332	17%
Child Sexually Acting Out	43	2%
Child Fear of Caregiver	95	5%
Child No Fear of Caregiver	174	9%
Lack of Credibility of Child	75	4%
Victim Recanted	36	2%
Child Not in Original Home	304	15%

As reported in Table 3.7 few risk issues were documented in the post-investigation summary for the child victim. The most frequent risk issues mentioned are child problems, and that child is not in the home of their primary caregiver.

2. MMCS Type of Maltreatment Alleged and Experienced by the Children in this Sample

In previous studies we have found that CPS classification of abuse/neglect does not always adequately represent the alleged or actual experience of the child. In this (and prior studies) we have used a modified version of the Maltreatment Classification System (MMCS) developed by Barnett, Manly, and Cicchetti (1993). The MMCS provides a mechanism for coding a child's experience by sub-type and severity level. Table 3.8 provides data on the CPS classification of maltreatment for this sample.

Table 3.8
CPS CA/N Code at Intake (N=2000)

CPS CA/N CODE*	N	% OF TOTAL SAMPLE
Physical Neglect only	733	37%
Physical Abuse only	606	30%
Sexual Abuse/Sexual Exploitation only	142	7%
Medical Neglect/Prenatal Injury only	85	4%
Emotional Abuse/Mental Injury only	51	3%
Other Type only or None Given**	30	2%
Multiple CA/N Codes***	353	18%

* The categories in this table are mutually exclusive.
** Other Type includes Abandonment or Exploitation only.
*** Referrals with more than one CA/N code at intake.

According to CPS (intake worker) classification, the majority of the sample children were alleged to be victims of neglect (37%), followed by physical abuse (30%), with a variety of other "types" comprising the remainder of the classification. Table 3.9 provides greater specification of types of maltreatment allegations based on the MMCS.

Table 3.9
MMCS Referral Allegations for Narrative Sample
(N=2000 Referrals representing 2000 victims; 4389 allegations)

SEVERITY LEVEL	1		2		3		4		5		TOTAL	
TYPE OF ALLEGATION	N	%	N	%	N	%	N	%	N	%	N	%
P/A Face/Head/Neck	98	30%	114	35%	100	30%	15	5%	2	1%	329	28%
Torso	53	39%	48	35%	25	18%	7	5%	4	3%	137	12%
Buttocks	23	28%	32	39%	25	31%	2	2%			82	7%
Limbs	25	14%	79	45%	53	31%	17	10%			174	15%
Violent Handling	116	72%	21	13%	16	10%	8	5%			161	14%
Choking/ Smothering	40	78%	4	8%	6	12%			1	2%	51	4%
Burns	2	7%	4	13%	22	73%	2	7%			30	3%
Shaking	2	14%			11	79%			1	7%	14	1%
Non-descript	158	75%	33	16%	17	8%	3	1%			211	18%
P/A Total	**517**	**44%**	**335**	**28%**	**275**	**23%**	**54**	**5%**	**8**	**1%**	**1189**	**100%**
P/A % of Col. G. Total	40%		35%		27%		7%		2%		27%	
FTP Food	82	37%	85	39%	15	7%	25	11%	13	6%	220	19%
Clothing	51	43%	68	57%							119	10%
Shelter	104	48%	49	23%	23	11%	41	19%			217	19%
Medical	41	13%	86	28%	129	41%	26	8%	30	10%	312	27%
Hygiene	96	33%	40	14%	60	21%	96	33%			292	25%
FTP Total	**374**	**32%**	**328**	**28%**	**227**	**20%**	**188**	**16%**	**43**	**4%**	**1160**	**100%**
FTP % of Col. G. Total	29%		35%		22%		26%		12%		26%	
LOS Supervision	118	42%	82	30%	20	7%	22	8%	36	13%	278	32%
Environment	17	6%	36	13%	17	6%	93	32%	126	44%	289	33%
Substitute Care	34	11%	26	9%	63	21%	184	60%			307	35%
LOS Total	**169**	**19%**	**144**	**17%**	**100**	**11%**	**299**	**34%**	**162**	**19%**	**874**	**100%**
LOS % of Col. G. Total	13%		15%		10%		41%		45%		20%	
Sexual Abuse	**33**	**17%**	**14**	**7%**	**63**	**32%**	**76**	**39%**	**9**	**5%**	**195**	**100%**
Sexual abuse % of Col. G. Total	3%		2%		6%		10%		3%		4%	
Moral/Legal	**8**	**10%**	**62**	**48%**	**6**	**6%**	**29**	**35%**	**4**	**5%**	**109**	**100%**
Moral/Legal % of Col. G. Total	1%		7%		1%		4%		1%		3%	
Educational	**54**	**64%**	**7**	**8%**	**5**	**6%**	**9**	**11%**	**10**	**12%**	**85**	**100%**
Educational % of Col. G. Total	4%		1%		1%		1%		3%		2%	
Emotional Maltreatment	**149**	**19%**	**61**	**8%**	**362**	**47%**	**83**	**11%**	**122**	**16%**	**777**	**100%**
Emotional Maltx % of Col. G. Total	11%		6%		35%		11%		34%		18%	
Column Grand Total	**1304**	**30%**	**951**	**22%**	**1038**	**24%**	**738**	**17%**	**358**	**8%**	**4389**	**100%**
Col. Grand Total %	100%		100%		100%		100%		100%		100%	

As noted in Table 3.9 the MMCS provides additional information about the alleged maltreatment experience of the children including sub-types and severity levels. The 2,000 victims in this study were alleged to have experienced 4,389 allegations of maltreatment. The most frequent type of maltreatment in the MMCS classification scheme is also neglect (46%), but greater detail is provided regarding sub-types e.g., failure to provide basic needs (26%), and failure to supervise (20%). Using the MMCS to classify cases provides sub-type detail that can be useful in understanding the experience of children. For example, in this sample, the majority of the children with physical abuse allegations do not manifest "physical harm." Two-thirds of the allegations are rated severity level 1 and 2. About one-third (29%) of the children manifested

bruises (23% of severity level 3) or were examined or treated in a hospital (6% severity level 4-5). While many of the children did not experience bruising or other physical manifestations of harm, the potential for harm from violent handling or choking is significant. In this sample 180, (about 10%) of the physical abuse allegation were for violent handling or choking that did not result in a physical manifestation of harm. Notice that 72% of the violent handling allegations and 78% of the choking/smothering allegations are classified as severity level 1. While the children did not experience harm that was "*observable*," one wonders about both the potential, and/or psychological harm from these experiences. If physical abuse allegations do not result in a physical manifestation of harm, should they be dismissed? One might argue that blows to buttocks or limbs, or even nondescript physical abuse allegations that do not result in physical manifestations might be questionable, but what about blows to face, head, neck, or torso (N=313 allegations)? Some of these caregiver behaviors could be considered "dangerous acts" that did not manifest in observable harm. Over one-half of the children are below the age of 5 in this sample and 87% are below the age of 12. These potentially dangerous acts could have resulted in observable injury, but did not (at least based on the information available to the intake worker at the time the referral was called into CPS).

In the MMCS, the higher level neglect classifications for failure to provide (FTP) are associated with physical consequences such as failure to provide food or medical care. Other types of FTP are associated with the regularity of the provision of food, cleanliness/hygiene, and shelter. Over half the allegations fall into severity level 1 or 2 category. On the surface, there does not appear to be "*demonstrable*" harm if a child is dirty, smells, or is not provided with regular meals. Only about a third of the hygiene allegations fall into a serious category (level 4). However, these allegations refer to one instance/referral only. Is the level of harm the same for children who experience an ongoing and persistent pattern of failure to provide?

Levels of severity differ for neglect referrals associated with supervision. Overall, one in five allegations were associated with leaving a child unsupervised for varying lengths of time, failing to adequately supervise a child in a dangerous environment, or leaving a vulnerable child with a dangerous person, or someone who is too incapacitated to supervise. Again, the nature of neglect (except medical neglect) does not typically result in manifested, observable harm. In the case of supervision, the child is at-risk of harm. In this sample of cases, nearly one-half of these children (54%) were left unsupervised for long periods of time or in dangerous situations. For example, children were left alone overnight or 10-12 hours at a time, or a suicidal child is left unsupervised, or a pre-school child is left alone for 24 hours. Other examples might include keeping loaded firearms in a location accessible to the child, or the child being allowed to go with a caregiver who has a known history of sexual acts towards other children. Even though these acts did not result in observable harm, it doesn't necessarily mean these children are not at serious risk.

In contrast to other maltreatment types, the majority, (three out of four) of sexual abuse allegations in this sample of children was either molest (32%) or rape/penetration (44%). While sexual abuse accounts for a small percent of the overall allegations (4%), if alleged, the allegations are significant. However, as noted in Table 3.5, sexual abuse is the type of child abuse/neglect allegation least likely to be substantiated.

In Table 3.9 there are also allegations for moral/legal types of allegations (3%) as well as educational (2%). Examples of moral/legal or educational include a caregiver who participates in illegal behavior (e.g., shoplifting, selling drugs) with the child's knowledge, or the caregiver is aware a child is truant from school and does nothing about it. Finally, nearly one in five allegations (18%) are for emotional maltreatment, with the majority (47%) classified as moderate

risk. Moderate risk emotional abuse allegations include exposing child to extreme, unpredictable or inappropriate behavior, threatening to injure the child, blaming the child for family problems, calling the child derogatory names or engaging in a pattern of negativity and/or hostility to the child. Table 3.10 provides an overview of the types of emotional maltreatment allegations reported in these 2,000 referrals. One–third (607/2000) of the sample contained 777 allegations of emotional maltreatment. Twenty-seven sub-types of maltreatment are grouped into four categories: 1) psychological safety and security, 2) acceptance and self-esteem, 3) age appropriateness, and, 4) autonomy and restriction. The majority (60%), of the emotional maltreatment allegations fall into the psychological safety and security category. Within psychological and safety, the highest percent (37%) of the allegations allege exposure of the child to extreme, unpredictable and inappropriate behavior. For the second category, acceptance and self-esteem, the predominate type of allegation is associated with the parent/caregiver exhibiting a pattern of negativity and hostility to the child. Fewer than 12% of the allegations of emotional maltreatment grouped into the age appropriate autonomy and restriction categories.

Table 3.10
Emotional Maltreatment Allegations at Intake
(N=607 referrals of 2000 (30%) which had 777 allegations of emotional maltreatment)

TYPE OF EMOTIONAL MALTREATMENT	SEVERITY LEVEL	N	% of EM subcategory	% of all EM allegations
Psychological Safety & Security				
Uses fear or intimidation	1	64	14%	8%
Exposure to non-violent marital conflict	2	18	4%	2%
Threat to injure	3	34	7%	4%
Exposes to extreme, unpredictable, or Inappropriate behavior	3	174	37%	22%
Threatens suicide or abandonment	4	27	6%	4%
Exposes to extreme marital violence	4	29	6%	4%
Blames child for suicide/death	4	0	-	-
Suicidal attempt in presence of child	5	10	2%	1%
Homicidal attempt/threat against child	5	38	8%	5%
Abandons child >24 hours	5	71	15%	9%
Total Psychological Safety & Security		**465**	**100%**	**60%**
Acceptance & Self Esteem				
Undermines relationship with significant person	1	10	5%	1%
Belittles or ridicules	1	20	9%	3%
Ignores or refuses to acknowledge child	1	12	5%	2%
Rejects or is inattentive to child's needs for Affection	2	26	12%	3%
Blames child for marital/family problems	3	8	4%	1%
Inappropriate or excessive expectations	3	23	10%	3%
Calls derogatory names	3	38	17%	5%
Pattern of negativity/hostility	3	84	38%	11%
Total Acceptance & Self Esteem		**221**	**100%**	**28%**
Age-Appropriate Autonomy				
Inappropriate level of responsibility	1	43	72%	6%
Does not permit age-appropriate socialization	2	8	13%	1%
Role-reversal	2	4	7%	1%
Infantilizes	2	5	8%	1%
Total Age Appropriate Autonomy		**60**	**100%**	**8%**
Restriction				
Binds hands/feet for mod. Periods, 2-5 hrs.	3	1	3%	<1%
Confines/isolates child for 5-8 hrs.	4	12	39%	2%
Restrictive methods to bind or close Confinement <2 hrs.	4	15	48%	2%
Restrictive methods to bind, 2 or more hrs.	5	2	7%	<1%
Close confinement for extended periods	5	1	3%	<1%
Total Restriction		**31**	**100%**	**4%**
Grand Total of Emotional Maltreatment		**777**		**100%**

Table 3.11
PHASE 1: MMCS Emotional Maltreatment Allegations
(N = 607 Referrals representing 607 victims; 777 allegations)

SEVERITY LEVEL	1		2		3		4		5		TOTAL	
Category of Emotional Maltreatment	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Psychological Safety & Security	**64**	14%	**18**	4%	**208**	45%	**56**	12%	**119**	26%	**465**	100%
Psy. Saf. & Sec. % of Col. G. Total	43%		30%		58%		68%		98%		60%	
Acceptance & Self Esteem	**42**	19%	**26**	12%	**153**	69%					**221**	100%
Acc. Self Est. % of Col. G. Total	28%		43%		42%						28%	
Age-Appropriate Autonomy	**43**	72%	**17**	28%							**60**	100%
Age-App. Auto. % of Col. G. Total	29%		28%								8%	
Restriction					**1**	3%	**27**	87%	**3**	10%	**31**	100%
Restriction. % of Col. G. Total					<1%		33%		3%		4%	
Column Grand Total	**149**	19%	**61**	8%	**362**	47%	**83**	11%	**122**	16%	**777**	100%

The allegation data was also collected from the summary assessment (post-investigation documentation) record. The most striking feature of this data are that there was some (but not much) variation in the type and severity level classification of the allegations in the summary assessment as compared to intake. The same information that is provided on the intake referral is transferred to the summary assessment documentation. The most significant difference is the documentation of emotional maltreatment allegations at summary assessment compared to the information available at intake. The summary assessment documentation contained 182 fewer allegations than were contained in the intake assessment, and over 100 of these were in the Psychological Safety and Security category. The item associated with exposure to extreme marital violence was the least likely item to be omitted at the summary assessment level.

One might argue that the data thus far is based on allegations, most of which will not be substantiated. In order to examine any similarities or differences between alleged and substantiated maltreatment we hand-coded data from the CPS workers narrative documentation, and data fields from CAMIS. Table 3.12 provides subtypes and level of severity data on founded (substantiated) allegations for these 2,000 referrals. Detailed data was available on 629 of the 640 victims with substantiated findings.

Table 3.12
MMCS Founded Allegations per Summary
(N=629 Summaries representing 629 victims*; 1136 founded allegations)

SEVERITY LEVEL	1		2		3		4		5		TOTAL	
TYPE OF ALLEGATION	N	%	N	%	N	%	N	%	N	%	N	%
P/A Face/Head/Neck	24	25%	33	34%	31	32%	7	7%	2	2%	97	32%
Torso	13	37%	10	29%	6	17%	3	9%	3	9%	35	12%
Buttocks	2	8%	7	29%	13	54%	2	8%			24	8%
Limbs	4	9%	18	40%	18	40%	5	11%			45	15%
Violent Handling	27	64%	7	17%	4	10%	4	10%			42	14%
Choking/ Smothering	10	71%	1	7%	3	21%					14	5%
Burns	1	33%			1	33%	1	33%			3	1%
Shaking	1	25%			3	75%					4	1%
Non-descript	25	61%	8	20%	7	17%	1	2%			41	13%
P/A Total	**107**	**35%**	**84**	**28%**	**86**	**28%**	**23**	**8%**	**5**	**2%**	**305**	**100%**
P/A % of Col. G. Total	37%		35%		32%		12%		4%		27%	
FTP Food	19	32%	26	43%	2	3%	4	7%	9	15%	60	18%
Clothing	12	46%	14	54%							26	8%
Shelter	23	40%	10	17%	9	16%	16	28%			58	17%
Medical	11	10%	30	28%	32	30%	11	10%	23	22%	107	32%
Hygiene	28	33%	4	5%	20	23%	34	40%			86	26%
Failure to Provide Total	**93**	**28%**	**84**	**25%**	**63**	**19%**	**65**	**19%**	**32**	**10%**	**337**	**100%**
FTP % of Col. G. Total	32%		35%		24%		33%		23%		30%	
LOS Supervision	34	41%	24	29%	6	7%	7	8%	12	15%	83	37%
Environment	5	6%	10	13%	2	3%	23	29%	40	50%	80	34%
Substitute Care	11	16%	11	16%	22	31%	26	37%			70	30%
Lack of Supervision Total	**50**	**22%**	**45**	**19%**	**30**	**13%**	**56**	**24%**	**52**	**22%**	**233**	**100%**
LOS % of Col. G. Total	17%		19%		11%		28%		37%		21%	
Sexual Abuse	**2**	**5%**	**2**	**5%**	**17**	**45%**	**15**	**40%**	**2**	**5%**	**38**	**100%**
Sexual % of Col. G. Total	1%		1%		6%		8%		1%		3%	
Moral/Legal			**12**	**52%**	**2**	**9%**	**8**	**35%**	**1**	**4%**	**23**	**100%**
Moral/Legal % of Col. G. Total	0%		5%		1%		4%		1%		2%	
Educational	**15**	**71%**	**2**	**10%**	**1**	**5%**	**2**	**10%**	**1**	**5%**	**21**	**100%**
Educational % of Col. G. Total	5%		1%		<1%		1%		1%		2%	
Emotional Maltreatment	**21**	**12%**	**13**	**7%**	**69**	**39%**	**28**	**16%**	**48**	**27%**	**179**	**100%**
Emotional Maltx % of Col. G. Total	7%		5%		26%		14%		34%		16%	
Column Grand Total	**288**	**25%**	**242**	**21%**	**268**	**24%**	**197**	**17%**	**141**	**12%**	**1136**	**100%**
Col. Grand Total %	100%		100%		100%		100%		100%		100%	

* 11 summaries had something founded, but had no text; thus the allegation detail is missing from those summaries, and they were excluded from this analysis.

Overall, about 25% (1136/4389) of the allegations in these 2,000 cases were substantiated for 629 victims. About 26% (305/1189) of the physical abuse allegations, 29% (337/1160) of the physical neglect failure to provide allegations, 27% (233/874) of the physical neglect – lack of supervision allegations, 19% (38/195) sexual abuse allegations, and 23% of the emotional maltreatment allegations were substantiated. It is interesting to note the consistency in the percent of allegations substantiated by type. Sexual abuse allegations were the least likely to be substantiated, even lower than emotional maltreatment allegations, and physical abuse and neglect allegations were about equally likely to be substantiated. When examining the specifics of the emotional maltreatment allegations that were substantiated, it is intriguing to find that 74% of the substantiated emotional maltreatment allegations are in the psychological safety and security category, with the majority of those classed as "exposes to extreme, unpredictable, or inappropriate behavior." Only 13% of the substantiated maltreatment allegations are associated with acceptance and self-esteem, and of those, the majority were either "a pattern of negativity/hostility to the child" (33%) or "caregiver rejects or is inattentive to child's needs for affection" (33%). However, these numbers are quite small and only serve as interesting indicators that should be pursued in future research.

The data indicate that failure to provide neglect allegations were also founded more often (30%) than either physical abuse (27%), or neglect - lack of supervision (21%). Findings related to supervision (or lack thereof) are more evenly distributed across severity levels, however unevenly distributed within sub-types of supervision. Lower severity "left alone unsupervised" allegations were found more often than low severity "environment or substitute caregiver allegations." Higher severity substitute caregiver allegations e.g., the child is left with an unreliable caregiver such as someone who's drunk, or a known sex offender, were much more likely to be founded, as were environmental allegations such as the child is allowed to play by a busy highway or the child in car while the caregiver is driving drunk. As noted, a very small percentage of the sexual abuse allegations in this sample were founded, and those that were, were in the molest/penetration severity levels. A surprisingly high percent of the emotional maltreatment allegations were substantiated (23%) with the majority of those substantiated in the higher severity levels e.g., the caregiver allows the child to be exposed to extreme violence. Just under one-third (29%) of the exposure to extreme, unpredictable or inappropriate behavior allegations were substantiated, and about one-fifth of the abandonment allegations (18%).

Table 3.13
Detail of MMCS Emotional Maltreatment Founded Allegations per Summary Assessment
(N = 146 summaries with 179 founded allegations of emotional maltreatment)

TYPE OF EMOTIONAL MALTREATMENT	SEVERITY LEVEL	N	% of EM subcategory	% of all EM allegations
Psychological Safety & Security				
Uses fear or intimidation	1	10	8%	6%
Exposure to non-violent marital conflict	2	1	1%	1%
Threat to injure	3	4	3%	2%
Exposes to extreme, unpredictable, or inappropriate behavior	3	51	39%	29%
Threatens suicide or abandonment	4	8	6%	5%
Exposes to extreme marital violence	4	11	8%	6%
Blames child for suicide/death	4	0	-	-
Suicidal attempt in presence of child	5	3	2%	2%
Homicidal attempt/threat against child	5	11	8%	6%
Abandons child >24 hours	5	33	25%	18%
Total Psychological Safety & Security		**132**	**100%**	**74%**
Acceptance & Self Esteem				
Undermines relationship with significant person	1	0	-	-
Belittles or ridicules	1	1	4%	1%
Ignores or refuses to acknowledge child	1	1	4%	1%
Rejects or is inattentive to child's needs for affection	2	8	33%	5%
Blames child for marital/family problems	3	1	4%	1%
Inappropriate or excessive expectations	3	3	13%	2%
Calls derogatory names	3	2	8%	1%
Pattern of negativity/hostility	3	8	33%	5%
Total Acceptance & Self Esteem		**24**	**100%**	**13%**
Age-Appropriate Autonomy				
Inappropriate level of responsibility	1	9	69%	5%
Does not permit age-appropriate socialization	2	2	15%	1%
Role-reversal	2	2	15%	1%
Infantilizes	2	0	-	-
Total Age Appropriate Autonomy		**13**	**100%**	**7%**
Restriction				
Binds hands/feet for mod. periods, 2-5 hrs.	3	0	-	-
Confines/isolates child for 5-8 hrs.	4	4	40%	2%
Restrictive methods to bind or close confinement <2 hrs.	4	5	50%	3%
Restrictive methods to bind, 2 or more hrs.	5	1	10%	1%
Close confinement for extended periods	5	0	-	-
Total Restriction		**10**	**100%**	**6%**
Grand Total of Emotional Maltreatment		**179**		**100%**

3. Caregiver Risk Issues

Caregiver risk issues related to the CPS referral were identified from two sources: 1) the CPS social workers assessment of risk using the WRM, and 2) any narrative recording included in the case record. Caregiver risk issues were identified in 1499/2000 or (74.9%) of cases. Table 3.14 provides a summary of the risk issues identified in the *narrative* section of the CPS intake referral.

Table 3.14
Caregiver Risk Issues Mentioned in Referral Text at Intake

CAREGIVER RISK ISSUE*	N	% OF REFERRALS WITH CG RISK ISSUES N=1499	% OF TOTAL SAMPLE N=2000
CA/N Toward Other Children	1003	67%	50%
Substance Abuse	768	51%	38%
Caregiver Domestic Violence	251	17%	13%
Mental Illness of Caregiver	177	12%	9%
Not Protective Caregiver	145	10%	7%
Caregiver Physical Health/ DD	55	4%	3%
Caregiver History of CA/N as a Child	57	4%	3%
Caregiver Not Cooperative with Agency	36	2%	2%

*Categories in this table are not mutually exclusive, as a single referral may have mentioned more than one risk issue.

The table presents data on the percent of referrals with documented risk issues as well as the percent of total sample. As indicated in the table, victimization of other children and substance abuse are the highest percent risk issues reported by the referent when they called in the referral.

Figure 3.2

Number of Caregiver Risk Issues* Identified per Referral (N=2000)

4 risks 2%
5+ risks 1%
3 risks 8%
None 25%
2 risks 26%
1 risk 38%

*8 different caregiver risk issues were collected from referral text.
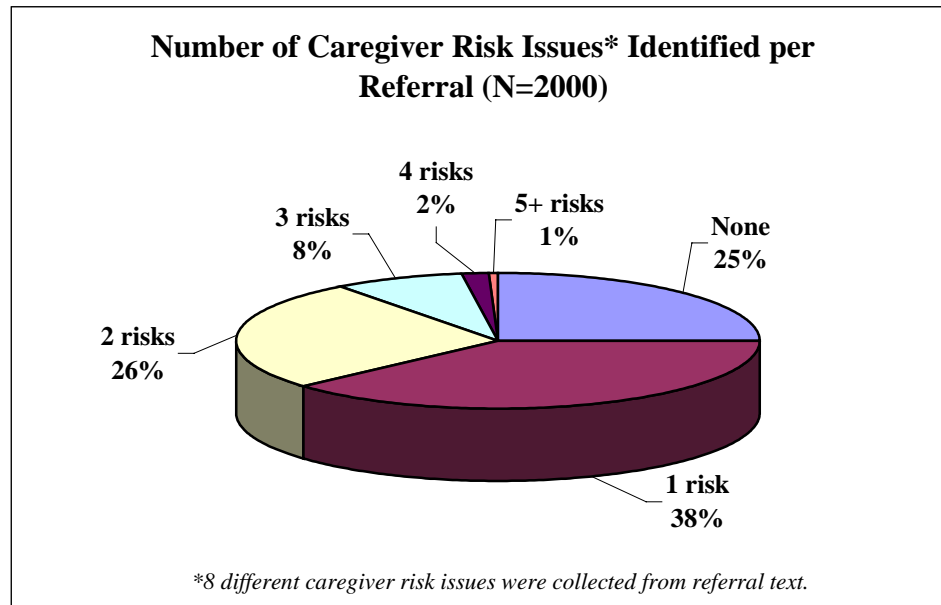
About one-quarter of the referrals had no caregiver risk issues mentioned, 38% had one caregiver risk issue mentioned, and 37% had two or more risk issues mentioned in the referral.
As noted earlier, if risk issues were identified by the referent, over half of such cases had substance abuse identified as a risk. Four out of five identified the substance abuse as a problem for the female caregiver. Father's, stepfather's and/or male partners had substance abuse identified as a risk issue in 43% of the referrals. One in four cases identified both the mother *and* father figure as having a substance abuse issue. About one-third of the cases with substance abuse issues referenced alcohol only (31%), drugs only (49%), or alcohol and drugs (30%).

In this sample, referents identified substance abuse (alcohol and/or drugs) as an issue related to their assessment that the child(ren) in question was being abused and/or neglected in over 768 referrals. Over one-third (39%) reference more than one type of substance as an issue (poly-substance use), with one-third referencing "hard" drugs (cocaine, opiates, amphetamine). Table

3.15 provides an overview of the substance use/abuse data available in the case narrative documentation.

Table 3.15
Referent Reported Substance Use/Abuse

Referent Reported	N	Caregiver Risk Issue	% Total Sample
Substance Use/Abuse	768	51%	38%
Mother figure only	394	51%	20%
Father figure only	132	17%	7%
Mother & Father Figure	203	26%	10%
Other	39	5%	2%
Substance Reported	**N**	**Caregiver Risk Issue**	**% Total Sample**
Alcohol only	187	31%	9%
Drugs only	233	39%	12%
Alcohol & Drugs	182	30%	9%
Non-specific	166	22%	8%
Single type	502	65%	25%
More than one type	236	39%	12%
Alcohol only	187	24%	9%
Marijuana (w/or w/o alcohol)	62	8%	3%
"Hard" drugs (w/or w/o alcohol	246	32%	12%
Generic substance abuse	273	36%	14%
Current use only	580	76%	29%
Historical issue	61	8%	3%
Both current & historical	127	17%	6%

Substance use and abuse by the child's primary and/or secondary caregiver is of concern, particularly the relationship between substance use/abuse and capacity to parent. Of equal concern, however, is the number of children who were reported by the caregiver to be directly involved with the substance abuse issue (N=287 or 37% of the children in this sample). Referents alleged that the caregiver gave or offered a child drugs/alcohol, the maltreatment incident occurred while the caregiver was under the influence, or the child had access to drugs, alcohol, or paraphernalia. These referrals also include allegations that the child had knowledge of, or was present during caregiver use, mother used drugs while pregnant, or the caregiver used funds to purchase drugs instead of providing for the child. One in five (N=157/768) of these homes were alleged to include violence, drug dealing/trafficking/manufacturing or growing, or criminal drug involvement.

Finally, in addition to specific allegations of maltreatment and substance abuse, the referents for these referrals reported a number of "other concerns" that are not specifically coded under the above categories. These "other concerns" include such information as caregiver with criminal histories, caregiver immature, lack of parenting skills, anger problems, perpetrator to be released from jail, recent death/divorce, compulsive gambling, isolation, prior history in another state, father has history of sexual abuse against siblings, victim fearful of CPS or placement, animal neglect, prior unsubstantiated sexual abuse, house caught fire twice in past two weeks and others.

Finally, the narrative data includes information on family strengths (N=392, 20%), primarily lack of prior history with CPS (48%), however, a few mention protective caregiver (6%), absence of fear in child (4%), cooperative caregiver (4%), and family wants service (1%).

4. Documented "Evidentiary Factors" in Post-Investigation Summary

As a supplement to the more in-depth examination of the types of information used in the finding decision process conducted in Phase II of this study, we collected data on the "evidentiary" factors documented in the post-investigation case narrative. The most frequent type of information documented in the post-investigation summary were observations about the condition of the child (52%), followed by observations of the home environment (22%). It is interesting to note that physical evidence of injury due to CA/N was only referenced in 12% of the total sample, and absence of physical evidence of injury due to CA/N was referenced in 8% of the total sample.

Table 3.16
Documented "Evidentiary Factors" in Summary (N=2000)

EVIDENTIARY FACTOR	N	%
Physical Evidence of Injury Due to CA/N	233	12%
No Physical Evidence of Injury Due to CA/N	150	8%
Medical Evidence of CA/N	111	6%
Victim Disclosure of CA/N	304	15%
Victim Did Not Disclose CA/N	268	13%
Perpetrator Confession	212	11%
Perpetrator Denies/Makes No Admission of CA/N	292	15%
Home Environment Factors Observed by SW	444	22%
Condition of Child Factors Observed by SW	1033	52%
Other Evidentiary Factor	378	19%

Further detail was collected for those cases (N=111, 6% of the sample) that indicated there was medical evidence of CA/N. Information in this category included evidence of observable injury such as bruises, cuts, scratches, burns, hair loss, stitches required, black eyes, Munchausens-by proxy, broken teeth, alcohol poisoning, broken bones, internal injury, head injury and death. Evidence of infant neglect included malnourishment, dehydration, failure to thrive, and evidence of prenatal drug use. Evidence of medical neglect included lack of immunization, lack of prenatal care, unattended infection, rotted teeth and lice. Medical evidence of sexual abuse included child pregnancy/abortion, sexually transmitted disease, and positive sexual abuse exam.

4a. Victim Disclosure

Victim disclosure was mentioned in 15% of the sample (N=304 victims). Table 3.17 provides data on victim disclosure by maltreatment type. Over one-half (54%) of all disclosures are for physical abuse, followed by sexual abuse (18%). There are very few disclosures for neglect, emotional maltreatment, or moral/legal. Nearly one in six of the disclosures, however, were for multiple types of CA/N.

Table 3.17
Victim Disclosure, Detail of Narrative Content Analysis (N=304)
(victim disclosure mentioned in 15% of the sample)

MMCS TYPE OF CA/N	NUMBER OF VICTIM DISCLOSURES	% OF ALL VICTIM DISCLOSURES N=304	% OF TOTAL SAMPLE N=2000
1. Physical Abuse	165	54%	8%
2. Sexual Abuse	56	18%	3%
3. Physical Neglect	18	6%	1%
4. Emotional Maltreatment	19	6%	1%
5. Moral/Legal Maltreatment	4	1%	<1%
6. Multiple Types of CA/N	42	14%	2%

It is not surprising that physical neglect would be the least likely type of maltreatment disclosed by children, as most of the children who are neglected are under the age of 5. However, 46% of reported children age 6 to 12 are referred for some form of neglect allegations (CPS CA/N codes) in this sample. These children should be resources for information about whether the allegation is true or not, as well as older children who are also sometimes referred for neglect.

If a child disclosed, the disclosure was most often made to the social worker, followed by multiple persons. The next most likely disclosure was to school or daycare personnel (14%). Only 11% of the disclosures were to non-professionals. Sexual abuse was almost as likely to be disclosed to a parent/stepparent as it was to a social worker. It is noteworthy that 19% of the disclosures were made to more than one person.

Thirteen percent (N=268) of the case summaries specifically mentioned that the child did *not* disclose. In the majority of non-disclosure cases (74%), the child either denied or would not confirm. In a small number of cases (N=35, 13%) the child provided an alternative explanation or admitted lying, and in another 13% the child was either non-verbal, refused to cooperate or was mentioned as being too young or shy. The majority of cases that mentioned that the child did not disclose were *either* physical abuse or sexual abuse cases. The types of CA/N most frequently unconfirmed by the victim were physical abuse (67/268 or 25%) and sexual abuse (59/268 or 22%).

4b. Perpetrator Confession
In 11% (N=212) of the cases, the alleged perpetrator *admitted* committing the abusive or neglectful behavior. The majority of documented admissions were for physical abuse (54%), followed by neglect (27%). Six percent of the confessions were for emotional maltreatment, and 4% were for sexual abuse. Mother or mother figures were nearly twice as likely to admit or confess (58%) compared to father or father figures (26%).

4c. Social Worker Observation of Home Environment
Social worker observations about the home environment were present in 22% (N=444) of the summaries. Social workers were as likely to mention that the home was clean, nice and orderly (36%) as they were to mention the home was dirty or cluttered (31%). Social worker's were more likely to document the home environment as safe (25%), than not safe (16%), and that there were adequate necessities (19%) rather than inadequate necessities (12%). Grouping these factors together, when social workers mentioned observations about the home environment in their documentation it was more likely to be positive (50%) than negative (39%). Sometimes social workers would mention both positive and negative observations (11%). As indicated earlier, observations about the home are, however, only mentioned in 13% of the referrals.

4d. Social Worker Observation of the Child
In contrast, social workers were much more likely to mention the condition of the child in their documentation (1,033/2,000 or 52%). Table 3.18 provides data on the types of observations about the child that were documented by the investigating social worker.

Table 3.18
Social Worker Observation of Child (N=1,033)

Observation	N	%
Positive Physical Condition	344	33%
Negative Physical Condition	147	14%
Positive Emotional Condition	214	21%
Negative Emotional Condition	180	17%
Positive Behavior	52	5%
Negative Behavior	258	25%
Child Cooperative	35	3%
Child Uncooperative	50	5%
Child Able to Self-Protect	172	17%
Child Unable to Self-Protect	87	8%
Child Physical or Developmental Problem	118	11%
No Physical or Developmental Problem	77	8%
Other	19	2%

*Categories are not mutually exclusive as social worker may have documented more than one observation.

The most frequent observation noted in the post-investigation documentation was the observed condition of the victim. About one in three of the "positive" observations about the child (33%) referenced a well-groomed or well-cared for child, basic needs met, child alert and responsive, or immunizations up to date. About one in seven (14%) of the observations about the child were "negative," e.g., child unhealthy, frail, malnourished, dirty, poor hygiene, failure to thrive, lice-infested, severe diaper rash, in need of dental care or rotted teeth. Some social workers also observed and mentioned the emotional/behavioral condition of the child. Positive references to child's emotional condition (21%) and behavior (5%) included child bonded to caregiver, child did not evidence any fear of caregiver or environment, child was happy, cheerful, well-adjusted, safe, helpful, cooperative, pleasant, polite, friendly, or the absence of behavior problems. Negative references to child's emotional condition (17%) and behavior (25%) included child fearful, feels unsafe, depressed, suicidal, mentally ill, unhappy, used as pawn between parents, withdrawn, sad, maladjusted, distraught, emotionally unstable, family scapegoat, anger problem, low self-esteem, defiant, rebellious, manipulative, oppositional, uses drugs/alcohol, sexualized behavior, runs away, self-destructive, enuresis/encopresis, lying, stealing, assaultive, fire-setter, aggressive, eating disorder, acting out behavior, poor impulse control, hyperactive. The other relatively frequent observation about the child documented by the worker is that "the child is safe and able to self-protect" (17%).

4e. Other Factors Mentioned
"Other" types of "evidentiary" information were found in 19% (378/2,000) of the post-investigation documentation. This type of information included "hard" evidence such as photos, criminal records, positive urinalysis, failed polygraph, social worker personal observation of the home/injury condition (20%), negative collaterals (14%), positive collaterals (19%), and documentation that there was no evidence (37%). In summary, documented observations about the child were positive 43% of the time, negative 38% of the time, and 19% of the time both positive and negative conditions were noted.

The most frequently documented "other" case outcome was a category we called social worker framing of the incident (20%). This category includes such statements as "social worker believed that this is a one-time incident, injury was minor/insignificant/superficial, plausible explanation/excuse for situation/injury, credible explanation for incident, low priority case, allegation was a misunderstanding, this is not a CA/N issue due to context of CA/N (attempting to control child, cultural exceptions, situational factors), parents doing the best they can, parent

will never live up to standards, parent did not intend harm or CA/N, lifestyle issue instead of CA/N, family conflict, not CA/N." Additional "other" categories of interest are caregiver statement, justification or explanation, family strength and technical obstacles. Caregiver statement/justifications (12%) included caregiver stating that he/she feels justified in their behavior, has a right to physically discipline, child got what she had coming to her, just a one-time incident, it was an accident, denies injury as result of discipline, denies intent to harm, denies drug/alcohol use or problem. References to family strengths (13%) included good parent/child bonding, caregiver provides adequate care, family is doing well, parent has stable income, parent loves child, positive caregiver/child relationship.

Finally, the category of technical obstacles (120/932 cases or 13%) included such issues as the time lapsed between receipt of referral and worker assignment, workload impeded investigation, referral was lost, delay caused by other professionals in investigation, social worker did not observe factor in the investigation that was deemed important, social worker did not interview key party, social worker was unable to locate or had difficulty locating key party.

5. Narrative Data on Case Disposition

Information from the case narrative regarding case disposition was also extracted. According to the electronic case management data system, the majority of the cases were documented as little or no risk, case closed (64%). Another 12% of the cases were documented as at-risk, but the family refused services, there was no basis for legal intervention and the case was closed. Finally, 17% of the cases were classified as "risk continues" and the case remained open for service under contract or legal intervention (7% of the referrals were missing disposition code). The nature of the case outcome looks somewhat different based on hand-coding of social worker narrative.

Table 3.19
Additional Documented Case Outcome Information in Summary (N=2000)

ADDITIONAL ISSUE*	N	%
Injury Determined to be Accident	35	2%
No Resources/Services for Family	4	<1%
Referred to/Aware of Services/Resources	458	23%
Family Engaged in Service	580	29%
Issues Resolved/Family Addressing Problem	302	15%
Other Documented Case Outcome Information	932	47%
Ongoing in DCFS	966	48%

    * Categories are not mutually exclusive.

Based on narrative data, 966 or 56% of the sample cases remained open for services in DCFS post-investigation. About one-third or 580 (29%) were engaged in services, and 458 (23%) were referred to services/resources. For 302 families the social worker documented that the issue that brought the family to the agency was resolved, or the family was addressing the problem. For a small number of families the injury to the child was determined to be accidental and the case was closed (N=35 or 2%), and for less than 1% it was documented that there was no resource or service for the family. For 932 families there were "other" documented outcomes, such as "case low risk, unlikely to re-refer," "positive social support available," "risk of CA/N remains," "caregiver justification/explanation."

6. Placement

Data on placement was collected for the identified victim in these 2,000 referrals.

Table 3.20
Table 3.20
Placement for Identified Victim (N=2,000)

Data on Placement of Victim	N	%
Victim had placement **prior** to referral for this study.	117	6%
Other child in family had placement prior to referral for this study.	196	10%
Victim placed within 12 months of study referral.	384	19%
Percent placed longer than 5 days.	341	17%
Other children in family placed since study referral.	246	12%

A small percent (6%) of the total sample had a placement prior to the referral that brought them into the study, and a slightly higher percent (10%) of other children in the family had a prior placement. Nearly one in five (384/2000 or 19%) children in this one-year cohort of families were placed within one year of the referral that brought them into this study. In addition, (246/2000 or 12%) of the families had other children in the family placed within one year of this referral.

Of the children who were placed as a result of the study referral or thereafter (N=384), 24% were placed on the same day the referral was received. An additional 15% were placed within 10 days of the referral. Another 22% of the placed children were placed within three months of the referral (by the end of the investigation period allowed in CA policy). The remaining children were placed from 3 to 6 months (13%), 6 to 9 months (9%), and 9 to 12 months (11%).

About one-third of the children placed (116/384) were returned home within 30 days of the placement. An additional 16% (62/384) were returned home within 6 months, and 22/384 were returned home within a year. The remaining children (184/384) were in placement over a year. In summary, one in five children in this study experienced a placement associated with or following their referral to CPS, and nearly one-half of those children (48%) were still in placement one year later.

Table 3.21
Duration of Placement Episode After Sample Referral*

DURATION OF PLACEMENT FOR VICTIM	N	% OF VICTIM PLACEMENTS (N=384)	% OF TOTAL SAMPLE (N=2000)
1 - 5 days	50	13%	3%
6 - 30 days	66	17%	3%
31 – 89 days	42	11%	2%
90 – 179 days	20	5%	1%
180 – 360 days	22	6%	1%
Episode ongoing 1 year past referral date	184	48%	9%

*Duration is captured for the 1st placement episode after the sample referral, but within 1 year after the sample referral. Only official DCFS placements are captured, and in-home dependencies are excluded.

7. Re-referral

Over one-third (N=701, 35%) of the identified children for this study had at least one re-referral within 12 months after the referral that brought them into this study. An additional 108 siblings were re-referred within 12 months. Of the 809 family re-referrals, 22% had 3-5 re-referrals, and 4% had more than 6 re-referrals. About one-fourth (27%) of the re-referrals occurred within 30 days and one-half (53%) within 90 days. Seventy-six percent of the families who were going to re-refer, had re-referred within 6 months. Nine out of ten (91%) of the re-referrals were classified as moderate or high risk (3,4, or 5) upon re-referral, indicating that the majority of these 698 families were re-investigated within 6 months of the previous referral. The distribution of type and sub-type of maltreatment was very similar to the original distribution of types and

sub-types identified on the study referral. Table 3.22 provides detailed information on type and severity of re-referral allegations.

Table 3.22
MMCS Allegations for 1st Re-Referral
(N = 701 Re-referrals representing 701 victims; 1497 allegations)

SEVERITY LEVEL	1		2		3		4		5		TOTAL	
TYPE OF ALLEGATION	N	%	N	%	N	%	N	%	N	%	N	%
P/A Face/Head/Neck	32	32%	37	37%	29	29%	2	2%	1	1%	101	31%
Torso	15	43%	10	29%	8	23%	2	6%			35	11%
Buttocks	8	38%	9	43%	4	19%					21	6%
Limbs/Extremities	11	23%	19	40%	15	32%	2	4%			47	14%
Violent Handling	36	82%	4	9%	3	7%	1	2%			44	13%
Choking/ Smothering	2	40%	2	40%	1	20%					5	2%
Burns			1	14%	5	71%	1	14%			7	2%
Shaking					3	100%					3	1%
Non-descript	54	79%	7	10%	7	10%					68	21%
Physical Abuse Total	**158**	**48%**	**89**	**27%**	**75**	**23%**	**8**	**2%**	**1**	**<1%**	**331**	**100%**
P/A % of Col. G. Total	35%		26%		22%		3%		1%		22%	
FTP Food	42	44%	35	37%	5	5%	6	6%	7	7%	95	22%
Clothing	12	32%	26	68%							38	9%
Shelter	43	48%	19	21%	7	8%	20	23%			89	21%
Medical	10	10%	44	42%	36	35%	8	8%	6	6%	104	24%
Hygiene	37	35%	18	17%	24	23%	27	26%			106	25%
Failure to Provide Total	**144**	**33%**	**142**	**33%**	**72**	**17%**	**61**	**14%**	**13**	**3%**	**432**	**100%**
FTP % of Col. G. Total	32%		42%		21%		26%		10%		29%	
LOS Supervision	43	38%	28	25%	15	13%	6	5%	20	18%	112	33%
Environment	5	5%	10	9%	10	9%	38	36%	43	41%	106	32%
Substitute Care	11	9%	9	8%	28	24%	69	59%			117	35%
Lack of Supervision Total	**59**	**18%**	**47**	**14%**	**53**	**16%**	**113**	**34%**	**63**	**19%**	**335**	**100%**
LOS % of Col. G. Total	13%		14%		15%		49%		50%		22%	
Sexual Abuse	**17**	**26%**	**4**	**6%**	**22**	**34%**	**17**	**26%**	**5**	**8%**	**65**	**100%**
Sexual % of Col. G. Total	4%		1%		6%		7%		4%		4%	
Moral/Legal	**5**	**10%**	**36**	**75%**	**1**	**2%**	**5**	**10%**	**1**	**2%**	**48**	**100%**
Moral/Legal % of Col. G. Total	1%		11%		<1%		2%		1%		3%	
Educational	**21**	**60%**	**3**	**9%**	**2**	**6%**	**5**	**14%**	**4**	**11%**	**35**	**100%**
Educational % of Col. G. Total	5%		1%		1%		2%		3%		2%	
Emotional Maltreatment	**51**	**20%**	**16**	**6%**	**122**	**49%**	**24**	**10%**	**38**	**15%**	**251**	**100%**
Emotional Maltx % of Col. G. Total	11%		5%		35%		10%		30%		17%	
Column Grand Total	**455**	**30%**	**337**	**23%**	**347**	**23%**	**233**	**16%**	**125**	**8%**	**1497**	**100%**
Col. Grand Total %	100%		100%		100%		100%		100%		100%	

C. Bivariate Analysis Based on Narrative Coding
This section provides data on the bivariate analyses of the narrative data.

1. Narrative Bivariate Analyses of Demographic and Case Variables and Findings
The chi-square tests of the demographic and case variables and the finding decision were conducted using a composite finding from post-investigation data on the identified victim. The total N in this section is 1,851 due to missing data on findings for 149 victims. Also note that the number of cases in some tables is lower due to missing data and collapsed versions of some of the variables. Bivariate analyses of findings by family and case demographics include victim age, gender, ethnicity, public assistance status, employment status of caregiver, geographic

region, referrer type, referrer source of information, response time to referral, risk tag at intake, intake assessment of imminent harm, type of CA/N, number of prior referrals, time since last CPS referral, overall risk after investigation, case disposition, and whether case remained open for services post-investigation. Tables providing the number and percent for each of these family and case demographic variables by finding, and significant associations of each variable by collapsed versions of the finding variable (founded versus unfounded/inconclusive, unfounded versus founded/inconclusive, and inconclusive versus founded/unfounded) are presented in Appendix E. Also included in that Appendix is a summary table of significant associations at the $p = \leq .05$ level) indicating whether the individual demographic and case variables were significantly more or less likely to be associated with one of the three finding combinations listed above. While the primary finding type of interest in this study is unfounded or unsubstantiated we explored various combinations in order to determine if some variables were more closely associated with one finding type compared to the other two types.

For the purposes of this narrative, we focus on the cases classified as unsubstantiated, while noting that there is also interesting information associated with the other two finding classifications. Children aged 0-2 and 13+ were less likely to be unsubstantiated, while children age 3-5 were more likely. As noted earlier, there were regional differences in the likelihood of a case being classified as unsubstantiated. Referrals from the community at large were significantly more likely to be classified as unsubstantiated. There were no differences in likelihood of a case being classified as unsubstantiated based on the referent's source of information. Cases classified as unsubstantiated were more likely to have received a level 3 (moderate) risk tag at intake, to be considered non-emergent and, based on the information presented by the referent, the child was not assessed as "in danger of imminent harm." *Unsubstantiated cases were no more or less likely to be one type of CA/N compared to another.* In comparison, sexual abuse and cases with multiple types of CA/N alleged were more likely to be classified as inconclusive compared to other types.

It is interesting to note that the absence of prior CPS history was associated with a referral being significantly more likely to be unsubstantiated, and the presence of prior CPS history was associated with being significantly less likely to be unsubstantiated. There were no differences in likelihood of unsubstantiation based on time since last CPS referral. There were associations with length of time to post-investigation paperwork completion. The longer the time to paperwork completion the less likely a case was to be unsubstantiated. If a case was unsubstantiated it was significantly more likely to be classified as no or low risk post-investigation, significantly more likely to be assessed as "no risk/closed" and less likely to have a case remain open post-investigation. There were no significant associations across finding type by gender, ethnicity, whether or not the family was on public assistance, or whether the caregiver was employed at the time of investigation.

2. Bivariate Findings of Individual Risk Factors and Victim Findings
Social worker risk ratings for all 37 risk matrix factors in the WRM were tested for association with the finding decision (See Appendix F for details). Risk ratings of "0" (no risk), "not applicable" and "insufficient information to assess" were recoded to missing, and all other ratings (1-5) were treated as continuous variables. Finding codes for 149 victims were missing and these cases were not included in the analysis. The total number (N) for each matrix factor used in the chi-square test is included in the tables in the Appendix and the tables included below. Finally, several risk matrix factors did not have an adequate N and distribution of risk ratings for reliable chi-square tests due to insufficient expected cell counts. The list of variables excluded because of low cell counts is noted in table footnotes.

As with the other sections, detailed tables of the number, percent, and significant associations for the three finding decision comparisons are included in Appendix F. Also presented in Appendix F is a summary table of significant associations at the p.=05 level indicating whether the individual risk factor (and individual risk ratings for that factor) are significantly more or less likely to be associated with one of the three findings combinations. For the purposes of this narrative the focus is on the risk factors associated with cases classified as unsubstantiated.

2a. Child Characteristics Domain
There was no bivariate association between a social worker's assessment of a child's physical/mental/social development and unsubstantiation. If a social worker assessed no risk (0) or very high risk (level 5) for behavior problems, the case was more likely to be unsubstantiated. If a child was assessed as able to self-protect (and there was no indication the child was afraid) the case was more likely to be unsubstantiated.

2b. Incident Severity Domain
If there was any indication of risk (level 1-5) on *any* of the incident severity risk factors the case was significantly less likely to be unsubstantiated. Conversely, if there was indication of risk (level 1-5) the case was significantly more likely than not to be substantiated. However, the presence of risk in the low to moderate level (1-3) for dangerous acts, extent of physical injury/harm, emotional harm, or adequacy of supervision were also significantly more likely to have a finding classification of inconclusive.

2c. Chronicity Domain
The absence of prior CPS involvement was significantly associated with unsubstantiated cases. However again, as with the incident factors, chronicity was associated with both inconclusive and substantiated cases. The difference between these two classifications (inconclusive vs. substantiated) is in the risk level of the chronicity variable. Lower levels of risk (level 1-3) were more likely for inconclusives, some risk levels two and three were more likely for substantiated cases, and risk levels 4-5 were more likely *only* for substantiated cases.

This data indicates how different levels of the chronicity variable may be used distinctly by social workers. Evidently, *no* prior evidence of CA/N tends toward unsubstantiation, risk level 1-3, tends toward an inconclusive judgment, risk levels 2-3 may or may not tend toward substantiated (as opposed to inconclusive) and risk levels 4-5 tend to be substantiated.

2d. Caregiver Characteristics Domain
For all caregiver characteristics, the absence of risk was more likely for unsubstantiated cases. Furthermore, also associated with a case being more likely to be unsubstantiated were assessments that incidents of domestic violence were isolated or did not result in injury, that a caregiver had experienced occasional incidents of CA/N as a child, that the caregiver had some unrealistic expectations or gaps in parenting skills, and that the caregiver recognized problems exist and were willing to take some responsibility (all factors considered as low risk, level 1 on the WRM).

A slightly different pattern emerges in the bivariate relationships for cases classified as inconclusive. As with the incident factors, in some cases no or low risk ratings were more likely to result in the case being classified as inconclusive. Also like the incident factors, the middle range risk levels were associated with increased likelihood that a case would be classified as inconclusive *or* substantiated. Specifically, a case is more likely to be classified as inconclusive if there is evidence of minor abuse by the caregiver to another child (other than the identified victim), the caregiver had a minor physical/mental or emotional impairment that could interfere

with their capacity to parent, the caregiver had a history of or reduced effectiveness associated with substance abuse, there were sporadic incidents of domestic violence with minor injury, minor history of victimization as a child, and even if there are some gaps in parenting skills, the parent recognizes the problem and is willing to take some responsibility.

Several of the lower risk (level 2) caregiver factors associated with increased likelihood of an inconclusive classification were also associated with substantiation. These factors are minor abuse to another child, minor physical/emotional problems, minor history of childhood victimization, some parenting skill gaps, inconsistent nurturance of a child and intermittent cooperation with intervention. However, in the main, the patterns of association with increased likelihood of substantiation are risk factors rated at moderate to high risk levels (3-5). In other words, the case is significantly more likely to be substantiated if the caregiver had a history of moderate or serious abuse/neglect of another child, had significant physical/mental/emotional impairments, was incapacitated because of drugs/alcohol, there was domestic violence that resulted in injury, there were significant histories of victimization as children, significant gaps or gross deficits in parenting skills, the parent withheld affection from child or is openly hostile, parent denies problem and refuses responsibility, caregiver does not or is unable to protect child, or caregiver accepts intervention but is then uncooperative, or is hostile to the agency.

2e. Caregiver/Child Relationship Domain
The presence of any risk (1-5) in the caregiver/child risk domain was associated with a *lower* likelihood the case would be unsubstantiated. In general, any risk (risk level 1-5) in the caregiver/child risk domain was associated with *increased* likelihood of substantiation, but identified risk associated with parental response to abuse disclosure (some question about whether caregiver believed CA/N occurred, but is willing to protect the child) was more likely in the inconclusive finding classification.

2f. Social and Economic Domain
No or low risk (0-2) on the socio-economic factors is associated with increased likelihood a case will be unsubstantiated. Positively associated with unsubstantiation are mild stress, under or unemployment but with having some prospects, some supports and use of community resources, and an ability to meet basic needs. Only inadequate resources and stress on secondary caregiver (usually male in household) were associated with increased likelihood the case would be classified as inconclusive. As with the other domains, higher risk (3-5) in the social/economic domain was associated with higher likelihood of substantiation. Caregivers experiencing significant or severe stress, little prospect for employment, sporadic or isolated social supports, and inability to meet basic needs were conditions of caregiving in cases more likely to be substantiated.

3. Risk Issues, Family Strengths, and Other Issues from Narrative and Victim Findings
All of the risk issues, family strengths, and other issues presented in this section were collected based on the CPS social worker *documenting* them in their post-investigation *narrative* recording. The format followed in the earlier section of the bivariate findings is followed here.

The mention/documentation of historical, or historical *and* current substance abuse, custody battles, and lack of referent credibility were associated with an increased likelihood that a case would be classified as *inconclusive*. Also, an uncooperative caregiver, a child who is sexually acting out, and the inability to locate a family in order to complete an investigation were all associated with an increased likelihood a case would be classified as inconclusive. Issues associated with a lower likelihood of *substantiation* are historical substance abuse (if substance abuse of alcohol, marijuana or generic substances), a child sexually acting out, custody battle,

lack of referent credibility and inability to locate a family. In contrast, issues documented in case narrative that are associated with *increased* likelihood of substantiation are current substance abuse, domestic violence, mental illness of caregiver, caregiver health or developmental disability, CA/N toward other children, caregiver history of CA/N as a child, caregiver not protective of child and not cooperative with agency, use of "hard" drugs, substance abuse directly involving the child, evidence of substance abuse (urinalysis), child problems, child afraid of caregiver, unstable living situation, caregiver arrested (in jail) and caregiver involved in other assaultive behavior.

Finally, regarding these "other" issues mentioned in the post-investigation narrative associated with a case being more likely to be *unsubstantiated* were an assessment that the case was low-risk, social worker framing of the issue (See section III.B.4.c, p. 34), and identification of other family strengths. Technical obstacles such as inability to locate the family were associated with an *inconclusive* finding. Finally, referral of family to services, or family already engaged in services, caregiver recognition of problem and desire to change, and "other" family problems were associated with the *substantiation* decision.

Information documented at the initial intake to CPS in addition to the referral allegation was also found to be associated with the finding decision. References of CA/N toward other children and assessment at intake that the referent lacked credibility were associated with an increased likelihood that the case would be unsubstantiated. References to a child who is sexually acting out was associated with an increased likelihood a case would be classified as inconclusive. However, evidence of substance abuse, "drug culture", or exposure of child to substances were associated with increased likelihood of substantiation. Child already out of the home, caregiver in jail/arrested, and other allegations of risk also were associated with increased likelihood of substantiation.

4. Narrative Bivariate Relationships Between Findings and Outcomes

4a. Re-referral
Appendix G presents the results of the bivariate analysis of several variables associated with re-referral and the substantiation decision. Please note that the overall number of the sample may vary based on missing data in one or more variable of interest.

If the original sample referral was unsubstantiated, the family was significantly less likely to re-refer within one year, compared to families whose original referral was substantiated, although the family referral may not be for the victim identified in the original referral. Further, if the original referral was unsubstantiated, the re-referral was significantly more likely to be unsubstantiated upon re-referral if received within the year. Finally, if the unsubstantiated referral did re-refer it was significantly more likely to re-refer quickly (within 30 days), or later 9 to12 months from original referral.

If previously founded or substantiated, a family who re-referred is significantly more likely to be founded upon re-referral. The previously substantiated re-referral is likely to re-refer within 30 to 90 days, or 6 to 9 months.

In contrast to substantiated or unsubstantiated referrals and re-referral, the only significance for inconclusives is that the case is significantly more likely to be classified as inconclusive upon return. There are no differences in whether it is the original victim or another child in the family, or the speed at which the referral returns.

D. Summary Phase I: Narrative Coding

Based on the data collected from the narrative coding section, it is clear that there is rich data in CPS case records that can be successfully coded for use in analysis of factors that might influence the finding decision. This narrative data confirms data available from the numeric data system, and adds new information to help clarify factors that influence the finding decision.

The sample included in this study is reflective of cases accepted for investigation at the WRM risk level 3 - 5. The referrals are more likely to be made by professionals, the information is primarily based on first-hand knowledge (54%), and the majority of cases are not considered by CPS intake to be emergent (80%). The majority of families have been referred to CPS at least once before (64%) and the largest percent are referred for neglect (CPS, 37%, MMCS, 46%). Based on MMCS coding for severity, 49% are referred for allegations at the higher end of the severity scale (3-5). Interestingly, about one-third (30%) of the referrals include allegations associated with emotional maltreatment, primarily allegations associated with psychological threat/safety such as exposure to threats and violence.

In the intake narrative, the majority of referrals (75%) identified caregiver risk issues including reference to child abuse and neglect of other children (67%) and substance abuse (51%). In 37% of the substance abuse allegations the alleged *victim* is directly involved in some way with the substance abuse issue.

Risk factors identified in the post-investigation documentation reveal some interesting patterns. A child who is assessed as able to self-protect, or one that did not evidence fear during the investigation is significantly more likely to be classified as unsubstantiated. Absence of risk associated with child behavior is also associated with being unsubstantiated; however, so is a *high* risk assessment of child behavior problems. If any risk is identified in the incident risk factors the case is significantly *less* likely to be unsubstantiated. However, risk on the low to moderate level for dangerous acts, physical harm, emotional maltreatment and lack of supervision are significantly more likely to be classified as inconclusive. In terms of prior history of referrals to CPS, the data indicate that families with no prior history with CPS are significantly more likely to be unsubstantiated. However, a history of one to two priors is clearly associated with an inconclusive finding, and four or more prior referrals are associated with a substantiation finding.

Interesting patterns of association with caregiver risk factors also emerge. If no risk is identified across the caregiver risk domain the case is significantly more likely to be unsubstantiated. The case is also significantly more likely to be unsubstantiated if there is low-risk associated with domestic violence, unrealistic parental expectation, parenting skills, or history of maltreatment as a child. However, a case is significantly more likely to be classified as inconclusive or substantiated if moderate risk is identified in terms of victimization of other children, caregiver mental/emotional or physical problems, substance abuse, sporadic domestic violence, history of victimization as a child, but the family is assessed as recognizing the problem and is taking responsibility for protecting the child. Assessments of some risk (but not high) in terms of inconsistent nurturance and intermittent cooperation are also more likely to be classified as inconclusive.

If no risk is identified with the caregiver/child interaction risk factors, the case is significantly more likely to be classified as unsubstantiated. If risk is identified in this domain, but the caregiver is assessed as protective of the child the case is more likely to be classified as inconclusive. If risk is identified and the caregiver is not protective the case is more likely to be substantiated. Finally, in the socio-economic domain, no or low risk is associated with

unsubstantiation, inadequate resources and stress on the male caregiver (if present in the home) is associated with inconclusive, and risk in the moderate to high range in this domain are associated with substantiation, e.g., caregiver is experiencing severe stress or is isolated.

Other factors documented in the narrative were associated with the finding decision. Specifically, the case was more likely to be classified as inconclusive if there was identified substance abuse, the referent was determined to be credible, the caregiver was uncooperative, or there was evidence of a child acting out sexually. In addition, the data indicate that the case was significantly more likely to be substantiated if there was substance abuse, domestic violence, caregiver mental health issues, maltreatment toward other children, the caregiver had a history of childhood victimization, was not protective of the child, was not cooperative, "hard" drugs were involved, the child was exhibiting behavior problems and was fearful, the home was unstable or the caregiver was arrested and jailed.

The case narrative included documentation on the types of information or "evidence" present that were associated with the finding decision. The most frequently documented type of information is associated with the physical or emotional condition of the child (52%). Reference to "positive" conditions associated with the child's physical condition (33%) and emotional condition (21%) is more frequent than reference to positive child behavior (5%). In contrast, 25% of the cases referenced negative child behavior as a condition.

Social worker references to home environment are present in 22% of the cases, victim disclosure is referenced in 15%, primarily associated with physical abuse (54%), and perpetrator admission is present in 11% of the cases. Again, perpetrator admission is most often referenced for physical abuse (54%), and female caregivers are twice as likely to admit than male caregivers. Finally, what we call social worker "framing of the incident" is referenced in 20% of the cases. Social worker framing references are primarily "mitigating" circumstances that influence their finding decision.

Overall, the finding rate for this sample is higher (33%) than referrals to CPS in general. Higher finding rates are associated with medical neglect, emotional maltreatment and abandonment allegations, however, the reader should recall that the rate of referral for these types of maltreatment is lower than other maltreatment types. Sexual abuse referrals are the least likely to be substantiated, and failure to provide-neglect allegations are more likely to be substantiated than neglect-lack of supervision allegations.

Referrals classified as unsubstantiated and inconclusive are significantly less likely to result in placement during the investigation, (and/or during the 12-month follow-up). As expected, referrals that are substantiated are more likely to be placed, and the placements last longer. If other children in the family (other than the identified victim) are placed, they are placed within 90 days of the substantiation for the identified victim. In this sample of children, the data indicate that 6% experienced a placement prior to the referral that brought them into this study, and that 10% of other children (than the identified victim) in these families also experienced a prior placement. After investigation 1 in 5 (19%) of the children experienced a placement, with 17% of those children in placement longer than 5 days. Nearly one-half (48%) of the children in placement longer than 5 days were still in placement at the one year follow-up review.

The majority (64%) of the cases in this sample of 2,000 referrals were closed after investigation with a designation of low or no risk. Twelve percent of the cases are identified as at-risk, but the family refused services, and 17% are identified as at-risk and opened for services. However, in

the post-investigation narrative documentation, data indicates that nearly one-half (56%) of the cases remained open for services.

An examination of case characteristics and the finding decision revealed no relationship between gender, ethnicity or socio-economic status (as measured by public assistance status) and whether a case is classified as unsubstantiated, inconclusive, or substantiated.

Referrals of children age 3 to 12, from the community at large, assessed as risk level 3, with no priors or many priors (6+), and classified as no or low risk after investigation, are significantly more likely to be classified as unsubstantiated. Cases initially assessed as emergent or at imminent risk of harm at intake are significantly less likely to be unsubstantiated. There are no differences in likelihood of being unsubstantiated by type of abuse/neglect.

In contrast, referrals initially assessed at-risk level 3 to 5, children over age 13, referrals from professionals, assessed as non-emergent, alleged physical abuse or multiple type allegations are significantly more likely to be classified as inconclusive. These inconclusive cases are more likely to be classified as moderate risk after investigation and the case closed.
Finally, substantiated referrals are more likely to be referred by professionals, assessed as emergent or at-risk of imminent harm, referred for physical abuse or neglect (mostly medical neglect), assessed at higher risk after investigation, and were as likely to have their case closed as they were to be opened for service.

About one-third (35%) of the identified victims in these referrals re-referred within a 12-month follow-up period, and 5% of 108 siblings of the identified victims are also referred to CPS for a new allegation of maltreatment. Nearly one-quarter (22%) of the re-referred children have 3 to 5 new referrals within the follow-up period. If a child is going to re-refer, about 25% re-refer within 30 days, and 53% re-refer within 90 days. Three-quarters (76%), re-refer within 6 months of their initial referral. The majority (91%) of those children who re-refer, are assessed as risk level 3, 4, or 5 (moderate to high risk) upon re-referral.

Referrals that are initially classified as unsubstantiated are significantly less likely to re-refer. If they do re-refer they are more likely to re-refer very quickly (within 30 days), or between 9 to 12 months after the initial referrals. An unsubstantiated referral is more likely to be again unsubstantiated upon re-referral. A similar pattern is revealed for cases classified as inconclusive or substantiated. If a case is initially substantiated, the re-referral is more likely to be substantiated also, and if initially inconclusive, the re-referral is more likely to be classified as inconclusive. Physical neglect, and referrals containing multiple allegations are significantly more likely to re-refer.

This sample of cases are representative of cases passing screening guidelines and requiring a comprehensive investigation by the assigned CPS worker. The majority of families are referred for neglect, have prior history with the agency, and have one or more risk issues identified. The data on risk factors is interesting and informative. While risk factors alone do not result in a "substantiation" decision absent other "proof," they do appear to influence the finding classification. This finding from the study is evident in both Phase I and II analyses. The data reported here reflects information CPS workers document in their narrative records. The data in Phase II is information that influenced the finding decision CPS workers report based on their recollection of their "last" case.

As with most research in this area, the data from this study raise many questions about both the implications for children and CPS practice in general. For example, on the surface, absence of

fear on the part of the child seems a reasonable factor to consider in terms of risk, but some children who are victims of sexual abuse may not exhibit fear. Absence of fear in these cases should *not* be a factor influencing the finding decision. Likewise, absence of child behavior problems is probably a good thing, but what about the children who "internalize" their reaction to maltreatment? Furthermore, why would very significant behavior problems (unless they were not related to maltreatment) be associated with unsubstantiation?

One would expect risk in the incident domain to be strongly related to the finding decision because these factors capture parental behavior characterizing maltreatment. Furthermore, when risk is identified and the case is not substantiated it is significantly associated with an inconclusive finding, not unsubstantiation. Prior history of referral to CPS is one of the best predictors of new referrals to CPS (English et al., 1998a). The absence of prior history is a risk factor that might easily influence an unsubstantiated finding, especially if there are other factors such as referent credibility, plausible explanation, etc., as we found in Phase II of this study. The data in Phase II indicates that more priors are associated with substantiation. What is unclear and an interesting question, is why a "moderate" history of 1 to 3 referrals would be associated with a finding of inconclusive. Again, some of the data from the analysis in Phase II inform this question.

Overall, another main finding in this study is that the boundaries between unsubstantiated and the other two finding classifications seem to be clearer than the boundaries between inconclusive and substantiation. Many of the identified risk factors are associated with *both* the inconclusive and substantiation decision. What factors tip the scale in one direction or another? The data in the caregiver domain provides some insight into this distinction. For example, there is some indication that caregiver recognition and assumption of responsibility (even if intermittent) for their behavior might promote an inconclusive finding. On the other hand, if a CPS worker assesses that the child's primary caregiver is not protective of the child, the case is significantly more likely to be substantiated.

Documentation of the condition of the child dominates the "evidence" data collected from narrative. CPS workers document both positive and negative conditions in their summary of influential factors. Less likely were references to home conditions, alleged perpetrator admissions or denials, although these factors were reported as important in Phase II of this study.

Examining findings by maltreatment sub-types produced some interesting results. Medical neglect has the highest substantiation rate, and lack of supervision-neglect the lowest rate within the neglect category. Since medical neglect is more likely to be referred by medical professionals this makes sense. Referrals from professional referents are more likely to be substantiated based on referent type and availability of medical evidence. In contrast, allegations associated with lack of supervision are much more difficult to prove unless the social worker observes the child unsupervised as part of the investigation, or the referral of an unsupervised child is received from law enforcement. Most neglect referrals are from friends, family, or neighbors, and these types of referents are often considered less credible.

While some children are placed before or during a CPS investigation, a finding of inconclusive or unsubstantiated can still occur. One would expect that substantiated incidents of maltreatment would result in more placements and that if one child in the family is placed, the conditions precipitating the placement might result in other children in the family also being placed. Overall, the post-investigation placement seems high (19%), and if placed, many (48%) of the children remain in placement more than 12 months.

Consistent with other research, the majority of the cases in this sample are not opened for services after investigation, although there is inconsistency regarding whether a case is opened or not based on the narrative documentation. The majority of the cases that remained open are cases where children were placed as a result of the investigation. However, despite an assessment that the allegation was unsubstantiated or inconclusive, considered no or low risk and closed post-investigation, one-third (35%) of the children re-refer to CPS within 12 months. If the child re-refers they are significantly more likely to be classified as inconclusive or unsubstantiated after the new investigation.

These findings are troubling. Why are so many children re-referred to CPS on new allegations of maltreatment after already being investigated? What factors influence the finding decision in those cases? Based on the data from the narrative portion of the study, and data collected in other phases of this study, the answer to that question is complex. The data in this phase of the study indicate that in those cases with higher levels of risk associated with the alleged maltreatment incident, child and caregiver risk factors are associated with the decision to substantiate maltreatment. The same factors when "less serious" in degree, at least as assessed by the worker at the time the decision is made, are associated with *not* finding maltreatment.

IV.   Findings Associated with Hypothese

In addition to the other objectives for Phase I of this study, as noted in the introduction, we also proposed to test several specific hypotheses. The hypotheses tested specified certain interrelationships of variables representing *case history* (multiple priors), *case features* (type of maltreatment, presence or absence of physical evidence, dangerousness of the acts alleged), *case decisions* (finding, placement), *risk* ("CA/N potential"), and *outcomes* (service engagement, and re-referral, including the type of maltreatment alleged in the re-referral, its severity, and the finding). Details of the hypotheses tested, the results of the tests, and associated findings are presented in the remainder of this section, wherein the seven hypotheses are considered successively.

Hypothesis 1: *Referrals with neglect as the primary abuse allegation, with multiple prior referrals, will be significantly more likely to be unsubstantiated than physical abuse or sexual abuse cases.*

This hypothesis is *rejected*.   Neglect referrals with multiple prior referrals were *not* significantly more likely to be unsubstantiated than were other types of maltreatment. Furthermore, this was true regardless of whether cases were classified as neglect by CPS or MMCS, and regardless of whether neglect was defined as "neglect-only" or as "any neglect."

On the contrary, we found an interaction such that the presence of priors increased the chance that a physical neglect case would be *substantiated* (from 26% to 39%), but there was no such effect for physical and sexual abuse cases. The presence of priors, in contrast, *decreased* the chance that sexual abuse cases would be substantiated (from 29% to 16%) in this sample.

Hypothesis 2: *Lack of physical evidence regardless of the dangerousness of the act is significantly more likely to result in an unsubstantiated finding of abuse compared to cases where there is physical evidence of harm.*

This hypothesis is *not* rejected. A composite variable indicating evidence of harm was derived from two variables: 1) If risk tag 3 to 5 was indicated on the extent of *physical injury* risk factor of the WRM, or 2) if the CPS social worker mentioned *physical evidence* of injury due to CA/N in the summary text, evidence of harm was considered present in the case.

Cases in which there was *not* physical evidence of harm were significantly more likely to be *unsubstantiated* than cases in which physical evidence of harm was *present*, and this was true regardless of the level of risk rated for *dangerousness of the act*.   However, the effect was most pronounced for cases where risk of dangerous acts was rated lower (p. < .00001) compared to higher (p. <.05).   However, it was rare (< 10%) for a case with a 3-5 risk rating of dangerousness to be unsubstantiated, regardless of whether evidence of harm was indicated or not. The difference noted in effect size may well be due to a "ceiling effect," because when risk of dangerous acts is high there is such a slight likelihood that a case will be unsubstantiated, regardless of the nature of the evidence.

Correspondingly, if risk for dangerous acts was rated *moderate or high risk* (3 – 5) with *no* evidence of physical harm, the case was *less* likely to be substantiated than those higher-risk cases where evidence of harm *was* indicated (61.3% vs. 75.8%). Even so, these dangerous cases still were far *more* likely to be substantiated than were *lower risk* cases, whether (37.9%) or not (23.5%) there was physical evidence of harm indicated.

Hypothesis 3: *Neglect cases are significantly more likely to be classified as inconclusive compared to other types of maltreatment allegations.*

The hypothesis is *rejected*. In fact, it was found that neglect-only cases were somewhat *less* likely to be found inconclusive than other cases taken as a whole (29.1% vs. 33.6%, statistically significant at p. < .05). Regarding "any neglect" and "neglect only" cases compared to "physical abuse only" and "sexual abuse only" cases, overall there were no statistically significant associations consistent with the hypothesis. On the contrary, marginal results (p. < .10) indicated a possible association with *sexual abuse* cases and inconclusive findings.

Hypothesis 4: *Families who are substantiated but their children are not placed are more likely to engage in services than families who are classified as inconclusive.*

This hypothesis is *not* rejected. For the purposes of testing this hypothesis, placement was defined as any placement lasting more than five days. Families whose children were not placed, but the allegations of maltreatment were *substantiated* were significantly more likely to engage in services compared to families whose children were not placed and the allegations were classified as *inconclusive* (33.7% vs. 25.5%, p.< .01).

Hypothesis 5: *Families who are unsubstantiated will re-refer at the same rate as families classified as inconclusive and unsubstantiated.*

This hypothesis is *rejected*. For the purposes of testing this hypothesis, re-referral is defined as any new accepted referral to CPS within a one-year period after the initial referral. Families who are classified as *substantiated or inconclusive* are significantly more likely to re-refer than are families who are classified as *unsubstantiated* (42.0% vs. 36.7%, p. < .05).

Hypothesis 6: *Families who are unsubstantiated will be nearly as likely to re-refer as inconclusive and/or substantiated as those families initially referring as inconclusive or substantiated.*

This hypothesis is *rejected*. Generally, families who re-refer and who are re-investigated are much more likely to have the second investigated classified in the *same* way as the original investigation (p. <.00001) than they are to have a *different* finding. Specifically, families who are initially unsubstantiated will be most likely to be unsubstantiated on the re-referral (53.9%). Families who are classified as inconclusive on the initial referral are most likely to be classified as inconclusive on the re-referral (54.5%), and families who are initially substantiated on the first referral will be most likely to be substantiated on the re-referral (69.3%).

Interestingly, though cases initially *unsubstantiated* that were *not* subsequently unsubstantiated were *evenly divided* between cases subsequently substantiated (23.5%) and cases subsequently judged inconclusive (22.6%), there was a different result regarding the *inconclusive* cases: for cases initially found inconclusive but not subsequently so, there was a preponderance of cases subsequently judged *unsubstantiated* (28.7%) compared to *substantiated* (16.8%).

Hypothesis 7: *Families who are unsubstantiated will not significantly differ from families classified as inconclusive or substantiated in their CA/N potential, rates of re-referral, or severity of subsequent abuse.*

The rates of re-referral and CA/N potential parts of the null hypothesis *are* rejected, but the re-referral severity part of the hypothesis is *not* rejected.

The *rate of re-referral* hypothesis was rejected in Hypothesis 5: Cases initially classified as substantiated or inconclusive *are* more likely to re-refer than cases that are initially classified as unsubstantiated (42% vs. 37%, p.<.05) Also, having operationalized "CA/N potential" as first re-referral risk tag, the *C/AN potential* part of the hypothesis *is rejected*: Unsubstantiated cases had much *lower* risk at re-referral ("no" risk or "low" risk) than would be expected, and substantiated or inconclusive cases had much *higher* risk at re-referral ("moderate low" to "high" risk) than would be expected from the marginal frequencies (p. <.001). However, the finding associated with unsubstantiation and re-referral *severity* are nonsignificant, though marginal (p. = 07), so that part of the null hypothesis, that the families will not significantly differ in severity of subsequent abuse, is *not* rejected.

A. Summary of Findings Related to the Hypotheses

1. The Hypotheses:
♦ Evidence was found *consistent* with all or part of Hypotheses 2, 4, and 7. These findings indicate:
- The importance of (lack of) physical evidence to unsubstantiated findings.
- The importance of a substantiation finding to families with non-placed children in determining whether or not they engage in services.
- That the unsubstantiated finding category is *not* clearly linked to *severity* of subsequent re-referrals.

♦ Evidence was found *in*consistent with all or part of Hypotheses 1, 3, 5, 6, and 7. These findings indicate that:
- Neglect referrals with multiple prior referrals were *not* significantly more likely to be unsubstantiated than were other types of maltreatment.
- Neglect cases are not significantly more likely to be classified as inconclusive compared to other types of maltreatment allegations.
- Families who are unsubstantiated do not re-refer at the same rate as families classified as inconclusive and unsubstantiated.
- Families who are unsubstantiated are not as likely to re-refer as inconclusive and/or substantiated as those families initially referring as inconclusive or substantiated.
- Families who are unsubstantiated do significantly differ from families classified as inconclusive or substantiated in their rates of re-referral and CA/N potential (as indicated by intake risk-tag at re-referral).

2. Hypotheses and Related Findings, by Domain
♦ Regarding *case history*, it was found that the presence of priors increased the chance that a physical neglect case would be *substantiated*, but there was no such effect for physical and sexual abuse cases. The presence of priors, in contrast, *decreased* the chance that a sexual abuse cases would be substantiated.

♦ Regarding *case features*, it was found that:
- Cases in which there was not physical evidence of harm were significantly more likely to be unsubstantiated than cases in which physical evidence of harm was present, and this was true regardless of the level of risk rated for dangerousness of the act.
- If risk for dangerous acts was rated moderate or high risk with no evidence of physical harm, the case was less likely to be substantiated than those higher-risk cases where evidence of harm was indicated.

- Neglect-only cases were somewhat less likely to be found inconclusive than other cases taken as a whole.

♦ Regarding *outcomes,* it was found that:
- Families whose children were not placed, but the allegations of maltreatment were *substantiated*, were significantly more likely to engage in services compared to families whose children were not placed and the allegations were classified as *inconclusive*.
- Families who are classified as *substantiated or inconclusive* are significantly more likely to re-refer than are families who are classified as *unsubstantiated*.
- Families who re-refer and who are re-investigated are much more likely to have the second investigated classified in the *same* way as the original investigation than they are to have a *different* finding.
- for cases initially found inconclusive but not subsequently so, there was a preponderance of cases subsequently judged *unsubstantiated* compared to *substantiated*.
- Cases initially classified as substantiated or inconclusive *are* more likely to re-refer than cases that are initially classified as unsubstantiated.
- Unsubstantiated cases had much *lower* risk at re-referral ("no" risk or "low" risk) than would be expected, and substantiated or inconclusive cases had much *higher* risk at re-referral ("moderate low" to "high" risk) than would be expected.
- the unsubstantiated finding category is *not* clearly linked to *severity* of subsequent re-referrals.

V. Multivariate Analyses

A. Introduction
Extensive empirical analysis in the 1994 CPS Decision-Making study provided a number of interesting findings associated with the CPS decision process, but, as important, this study also provided us with a better understanding of the underlying nature and character of the variables associated with CPS decision-making. The size of the database (>12,000 cases) allowed us to explore relationships within constructs and between constructs in sufficient depth to detect differences in structure and behavior of variables for sub-sets of the study population. For example, in the previous study we were able to identify those variables that were non-linear and to do exploratory work on variable interactions. This varied nature of the underlying structure of variables resulted in the use of more sophisticated statistical techniques in the present data analysis strategy. Some of the analyses below were conducted and are presented for the specific purpose of continuing to explore which statistical approaches result in the best predictive models to help us understand the character and nature of the relationships of different factors to the CPS finding decision. Correspondingly, some of our conclusions are methodological. In the first section we describe the initial construction of the analysis database. Data are provided on the comparability and differences between the data set used in this and the 1994 study. This is followed by a general description of the multivariate methods employed.

In the second section we present specific statistical models for different maltreatment types, a comparison of variable screening results using different statistical approaches, and summaries of findings by maltreatment sub-type and across types. Further analysis of the relationship of risk factors includes an examination of the form and trend of non-linear relationships on two underlying dimensions, and the resulting classification accuracy across the three finding decisions of interest. As will be noted, these analyses result in complex findings with varying levels of classification accuracy across maltreatment types based on different statistical approaches. A recommendation regarding the most useful analytical approach to CPS data are included with the final models.

In the next set of analyses we investigate whether a more parsimonious model could be developed which, though less specifically informative, would have a comparably high level of classification accuracy. In these final analyses we incorporate variables from the narrative analysis as well as summary risk variables for a final exploration of variable relationships in the CPS finding decision context, giving detailed information regarding each of the variables included in the general model.

B. Data and Methods

1. Extraction of Administrative Data Set
An analysis data set was extracted from a larger computerized statewide data management system known as CAMIS (Case and Management Information System). Once the data set was extracted, a primary one-year data cohort was defined for statistical analyses. The one-year data cohort includes CPS referrals which met the screen-in criteria for Washington State CPS for the time period 9/1/96 through 8/31/97. Cases excluded from the data set include referrals that did not have corresponding findings documented, summary post-investigation documentation, referrals on licensed facilities, and referrals lacking demographic and/or case information.

Once the initial data set was developed, procedures for unduplication, imputation and variable construction were devised. Furthermore, a comparison group of referrals was developed to determine if the selection criteria used to develop this data set produced a sample comparable to

the larger CPS population of cases. Finally, the analyses conducted on the previous data set developed for the 1994 CPS Decision-Making Study was replicated on this data set to determine if the previous findings were robust and could serve as the basis for further exploration in this new analysis. Appendix H provides detail on the extraction of the data set, unduplication procedures, imputation and variable construction, replication and data set differences from the previous study.

2. Survey of the Multivariate Methods Employed

Various multivariate modeling techniques were used to evaluate the finding decision data set. Bivariate analysis, logistic regression (LR), generalized additive models (GAM), and neural networks (NN) were used for initial risk factor selection. LR, GAM and NN were used to further eliminate redundant risk factors and to construct final regression models. NN was used to detect risk factor interactions. Nonlinear Canonical Correlation Analysis (NCCA) was used in Nonlinear Discriminant Analysis (NDA) mode to partition the risk factor-substantiation variance into two underlying components and to identify the relative importance of risk factors for both of these components.

NCCA examines the association between sets of nominal and/or ordinal variables where loglinear or nonlinear relationships are expected. For a technical description of the procedure that was used, see Appendix I. A particular form of NCCA was applied that is appropriate to this modeling situation: the finding variable was declared multiple nominal and placed in a set by itself. The risk factors identified in linear discriminant and (if available) neural network models were declared ordinal and included as a second set. (This is appropriate when correlations are expected between variables, and one does not wish this correlation to dominate the solution: i.e., we wish to examine the association between the finding variable with the risk factors, and not the associations among the risk factors.) Setting up the NCCA calculations in this way creates, in essence, in a nonlinear alternative to Discriminant Analysis (DA): vectors are constructed with the risk factors that optimally classify or discriminate among cases based on their substantiation status. For this reason, the results presented below will be referred to as Nonlinear Discriminant Analysis or NDA results.

DA or NDA proceeds in a manner similar to principle components analysis, with the exception that the variance optimization is performed with respect to an outcome or target classification variable. For the NDA results obtained here, two-dimensional solutions were constructed. In this procedure, vector (linear, for DA, and nonlinear for NDA) is constructed using all variables in a predictor set that captures the maximum variance in the substantiation variable. A second vector (dimension) is then constructed that optimally captures as much of the remaining variance as possible. Cases then can be classified based on their positions in the metric space defined by these two dimensions.

NDA suffers from two major disadvantages relative to linear DA and NN methods: there is no practical way to perform variable elimination and NDA does not explicitly treat interactions. This is the principle reason why, in the initial analysis, NN and linear DA were used to pre-select the risk factors included in the NDA modeling. (As a check, it was verified that NDA runs with all risk factors included resulted in solutions that were not significantly better than the runs with just the NN and DA-selected risk factors included.) In interpreting the results, it should be kept in mind that NDA, like LR or linear DA, will tend to try and model variance due to risk factor interactions as a nonlinear relationship between the finding outcome and single risk factors. For this reason, one should still consider those interactions identified by the NN method to get a complete picture of the possible relationships between risk factors and the substantiation decision. No one single modeling method provides any single "best" or "correct" model.

NCCA or NDA is an example of an optimal scaling procedure. Ordinal variables are requantified to convert them to interval scaled variables, so that for instance a doubling of the (rescaled) risk factor variable accurately reflects a doubling of risk. In this way, the nonlinear relationship between the risk factor and finding is contained in the rescaling of the variable.

C. Findings of Models Specific to Maltreatment Type, with Details of Risk

As noted in Appendix J, an aggregate type of abuse/neglect variable was constructed and used to segregate referrals based on type(s) of abuse.

Table 5.1
Frequencies of Each of the Resulting Type of Abuse Categories

Abuse Category	N
Sexual Abuse Only	726
Physical Abuse Only	2,065
Physical Neglect Only	2,472
Sexual Abuse plus Other Type(s)	569
Physical Neglect plus Other Type(s) *Except* Sexual Abuse	1,070

Table 5.1, provides an overview of the types and associated number for each subtype of maltreatment.

1. Screening of Variables

For each of the above five categories of abuse, Neural Network (NN) and Linear Discriminant Analysis (DA) were used to identify important interactions and to screen variables for input into a variant of Nonlinear Canonical Correlation Analysis here called Nonlinear Discriminant Analysis (NDA). Logistic regression (LR) with backwards (conditional) variable elimination was used as a further screen. NN was used to identify possible interaction terms for entry into LR and Generalized Additive Models. The outcome (dependent) variable was the finding status of the referral. Independent variables initially included all risk factor and all other variables from the intake referral information and the summary assessment. Variable screening procedures indicated that variables other than risk factors were *not* significant in the multivariate model when examined within the same context as all of the risk factors. The overall risk rating was deliberately *not* entered as a possible explanatory variable, to allow inclusion in the substantiation models of those individual risk factors associated with risk assessment and the overall risk rating.

In the course of screening for variables important for each type of abuse/neglect, LR and GAM models were compared, and the best (highest Somer's D correlation, highest classification accuracy) are presented below. GAM or Generalized Additive Models allow for nonlinear relationships between explanatory and outcome variables but otherwise have the same functional form as LR models; thus, they also share LR and regression models' weakness for the detection of explanatory variable interactions relative to Neural Network models. A comparison of LR, GAM, and NN models therefore allowed a preliminary assessment of the relative importance of nonlinear relationships between outcome and explanatory variables and an examination of explanatory variable interactions.

2. Results

Table 5.2
Comparison of Model Fit and Accuracy for Unsubstantiation Decision

	Type(s) of Abuse/Neglect				
	Sexual Abuse	Physical Abuse	Physical Neglect	SA and other(s)	PN and other(s) *except* SA
Logistic Regression (GLM)					
Dxy (Correlation)	.685	.679	.665	.653	.661
ROC area	.843	.839	.832	.826	.830
Sensitivity.5	68%	58%	64%	51%	50%
Specificity.5	83%	88%	84%	92%	90%
PPV.5	67%	68%	68%	69%	63%
NPV.5	83%	82%	81%	84%	84%
Total Accuracy	75%	78%	77%	81%	79%
N Risk Factors	5	11	14	6**	8**
Generalized Additive Model*					
Dxy (Correlation)	.703	.710	.694	.655	.716
ROC area	.851	.855	.847	.827	.858
Sensitivity.5	69%	61%	65%	39%	51%
Specificity.5	83%	89%	85%	95%	90%
PPV.5	67%	71%	69%	74%	65%
NPV.5	84%	83%	81%	82%	84%
Total Accuracy	78%	80%	78%	81%	80%
N Risk Factors	5	11	14	4**	7**
Neural Network Model					
K-S Statistic	.506	.503	.475	.436	.489
Complexity	5	32	2	18	55
Sensitivity.5	78%	76%	82%	76%	76%
Specificity.5	73%	75%	64%	62%	72%
PPV.5	59%	58%	55%	41%	49%
NPV.5	86%	87%	87%	88%	90%
Total Accuracy	75%	75%	73%	69%	74%
N Risk Factors	4	8**	2	3**	3**

*GAM computed with 4-df splines for each explanatory variable or interaction term.

** Interaction term(s) [hidden node(s) for neural networks] also significant in the model.

2a. General Observations

For single types of abuse (SA only, PA only, PN only), the models are rather simple. Except for PA only, the NN models do not have interaction terms (hidden nodes). The degree of nonlinearity is also low, evidenced by the similar results for LR(GLM) and GAM models. LR models, while slightly inferior to GAM models, provide an adequate description/explanation of the unsubstantiation decision. Interaction terms entered into LR and GAM models were not significant. As shown below, the risk factors for each type of abuse are sensible, and the unsubstantiation decision is dominated by the incident/severity factors appropriate for the specific type of maltreatment. In contrast, for mixed/multiple types, interaction terms are significant, and the spline functions in the GAM models show greater nonlinearity in the relationship between risk level and unsubstantiation.

Much of the complexity seen in earlier modeling of finding is (now) evidently due to cross-contamination of different types of abuse: the 25% mismatch problem, and the (incorrect) identification of referrals from the CA/N codes as single type referrals that were, in fact, multiple type referrals. In addition, the use of secondary caregiver risk factor information, where it exists, has had the effect of increasing the relative importance of the incident factors at the expense of the risk factors. The entry of the Overall Risk Rating in the models has a similar impact: much of

the variance in earlier models accounted for by the risk (assessment) factors is now covered by overall risk, accentuating and clarifying the role of the incident/severity factors. Overall rating of risk is almost always, if not entirely, linearly related to unsubstantiation (inversely related), regardless of the type of maltreatment. There is a suggestion that in physical neglect plus other types of cases except sexual abuse, the effect of overall risk rating increases at higher risk, but there is not sufficient precision of the estimates to be sure. In short, the more complex models with interactions (still) arise in the case of multiple type of abuse/neglect referrals, while simpler, single-type referrals show a correspondingly simpler model of the unsubstantiation decision.

Table 5.3
Odds Ratios from Logistic Regression Models
(outcome is unsubstantiation vs. inconclusive/founded)

	Type(s) of Abuse/Neglect				
	Sexual Abuse	Physical Abuse	Physical Neglect	SA and other(s)	PN and other(s) *except* SA
Summary Risk Rating					
Overall Risk	.60	.36	.47	.58	.59
Chronicity and Incident Severity Factors					
Chronicity of CA/N	-	.80	.83	.73	.78
Dangerous Acts	.60	.60	.83	.65	.61
Sexual Abuse/Exploitation	.55	-	-	.66	-
Physical Injury/Harm	-	.78	-	-	-
Supervision	-	1.34	.47	-	-
Emotional Harm/Abuse	.74	-	.84	-	-
Medical Care	-	1.32	-	-	.72
Hazards in the Home	-	-	.86	-	.81
Child Risk Factors					
Child Age Risk Level	.83	-	.91	-	-
Developmental Disability	-	1.19	1.17	-	-
Fear of Caregiver	-	.83	-	-	-
Caregiver Risk Factors					
Recognition of Problem	-	-	-	.63	.76
Protection of Child	-	.78	-	-	.71
Cooperation with Agency	-	-	.79	-	-
Caregiver/Child Relationship Risk Factors					
Response to Child's Behavior	-	.68	-	-	-
Response to Disclosure	.75	-	-	-	-
Parenting Skills	-	-	.80	-	-
Nurturance	-	-	1.23	-	-
Pressuring Child to Recant	-	-	1.28	-	-
Socio-Economic and Access/Responsibility Risk Factors					
Economic Resources	-	-	-	1.26	-
Stress on Caregiver	-	1.15	1.18	-	-
Social Support	-	-	-	-	1.24
Access to/Responsibility for Child by Perpetrator	-	-	.95	-	-
Risk Factor Interaction Terms					
Dangerous Acts* Hazards in the Home	-	-	-	-	1.15
Dangerous Acts* Recognition of Problem	-	-	-	1.20	-

NOT significant in any logistic regression models for unsubstantiation: Deviant Arousal, Child Behavioral Problems, Non-Sexual Exploitation, Victimization of Others, Caregiver Impairments, Substance Abuse, Caregiver's History of CA/N as a Child, History of Domestic Violence, Attachment/Bonding, Child's Role in Family, Personal Boundary Issues, Employment Status.

Odds ratios less than one indicate that increased risk for a risk factor decreases the likelihood a referral allegation will be declared unsubstantiated. The following table gives the percentage decrease in this likelihood for a 2-unit increase in risk (e.g. from low to moderate risk).

Table 5.4
Percentage Decrease in Likelihood of Unsubstantiation with a 2-unit Increase in Risk

	Type(s) of Abuse/Neglect				
	Sexual Abuse	Physical Abuse	Physical Neglect	SA and other(s)	PN and other(s) *except* SA
Summary Risk Rating					
Overall Risk	180 (~3X)	570 (6.5X)	350 (~4.5X)	190 (~3X)	190 (~3X)
Chronicity and Incident Severity Factors					
Chronicity of CA/N	-	55	40	90 (~2X)	65
Dangerous Acts	180 (~3X)	170 (~2.5X)	50	140 (~2.5X)	170 (~2.5X)
Sexual Abuse/Exploitation	230 (~3X)	-	-	130 (~2X)	-
Physical Injury/Harm	-	65	-	-	-
Supervision	-	- 80	130 (~2X)	-	-
Emotional Harm/Abuse	80 (~2X)	-	40	-	-
Medical Care	-	- 70	-	-	95 (~2X)
Hazards in the Home	-	-	30	-	50
Child Risk Factors					
Child Age Risk Level	50	-	20	-	-
Developmental Disability	-	- 40	- 40	-	-
Fear of Caregiver	-	40	-	-	-
Caregiver Risk Factors					
Recognition of Problem	-	-	-	150 (~2.5X)	75
Protection of Child	-	65	-	-	95 (~2X)
Cooperation with Agency	-	-	60	-	-
Caregiver/Child Relationship Risk Factors					
Response to Child's Behavior	-	115 (~2X)	-	-	-
Response to Disclosure	75	-	-	-	-
Parenting Skills	-	-	50	-	-
Nurturance	-	-	- 50	-	-
Pressuring Child to Recant	-	-		-	-
Socio-Economic and Access/Responsibility Risk Factors					
Economic Resources	-	-	-	- 60	-
Stress on Caregiver	-	- 30	- 40	-	-
Social Support	-	-	-	-	- 50
Access to/Responsibility for Child by Perpetrator	-	-	10	-	-
Risk Factor Interaction Terms					
Dangerous Acts* Hazards in the Home	-	-	-	-	- 30
Dangerous Acts* Recognition of Problem	-	-	-	- 40	-

GAM coefficients are analogous to LR Beta coefficients, but now, instead of a single Beta value for each model variable, there is a coefficient multiplied by a spline smoothing function that varies over the risk range of 0-5. In other words, the magnitude of the effect of each risk factor on the finding decision depends on the risk level. A factor or factors that are important (large Betas) at low risk may be less important than other factors at higher risk.

Examples of the GAM smoothing functions are shown below. The error bands (95% confidence limits, dotted lines) expand at high risk because there are relatively fewer referrals at the higher risk levels (lower effective sample size). If a straight line can be drawn within these error bounds, that is an indication that a single coefficient (constant slope) is an adequate model of the

outcome-explanatory association, i.e., that a simple logistic regression model is an adequate description (for that variable). Nonlinear curves, on the other hand, indicate significant nonlinearity, and the fit of a GAM model to the data will as a result be better than the fit of a simpler, linear-term LR model.

Many of the interaction terms, identified by NN analysis, were not significant in corresponding LR models but *are* significant in GAM models. This indicates that the interaction terms are themselves nonlinear in their relationship to the outcome variable (unsubstantiation) and also explains why earlier efforts to test NN-identified interaction terms in LR models met with very limited success.

Figure 5.1. An example of GAM spline functions[1], from the GAM model for the multiple abuse category of Physical Neglect and Others Except Sexual Abuse. Note the three-dimensional interaction term for Chronicity of CA/N * Basic Needs.

Figure 5.1
Example of GAM Spline Functions
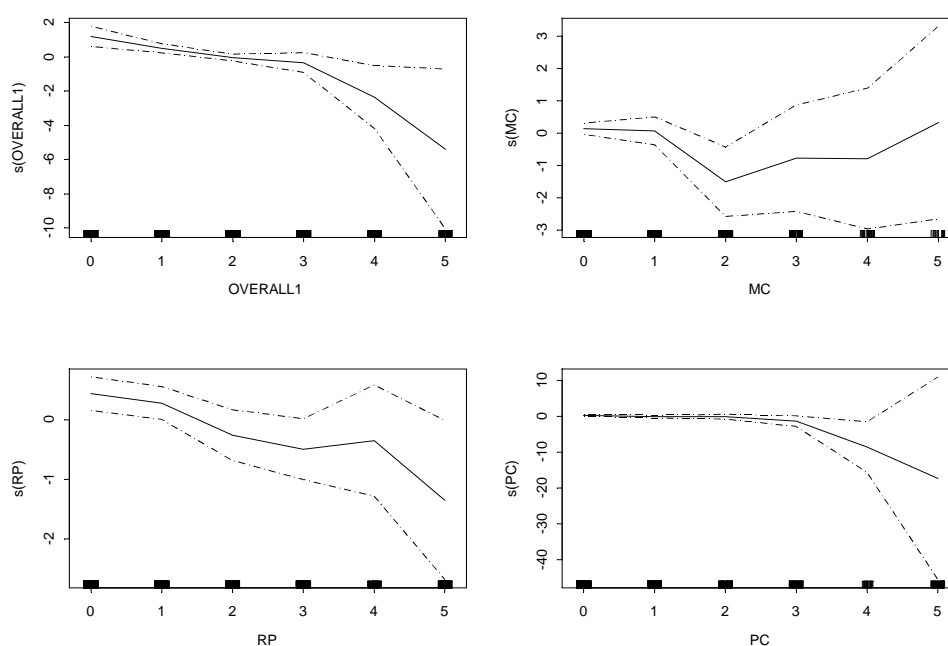
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[1] Vertical axes indicate the levels of GAM spline smoothing functions, as they vary over the 0-5 range of risk (X axes). * X-axis labels are as follows:

OVERALL1 – Overall Risk   MC – Medical Care   RP – Recognition of Problem   PC – Protection of Child
SS – Social Support   DA – Dangerous Acts   CCAN – Chronicity of C/AN   BN – Basic Needs

Figure 5.2
Example of GAM Spline Functions[1] (continued)
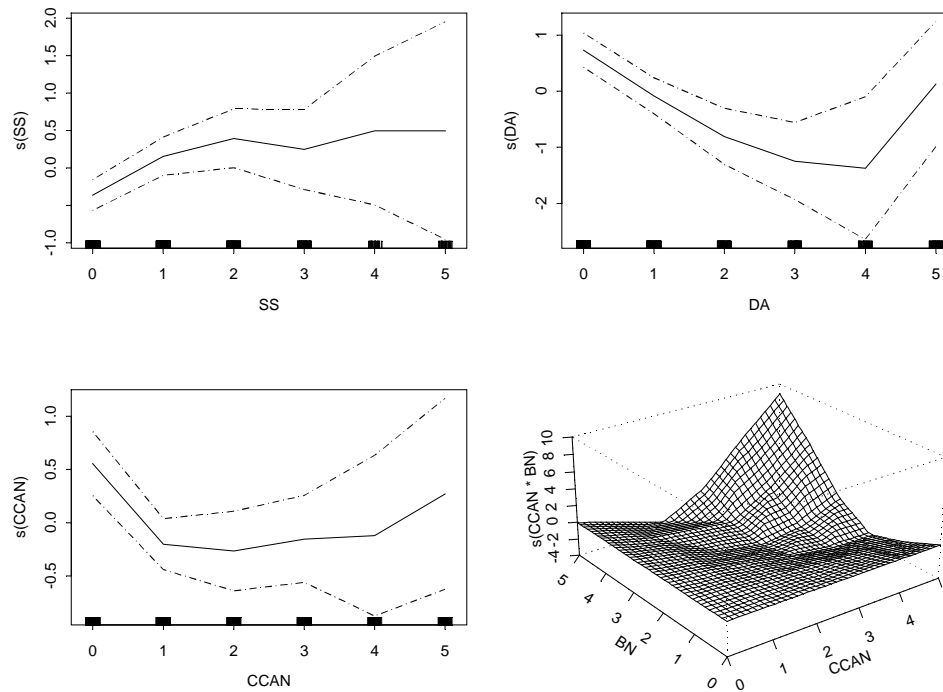
* Dotted lines indicate the 95% confidence limits for these smoothing function values.

The following sections detail the additional information gained from GAM and NN models of unsubstantiation for different types of abuse.

2b. Sexual Abuse Only

For sexual abuse only referrals, the LR model is an adequate description (see Tables 5.2-5.4). Linear (inverse) relationships between risk factors and (the logit of) unsubstantiation are all that are observable within the noise levels of the data. The sexual abuse model is relatively simple, with the Sexual Abuse/Exploitation factor having (logically) the largest effect; a 2-unit increase in risk decreases by over three times the likelihood a referral allegation of sexual abuse will be declared unsubstantiated. Overall risk and Dangerous Acts decrease this likelihood by nearly three times, and Emotional Harm/Abuse by nearly twice. Child Age Risk Level and Response to Disclosure also contribute to this model.

The GAM model with the same variables showed a slightly better fit than the LR model, but this improvement was not significant. The GAM model did indicate that the source of the improvement was primarily a nonlinear relationship between unsubstantiation and Response to Disclosure, where the (negative) slope of the smoothing function increases at higher risk, indicating that Response to Disclosure increases in importance (relative to the other variables in the model) at higher risk levels; referrals at 4-5 risk for Response to Disclosure have a likelihood of not being declared unsubstantiated that is enhanced relative to referrals at 0-3 risk for Response to Disclosure.

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[1] Vertical axes indicate the levels of GAM spline smoothing functions, as they vary over the 0-5 range of risk (X axes). * X-axis labels are as follows:

OVERALL1 – Overall Risk	MC – Medical Care	RP – Recognition of Problem	PC – Protection of Child
SS – Social Support	DA – Dangerous Acts	CCAN – Chronicity of CA/N	BN – Basic Needs

In an alternative model, the neural network for sexual abuse-only referrals identified Dangerous Acts, Medical Care, Sexual Abuse/Exploitation, and Deviant Arousal as the model variables, with Sexual Abuse/Exploitation having the largest effect. This model had a total classification accuracy comparable to the LR model and superior sensitivity, but did not contain any interaction terms (hidden nodes).

2c. Physical Abuse Only
In the case of referrals containing only physical abuse allegations, a more complex model for unsubstantiation results. The GAM model is significantly better than the LR model, indicating a higher degree of nonlinear relationships between finding status and (some of) the risk factors. Consequentially, the GAM model for physical abuse-only referrals is presented here in greater detail. The GAM coefficients reported in the table below that compares LR and GAM models represent an *average slope* of the unsubstantiation/risk factor relationships; i.e., an odds ratio averaged over the risk range of 0-5. This mean slope or mean odds ratio of a given risk factor is often very similar to the odds ratio of the risk factor in the LR model. As indicated in Table 5.5, some of the risk factors are essentially linear in their relationship to unsubstantiation, meaning a single odds ratio is appropriate and that a LR model is adequate. Other risk factors, however, show marked nonlinearity and an improved model fit is obtained in the GAM model.

Table 5.5
Comparison of LR Odds Ratios and GAM Mean Odds Ratios for Physical Abuse Only

Risk Factor	LR Odds Ratio	GAM Mean Odds Ratio	Δ GAM Odds Ratio +/- *
Overall Risk Level	.36	.39	0
Dangerous Acts	.60	.62	0
Response to Child's Behavior	.68	.70	+
Physical Injury/Harm	.78	.80	-
Chronicity of CA/N	.80	.80	-
Protection of Child	.78	.80	0
Fear of Caregiver	.83	.84	0
Supervision	1.34	1.31	+
Medical Care	1.32	1.21	0
Stress on Caregiver	1.15	1.17	-
Developmental Disability	1.19	1.17	0

*Does the GAM Odds Ratio increase (+) or decrease (-) in absolute magnitude (relative importance of the variable) as risk level for the risk factor increases. A zero entry indicates that the odds ratio is essentially constant and is therefore adequately represented by a simple linear term.

The change in GAM odds ratio is positive for Response to Child's Behavior, that is, the odds ratio is smaller (greater decrease in the likelihood of unsubstantiation) at high risk compared to low risk for this risk factor. The change is also positive for Supervision, but here, an increase in risk for this risk factor increases the likelihood of unsubstantiation (decreases the likelihood of a referral being declared founded/inconclusive). The effects of these two variables on the likelihood of unsubstantiation increase at higher risk, but in opposite directions. Conversely, the effects (odds ratios) of Physical Injury/Harm, Chronicity, and Stress on Caregiver decline in relative importance at higher risk, with the effect of Stress on Caregiver being in the opposite direction. The effects of the remaining risk factors in the model stay (roughly) constant throughout the risk range, meaning that their odds ratios (magnitude of their effects on the unsubstantiation decision) are approximately constant.

The magnitude of the change is greatest for Response to Child's Behavior: this risk factor has an odds ratio near one (no effect) at 0-2 risk, about 0.5 from risk 2-3 (i.e., this increase about halves

the likelihood of unsubstantiation) and of about 0.3 from risk 3-5 (i.e., this increase decreases the likelihood of unsubstantiation by a factor of about three for every unit increase, from 3-4 and from 4-5). This change infers that workers do not take Response to Child's Behavior into account in their unsubstantiation decision unless it is present at moderate or higher risk, where it takes on increasing importance as risk increases over the range of 2-5. at higher risk for Response to Child's Behavior, workers are much less likely to declare a physical abuse allegation as unsubstantiated. (These properties of Response to Child's Behavior are similar to those for Overall Risk Level for referrals containing allegations of Physical Neglect with Other(s) Except Sexual Abuse; see Figure 5.2 for a spline function illustrative of these properties.)

The odds ratio for Chronicity of CA/N is about 0.5 from risk 0-1 (an increase in Chronicity from zero to one halves the likelihood of unsubstantiation), but after that, further increases in risk for Chronicity have little or no effect (odds ratio near one). Recall that the odds ratio of 0.80 reported in the above table is an average across the entire risk range. The spline function is again similar to the Chronicity spline function for Physical Neglect with Others Except Sexual Abuse; see the figure for an illustration. Chronicity apparently matters in the unsubstantiation decision only when distinguishing families with no past abuse history from those with any amount or level of past abuse history, from isolated to intermittent to chronic.

The odds ratio for Supervision stays near one (no effect) from risk levels 0-3, whereupon it increases sharply, to about 2-3, decreasing the likelihood of unsubstantiation by a factor of two to three times. Apparently, physical abuse allegations with higher-risk Supervision allegations are much more likely to be unsubstantiated (less likely to be declared founded or inconclusive). This indicates something of a decision threshold in physical abuse cases: as the risk of neglect (Supervision) increases past a certain point, the case is perhaps no longer characterized in the worker's judgment as a physical abuse case, and physical abuse allegations are more likely to be unsubstantiated.

The odds ratio for Stress on Caregiver is near two from risk 0-2, then levels off to near one (no effect). If workers are "excusing" physical abuse because of stress, they apparently only do so at lower levels of stress, and further increases in stress past this threshold (moderate risk) no longer affect their unsubstantiation decision. Physical Injury/Harm shows an effect opposite in sign (increases in risk/severity decrease the likelihood of unsubstantiation) but a similar leveling off: after risk/severity levels of moderate, further increases do not affect the unsubstantiation decision.

The appearance of factors related to other forms of abuse/neglect (Supervision, Medical Care) as pseudo "protective" factors that *increase* the likelihood of unsubstantiation at *higher* risk has been observed before. One hypothesis is that workers are less likely to substantiate (more likely to unsubstantiate) a physical abuse allegation if they feel the case/family is primarily one of other issues such as neglect. We used the investigations module in an attempt to define "pure" physical abuse referrals, but apparently there are still many referrals not formally identified as having multiple types of abuse that workers still express, through the risk factors, a feeling that multiple issues are involved.

The appearance of Developmental Disability and Stress on Caregiver as factors that also *increase* the likelihood of unsubstantiation is more interesting, and may indicate some tendency on the part of workers to "excuse" (hopefully low-severity) physically abusive behavior if the child presents serious behavioral/developmental challenges to the parent(s) and/or if the parents are perceived as subject to high levels of stress.

The fact that overall risk level has the largest odds ratio (largest absolute difference from one) indicates that-risk assessment is a significant component of the finding decision, in keeping with earlier modeling results and with Washington State CPS policy definitions of the finding categories. This effect is large and relatively constant across the overall risk range of 0-5. Finally, the neural network model indicated a possible two-way interaction between Response to Child's Behavior and Stress on Caregiver, where if *both* factors increase in risk, the likelihood of unsubstantiation *increases*. It may be that what ordinarily would be a troubling response to child's behavior is discounted as an effect of stress on the caregiver rather than it's being attributed to more internal causes. This interaction term was not significant in the LR model, but was significant in the GAM model, indicating that the interaction is also nonlinear in its relationship to unsubstantiation. The shape of the interaction term was similar to that shown for the Chronicity of CA/N* Basic Needs interaction term in the figure for Physical Neglect plus Others Except Sexual Abuse referrals; i.e., relatively little to no effect (odds ratio near one) at low to moderate risk for either or both risk factors, and a large odds ratio for risk 4-5 for both risk factors (large increase in the likelihood of unsubstantiation). However, although the interaction term was significant, the overall improvement in model fit was not.

2d. Physical Neglect Only
For referrals with only physical neglect allegations, the simple LR model provided an adequate description of the unsubstantiation decision. The GAM model using the same coefficients did not provide a significantly better fit. The LR model (see Tables 5.2-5.4) has a larger number of risk assessment-related factors as well as the obvious neglect-related severity factors of Supervision and Basic Needs. Overall Risk Level has by far the largest effect (odds ratio) in the model. Stress on Caregiver and Developmental Disability again appear as offsetting or possibly "excusing" factors. Other negative factors are Pressuring Child to Recant and Nurturance. The appearance of these factors (as negative factors) is puzzling, although a moderate problem with collinearity between Nurturance and Child Age Risk Level (correlation of -0.33) may explain the (artifactual) occurrence of Nurturance. Other than these features, the model for physical neglect-only referrals seems logical and is similar to earlier results.

The NN model for physical neglect-only referrals was slightly inferior to the LR and GAM models, with a total classification accuracy of 75% versus 77%. However, this NN model is much simpler (and therefore likely much more robust and generalizable), containing only Overall Risk and Supervision. This indicates that most of the variance in the unsubstantiation decision for physical neglect cases is rather simply explained by the workers' global assessment of risk (Overall Risk) plus their judgment of the relative severity of the (lack of) Supervision issue in the referral.

2e. Sexual Abuse and Other Type(s)
The simple LR model for this combined type of abuse provided an adequate description, although this simplicity is likely only apparent due to the low N for this category (N = 569). The NN model indicated possible two- and three-way interaction terms between Dangerous Acts, Sexual Abuse/Exploitation, and Recognition of Problem. One of these two-way terms, Dangerous Acts* Recognition of Problem, was also significant in the LR model. In this case, the interaction term is roughly linear (constant) in its effect on the unsubstantiation decision. We observe the curious effect that higher risk for both Dangerous Acts and Recognition of Problem *increases* the likelihood of unsubstantiation. Since both of these risk factors have the opposite effect as main effects, this may be an interactive correction to an overly decreased likelihood of unsubstantiation when both risk factors are at high risk in the same referral. The other curious effect is the appearance of Economic Resources as a negative factor; this may indicate a similar

effect to the appearance of Supervision as a negative factor in the model for physical abuse-only referrals. At higher risk for Economic Resources, the multiple-problem referral may be viewed as primarily a neglect or poverty-related issue, with the sexual abuse allegation more likely to be unsubstantiated.

2f. Physical Neglect plus Other Type(s) except Sexual Abuse

The GAM model for this combined category gave a significantly better fit to the data than the simpler LR model, and the GAM model was further improved via the addition of NN-identified interaction terms that were not significant in the LR model. The full GAM model, with all significant interaction terms, is compared to the simpler LR model in Table 5.6. Figures 5.1-5.2 show the actual spline functions for each main effect and the Chronicity* Basic Needs interaction term. (the magnitude of the error limits should be kept in mind when interpreting these functions).

Table 5.6
Comparison of LR Odds Ratios and GAM Mean Odds Ratios for Referrals
with Physical Neglect plus Other(s) *Except* Sexual Abuse

Risk Factor	LR Odds Ratio	GAM Mean Odds Ratio	Δ GAM Odds Ratio +/- *
Overall Risk Level	.59	.56	0 (+)
Dangerous Acts	.61	.64	-
Protection of Child	.71	.70	0
Recognition of Problem	.76	.74	0
Medical Care	.72	.77	0
Chronicity of CA/N	.78	.84	-
Hazards in the Home	.81	not sig.	n/a
Social Support	1.24	1.29	0
Chronicity *Basic Needs	-	1.04	0
Chronicity *Dangerous Acts	-	.94	0
Dangerous Acts *Basic Needs	-	1.29	0
Dangerous Acts *Hazards in Home	1.15	1.25	+

*Does the GAM Odds Ratio increase (+) or decrease (-) in absolute magnitude (relative importance of the variable) as risk level for the risk factor increases. A zero entry indicates that the odds ratio is essentially constant and is therefore adequately represented by a simple linear term.

As with other types of abuse, Overall Risk has a large and roughly constant effect on the unsubstantiation decision; there is some indication that its effect increases at higher risk but the large error bounds make this uncertain. The *absence* of Supervision as a significant model variable in this combined abuse category is quite interesting, and may indicate that (lack of) Supervision is of relatively minor concern to the workers when other, more easily substantiated issues are present. The presence of Social Support as a negative factor is puzzling; there are no significant collinearity problems with this variable that might explain this as simply an artifact. Is it possible that workers are "excusing" complex, neglect-containing cases on the basis of social isolation? This does not seem plausible.

Three of the four interaction terms occur as negative factors, and again may represent a model correction for an overly decreased likelihood of unsubstantiation when both of the two factors in the interaction term are present at high risk. This may be due to a "saturation" effect, where the likelihood of unsubstantiation at first declines with increasing risk then reaches a maximum, past which further increases in risk in various risk factors does not cause any further decline in the likelihood of unsubstantiation. This nonlinear behavior is in keeping with the nonlinear behavior of several individual risk factors such as Chronicity of CA/N and Dangerous Acts, which both show a leveling off of their effects after risk reaches a certain level.

For the nonlinear risk factors in this model, both Dangerous Acts and Chronicity of CA/N show a large effect at lower risk (odds ratio .5 to .3) followed by a leveling off to little or no effect or even a slight reversal to odds ratios greater than one at higher risk. This leveling off occurs near risk levels 1-2 for Chronicity and near risk levels 3-5 for Dangerous Acts. *Again, this may be an indication that the difference between zero and low risk is the most important with respect to unsubstantiation, with further increases in risk in these factors not resulting in any further decreases in the likelihood of unsubstantiation.*

The neural network model identifies Dangerous Acts, Basic Needs, and Chronicity of CA/N as important risk factors, with a high degree of risk factor interaction. This model has inferior total classification accuracy but superior sensitivity compared to the LR and GAM models. As noted, the NN model identified potential interaction terms for the LR and GAM models. The achievement of superior sensitivity with only three risk factors is another indication that interactions are important in unsubstantiation decision making for this mixed, multiple abuse/neglect category of referrals.

Neural network models, with their inherent higher sensitivity to variable interactions, were used to identify possible risk factor interactions for entry into LR and GAM models. Because LR and GAM have a lower sensitivity to interactions, it is not surprising that some of these interaction terms did not provide statistically significant improvements in the model fit or classification accuracy. When considering the possible presence of interactions, it is important to evaluate NN-identified interaction terms regardless of whether they "survive" or not when entered into LR or GAM models. Some of the risk factor interaction terms that *were* significant when entered into GAM models include, for sexual abuse plus other(s) referrals, two- and three-way interaction terms between Dangerous Acts, Sexual Abuse/Exploitation, and Recognition of Problem. One of these two-way terms, Dangerous Acts* Recognition of Problem, was also significant in the LR model. It is interesting, and logically consistent, that more interaction terms were detected and found significant for the multiple types of abuse categories than for the single type of abuse categories.

The risk factor interactions identified by the neural network method are summarized below, with an indication of whether they were also statistically significant in the GAM and/or LR models. The additional notations have the following meanings: "L" indicates that the risk factor has a (approximate) linear relationship with the unsubstantiation decision. For nonlinear relationships, "↑" indicates that the effect of the risk factor strengthens (beta coefficient increases in magnitude, whether in the positive or negative direction) as the risk level for the factor increases.

Sexual Abuse Only: No Interactions Detected

Physical Abuse Only: Response to Child's Behavior* Stress on Caregiver, -↑
                 (significant in GAM model)

Physical Neglect Only: No Interactions Detected

Sexual Abuse & Other(s): Dangerous Acts *Sexual Abuse/Exploitation *Recognition of Problem
        Dangerous Acts* Sexual Abuse/Exploitation
                Dangerous Acts *Recognition of Problem, -L (sig. in LR model)
                Sexual Abuse/Exploitation *Recognition of Problem

Physical Neglect & Other(s)
Except Sexual Abuse: Chronicity of CA/N *Basic Needs, L (sig. in GAM model)
                      Chronicity of CA/N *Dangerous Acts, L (sig. in GAM model)
                      Dangerous Acts *Basic Needs, L (sig. in GAM model)
                      Dangerous Acts *Hazards in the Home, ↑
                       (significant in LR and GAM models)

2g. Interactions

It can be seen that almost all of the interactions detected pertain to the multiple-type categories of maltreatment, and that most of them involve the interaction of some other risk variable with Dangerous Acts. This indicates that, for these multiple-type cases, how various other risk factors are understood (specifically Recognition of Problem, Sexual Abuse/Exploitation, Chronicity of CA/N, Basic Needs, Hazards in the Home) depends upon the level of risk of Dangerous Acts. An implication of this finding is that for cases involving more than one type of maltreatment an accurate assessment of the risk of Dangerous Acts can be key to making a good decision as to whether or not the case should be unsubstantiated, because that assessment especially influences the interpretation of various other influential risk factors that may be present in the case.

Additionally, there are a few interactions not including Dangerous Acts that are specifically important to one or another type of maltreatment category. For Physical Abuse Only cases, the interaction of Response to Child's Behavior and Stress on Caregiver is notable: If both risk factors are high the case is more likely to be unsubstantiated (see discussion above, in 2c). For Sexual Abuse and Other cases, the interaction of Sexual Abuse/Exploitation and Recognition of Problem is important, though the implications of the interaction on the unsubstantiation decision my depend on the assessment of risk of Dangerous Acts (i.e., there is a three-way interaction involving these variables). For cases classified as Physical Neglect and Others Except Sexual Abuse, the interaction of Chronicity of CA/N and Basic Needs is important, such that the more chronic is the case that has a risk of insufficient provision of basic needs, and the higher that risk, the less likely is the case to be unsubstantiated.

2h. Nonlinearity

In summary, a comparison of LR and GAM models showed that nonlinear relationships between risk factors and the finding status of referrals were often statistically significant: for some types of maltreatment, GAM models provided significantly better fits to the data and higher classification accuracies. This should not be particularly surprising, as the risk factor scales have not been rigorously developed as continuous numerical scales but simply defined as ordinal variables. The extreme nonlinearity in some risk factors, however, does indicate that caseworkers, on average, use certain risk factors *as threshold or plateau variables* rather than as six-point ordinal scales. For instance, the presence of the Response to Child's Behavior risk factor in physical abuse only referrals does not appreciably affect the declaration of an allegation as unsubstantiated at no risk to moderately low risk, but when present at moderate or higher risk, reduces the likelihood an allegation will be declared unsubstantiated and becomes increasingly important as risk increases over the range of 2-5. Factor-by-factor nonlinearities, examined in the context of maltreatment type, are detailed in the next section, most specifically in the footnotes to Tables 5.7-5.11.

The models described herein reveal a greater level of detail and specificity regarding the relationship between the finding decision and risk factors, compared to the earlier finding models in the CPS decision making project. This improvement is due to a substantial increase in data quality from the use of investigations module information, secondary caregiver risk factors to supplement missing or insufficient primary caregiver information, and a more accurate

identification of principle type of CA/N (made possible by improvements in the reliability of intake to summary assessment matching). The most striking feature of these new models is the presence of nonlinearities. Earlier neural network models also indicated the presence of substantial nonlinearities and interactions. These observations prompted the application of Nonlinear Canonical Correlation Analysis (NCCA) to these data. By examining the projections of these quantifications along the two dimensions of the NDA solution, one can examine the form and trend of the nonlinear relationship.

2i. Summary of Findings of Comparison of Methods: Logistic, GAM, and Neural Networks

- Different modeling methods have their strengths and weaknesses. The contrasts between them make it evident that no one single modeling method provides any single "best" or "correct" model. In effect, they provide *different* views of the data.
- Cases of sexual abuse *only* or physical neglect *only* are simpler to understand in terms of risk factors associated with the unsubstantiation decision than are *physical abuse* cases (accurate modeling of which requires interaction terms), and especially cases with *multiple* types of maltreatment, which are more complex (requiring both interaction terms and nonlinearities for accurate modeling).
- Adding to the complexity of modeling cases with multiple types of maltreatment, risk factors' interaction terms may themselves be nonlinear.
- However, much of the complexity previously thought to be necessary evidently was due to data problems (mismatched cases, incorrect classification of cases as single-type of maltreatment cases) rather than being due to complexities of the actual finding decisions.
- Nonlinearity indicates that caseworkers tend to use some risk factors as *plateau* or *threshold* variables. In other words, factors that are important at low risk may be less important than other factors at higher risk, and *vice versa*. Consistent with plateau effects for individual risk factors, there is evidence for an overall *saturation* effect, such that likelihood of unsubstantiation initially declines with increasing risk, but then reaches a point beyond which further increases in risk on various factors does *not* cause any further decline in the likelihood of unsubstantiation.
- Some risk factors may be considered by caseworkers to indicate somewhat *mitigating* circumstances. For example, child developmental disability and stress on caregiver each increase the likelihood of *unsubstantiation* of physical abuse cases, and this may indicate a tendency of workers to excuse some physically abusive behavior if the child presents serious behavioral/developmental challenges and/or if the parents are perceived as being highly stressed.
- There are indications that the difference between zero and low risk (i.e., risk absent/present) generally is the most important risk-related distinction with respect to unsubstantiation.
- Use of the Overall Risk Rating can account for much of the variance accounted for by more specific risk assessment factors. Overall risk almost always is linearly related to unsubstantiation (inversely), regardless of the type of maltreatment.
- for cases involving more than one type of maltreatment, an accurate assessment of the risk of Dangerous Acts can be key to making a good decision as to whether or not the case should be unsubstantiated, because that assessment especially influences the interpretation of various other influential risk factors that may be present in the case.
- Using secondary caregiver risk factor information, where it exists, is important. Doing so has the effect of increasing the importance of incident severity factors relative to risk factors.
- There is a suggestion that caseworker conceptualization of the "type of case" can play an important role in the unsubstantiation decision. For instance, as the risk of neglectful supervision increases past a certain point physical abuse allegations are more likely to be

unsubstantiated. One hypothesis is that this may explained by caseworkers' no longer regarding such cases as "physical abuse cases," but instead thinking of them as "neglect cases," and correspondingly tending toward unsubstantiation of the physical abuse allegations.

3. Nonlinear Discriminant Analysis Results

3a. General Observations

The most basic contribution of the NDA models is the partitioning of the finding-risk factor association into two different dimensions. First, we show that the two-dimensional solution obtained includes a dimension related to the direction of the finding conclusion and a certainty dimension, then we show how the risk factors contribute to these two dimensions of the substantiation decision. Dimension 1 distinguishes between whether the case was unsubstantiated or substantiated. These are the two conclusive outcomes possible in the finding decision, so we refer to Dimension 1 as "direction of conclusion" (unsubstantiated vs. substantiated). Dimension 2, what we call the certainty dimension differentiates inconclusive (less certain) from substantiated or unsubstantiated cases (more certain).

Figure 5.3 shows the weighted mean scores for referrals with different finding status. (This particular plot is from the NDA model for physical neglect only cases; the plots for other types of abuse are very similar.) Note that the centroids unsubstantiated, inconclusive, and substantiated cases are nearly equally-spaced along dimension one. In contrast, unsubstantiated and substantiated referrals have nearly equal values along dimension two, with inconclusive referrals having a markedly different value than either of these.

Figure 5.3
Centroids for Findings
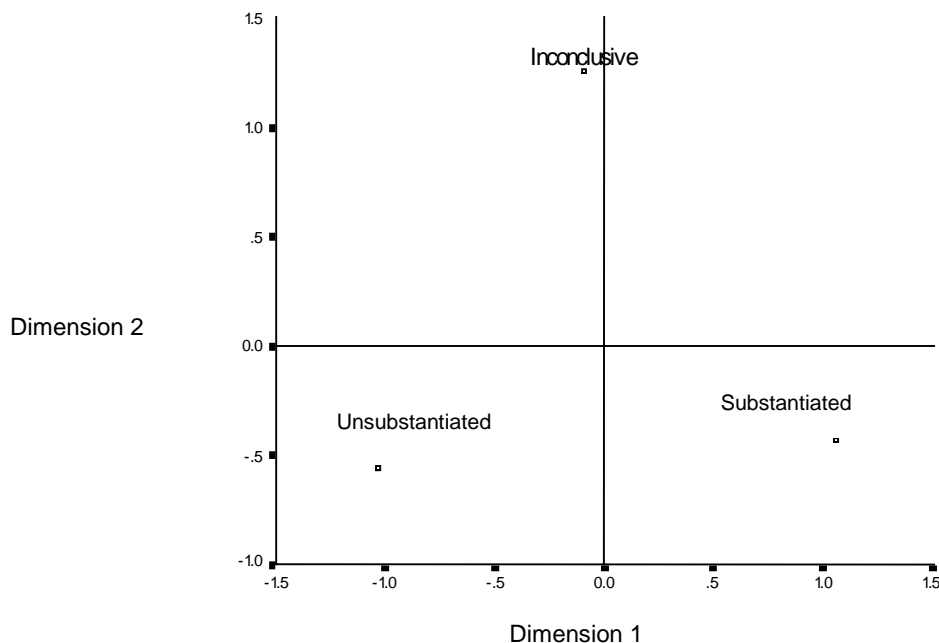
Centroids (weighted means) of case scores along the two NDA model dimensions, for Unsubstantiated, Inconclusive, and Substantiated physical neglect referrals.

The NDA risk factor vectors, composed of the rescaled risk factor scores for each referral, can be used as predictor variables in standard multivariate models. When the two vectors (dimensions)

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are entered as the (only) predictor variables into logistic regression models for each of the three ways of dichotomizing the finding status variable (unsubstantiated vs. inconclusive/substantiated, inconclusive vs. unsubstantiated/substantiated, and substantiated vs. inconclusive/unsubstantiated), the following results are obtained: in each of the separate three LR models, referrals are correctly classified as either unsubstantiated, inconclusive, or substantiated at rates (sensitivities) varying from 90-98%. When the second dimension is eliminated from the LR models, or when an NDA model using the same risk factors but restricted to a single dimension solution is used instead, the high classification accuracies are retained for unsubstantiated and substantiated referrals, but the classification accuracy for inconclusive referrals drops to 0% (no referrals correctly classified).

Figure 5.4 is an example of a centroid plot for a risk factor (this example is from the NDA model for physical neglect only referrals). By comparing the locations of the points for the risk factor to the location of the points in Figure 5.4, one can visually assess the association of various (rescaled) risk factor values with finding status. First, note that the rescaled points, labeled with the original ordinal values, are not evenly spaced along Dimension 1. This is an indication of the nonlinear relationship between values of Basic Needs and substantiation status; there is a leveling off of the probability that a referral will be declared "substantiated" when at-risk levels 3-5 for Basic Needs. This is an example of a plateau effect.

Figure 5.4
Centroids for Basic Needs
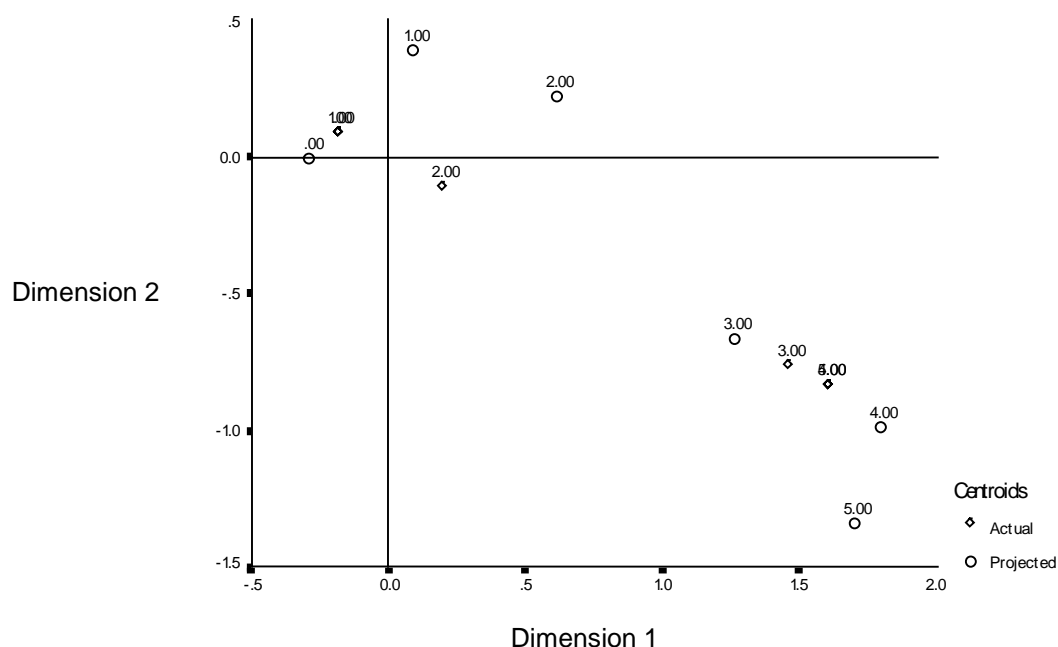
Example of risk factor centroid plot, for Basic Needs, physical neglect referrals.

Considering the distribution of points along Dimension 2, there is an increasing probability a physical neglect referral will be inconclusive as Basic Needs increases from zero risk to risk two (moderately low) then a dropoff in this probability for high risk.

To determine the approximate relative importance of the risk factors along each of the two dimensions of the finding decision, one compares the values of the NDA multiple fits of the

rescaled risk factors to the dimensional vectors, across all cases. Comparison of the values in each dimension indicates which risk factors are important for each of the dimensions. The multiple fit values for each risk factor in the five separate NDA models for the five types of abuse are given in Tables 5.7-5.11. The variables are arranged in decreasing order of their overall importance across both dimensions (total multiple fit values).

3b. Type Specific Results

Let us first consider some general features of the NDA multiple fit values in Tables 5.7-5.11. The multiple fit values for Finding give an indication of the relative importance of Dimension 1 (direction of conclusion) versus Dimension 2 (certainty) in the finding decision. For all types of CA/N, Dimension 2 is smaller than Dimension 1 but of similar magnitude. For instance, the value in Table 5.7 of 0.681 for Dimension 2 represents 45% of the total multiple fit. (A perfect fit of an NDA model would be a total multiple fit value equal to the number of dimensions.) the total fit value in Table 5.7 of 1.512 is 76% of this perfect fit value, indicating an excellent fit but that a still sizable proportion of the finding variance is not fit by an NDA model, reflecting in part the inability of NDA to model risk factor interactions.

Table 5.7
NDA Multiple Fit Values for Sexual Abuse Only Cases

Variable	Dimension-1	Risk*	Dimension-2	Risk*	Total
Finding	.831	N/A	.681	N/A	1.512
Sexual Abuse/Exploitation	.368	S	.076	C	.444
Child Age Risk Level	.002	U	.212	I	.213
Chronicity of CA/N[i]	.014	S	.175	I	.190
Economic Resources	.011	S	.078	C	.089
Emotional Harm/Abuse	.034	S	.053	I	.087
Deviant Arousal	.036	S	.013	C	.049
Supervision	.023	S	.024	C	.047
Response to Disclosure[3]	.015	S	.032	I	.047
Stress on Caregiver	.002	S	.042	I	.044
Hazards in the Home[4]	.003	S	.035	C	.038
Cooperation with Agency[5]	.000	N/A	.026	C	.026
Protection of Child[6]	.007	U	.019	I	.026
Caregiver History of CA/N[7]	.001	S	.025	I	.025
Caregiver Impairments[8]	.019	U	.003	I	.023

*For Dimension-1, "S" indicates that increased risk on the factor is associated with *Substantiated* decisions, and "U" indicates that increased risk on the factor is associated with *Unsubstantiated* decisions. For Dimension-2, "I" indicates that increased risk on a factor is associated with *Inconclusive* Decisions, and "C" is associated with *more conclusive* finding decisions (i.e., Substantiated/Unsubstantiated). These risk summaries are based on each variable's single category coordinates resulting from the NDA. Unfootnoted risk factors are different, in terms of the dimensions, for every risk level.

Note the differential use of risk factors for the two dimensions of the finding decision. The level of alleged sexual abuse or exploitation is a major factor in determining the relative likelihood of substantiation vs. unsubstantiation. All other risk factors contribute more strongly to the degree of certainty. The largest contributor to certainty (or uncertainty) is child age risk-level, which is likely a reflection of the difficulties in obtaining reliable, unambiguous victimization reports from young children. Chronicity also makes a substantial contribution to Dimension 2;

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[3] The only difference for Response to Disclosure, relative to these Sexual Abuse Only cases, is between risk levels 0 (no risk) and risk.
[4] The differences for Hazards in the Home, relative to these Sexual Abuse Only cases, are between risk levels 0-2, 3-4, and 5 (especially for Dimension-II).
[5] The differences for Cooperation with Agency, relative to these Sexual Abuse Only cases, are between risk levels 0-2 and 3-5.
[6] The only difference for Protection of Child, relative to these Sexual Abuse Only cases, is between risk levels 0 (no risk) and risk.
[7] The differences for History of CA/N, relative to these Sexual Abuse Only cases, are between risk levels 0-3, 4 and 5.
[8] The differences for Caregiver Impairments, relative to these Sexual Abuse Only cases, are between risk levels 0, 1-2, and 3-5.

inspection of the centroid plots show that no chronicity or moderately high to high chronicity *lower* the likelihood an allegation will be considered inconclusive, whereas low to moderately low chronicity risk values *increase* the likelihood an allegation will be labeled inconclusive. This general behavior is seen for all risk factors that make a substantial contribution to the certainty dimension in all types of CA/N: low to moderately low risk (1 or 2) is associated with the inconclusive finding.

Table 5.8 shows the NDA multiple fit values for Physical Abuse Only referrals. For Dimension 1, the four most important risk factors are Dangerous Acts, Chronicity of CA/N, Response to Child's Behavior, and Physical Injury/Harm. For Dimension 2, the three most important are Chronicity of CA/N, Recognition of Problem, and Fear of Caregiver. Zero to low risk for Physical Injury/Harm is associated with inconclusive referrals like the situation for sexual abuse referrals, low-severity physical abuse allegations are less certain.

Table 5.8
NDA Multiple Fit Values for Physical Abuse Only Cases

Variable	Dimension-1	Risk*	Dimension-2	Risk*	Total
Finding	.784	N/A	.627	N/A	1.412
Dangerous Acts[9]	.181	S	.023	C	.204
Chronicity of CA/N[10]	.060	S	.137	I	.197
Recognition of Problem[11]	.002	S	.107	I	.109
Fear of Caregiver[12]	.002	U	.091	I	.093
Physical Injury/Harm[13]	.044	S	.038	C	.082
Parenting Skills[14]	.009	S	.056	C	.066
Response to Child's Behavior[15]	.056	S	.002	I	.058
Response to Disclosure[16]	.004	S	.041	C	.045
Supervision[17]	.003	U	.036	C	.039
Social Support[18]	.003	S	.035	C	.038
Deviant Arousal[19]	.001	U	.035	I	.036
Caregiver History of CA/N[20]	.001	S	.033	C	.035
Stress on Caregiver[21]	.001	S	.030	I	.031
Child Age Risk Level[22]	.003	U	.027	I	.030
Hazards in the Home[23]	.017	U	.012	I	.028
Protection of Child[24]	.008	S	.014	I	.021
Medical Care[25]	.002	U	.014	C	.016

*For Dimension-1, "S" indicates that increased risk on the factor is associated with *Substantiated* decisions, and "U" indicates that increased risk on the factor is associated with *Unsubstantiated* decisions. For Dimension-2, "I" indicates that increased risk on a factor is associated with *Inconclusive* Decisions, and "C" is associated with *more conclusive* finding decisions (i.e., Substantiated/Unsubstantiated). These risk summaries are based on each variable's single category coordinates resulting from the NDA.

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[9] In terms of its relationship to the dimensions, the variable Dangerous Acts is different for every risk level.

[10] The differences for Chronicity of CA/N, relative to these Physical Abuse Only cases, are between risk levels 0, 1-3, and 4-5.

[11] The only difference for Recognition of Problem, relative to these Physical Abuse Only cases, is between risk levels 0 (no risk) and risk.

[12] The only difference for Fear of Caretaker, relative to these Physical Abuse Only cases, is between risk levels 0 (no risk) and risk.

[13] The differences for Physical Injury/Harm, relative to these Physical Abuse Only cases, are between risk levels 0, 1, 2, and 3-5.

[14] The differences for Parenting Skills, relative to these Physical Abuse Only cases, are between risk levels 0-1, 2, 3, and 4-5.

[15] The differences for Response to Child's Behavior, relative to these Physical Abuse Only cases, are between risk levels 0, 1, 2, and 3-5.

[16] The only difference for Response to Disclosure is between risk levels 0-4 and 5.

[17] The differences for Supervision, relative to these Physical Abuse Only cases, are between risk levels 0, 1-3, 4, and 5.

[18] The differences for Social Support, relative to these Physical Abuse Only cases, are between risk levels 0-1, 2, and 3-5.

[19] The differences for Deviant Arousal, relative to these Physical Abuse Only cases, are between risk levels 0-1, 2-3, and 5 (Dimension-II especially). The marginal frequency of risk category 4 was 0 for these cases.

[20] For the variable Caregiver History of CA/N, the risk levels 0-3 are virtually indistinguishable, but there are differences for risk levels 4 and 5.

[21] The differences for Stress on Caretaker, relative to these Physical Abuse Only cases, are between risk levels 0-2, 3-4, and 5.

[22] The differences for Child Age Risk Level, relative to these Physical Abuse Only cases, are between risk levels 0, 1-2, 3-4, and 5.

[23] The only difference for Hazards in Home, relative to these Physical Abuse Only cases, is between risk levels 0 (no risk) and risk.

[24] The only difference for Protection of Child, relative to these Physical Abuse Only cases, is between risk levels 0 (no risk) and risk.

[25] The differences for Medical Care, relative to these Physical Abuse Only cases, are between risk levels 0, 1-2, 3, and 4-5.

The multiple fit values for physical neglect only referrals are given in Table 5.9. The most important risk factors for Dimension 1 are Supervision, Parenting Skills, and Chronicity of CA/N. For Dimension 2 of the finding decision, Chronicity of CA/N, Supervision and Cooperation with Agency weigh most heavily. All risk factors show the typical pattern of zero to low risk levels associated with unfounded referrals, low to moderate with inconclusive, and moderate to high with founded referrals.

Table 5.9
NDA Multiple Fit Values for Physical Neglect Only Cases

Variable	Dimension-1	Risk*	Dimension-2	Risk*	Total
Finding	.788	N/A	.622	N/A	1.410
Chronicity of CA/N[26]	.045	S	.168	I	.213
Supervision[27]	.087	S	.057	I	.144
Cooperation with Agency[28]	.016	S	.070	I	.086
Behavioral Problems of Child[29]	.000	N/A	.077	I	.077
Emotional Harm/Abuse[30]	.027	S	.044	C	.071
Dangerous Acts[31]	.033	S	.037	C	.070
Parenting Skills[32]	.065	S	.004	C	.069
Caregiver Impairments[33]	.011	S	.045	C	.057
Protection of Child[34]	.003	S	.045	C	.047
Fear of Caregiver[35]	.009	U	.031	I	.040
Hazards in the Home[36]	.011	S	.028	C	.039
Basic Needs[37]	.006	S	.027	C	.033
Self-Protection by Child[38]	.022	S	.007	I	.030
Developmental Disability[39]	.012	U	.018	C	.030
Response to Disclosure[40]	.001	U	.021	I	.022
Stress on Caregiver[41]	.001	U	.014	C	.015
Nurturance[42]	.005	U	.009	C	.014

For Dimension-1 "S" indicates that increased risk on the factor is associated with *Substantiated* decisions, and "U" indicates that increased risk on the factor is associated with *Unsubstantiated* decisions. For Dimension-2 "I" indicates that increased risk on a factor is associated with *Inconclusive* Decisions, and "C" is associated with *more conclusive* finding decisions (i.e., Substantiated/Unsubstantiated). These risk summaries are based on each variable's single category coordinates resulting from the NDA.

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[26] The differences for Chronicity of CA/N, relative to these Physical Neglect Only cases, are between risk levels 0, 1, and 2-5.

[27] The differences for Supervision, relative to these Physical Neglect Only cases, are between risk levels 0, 1, and 2-5.

[28] The differences for Cooperation with Agency, relative to these Physical Neglect Only cases, are between risk levels 0, 1, 2, and 3-5.

[29] The differences for Behavioral Problems, relative to these Physical Neglect Only cases, are between risk levels 0, 1-2, 3-4, and 5 (especially for Dimension II).

[30] The differences for Emotional Harm/Abuse, relative to these Physical Neglect Only cases, are between risk levels 0, 1, and 2-5.

[31] The differences for Dangerous Acts, relative to these Physical Neglect Only cases, are between risk levels 0-1, 2, 3, and 4-5.

[32] The differences for Parenting Skills, relative to these Physical Neglect Only cases, are between risk levels 0, 1, and 2-5.

[33] The differences for Caretaker Impairments, relative to these Physical Neglect Only cases, are between risk levels 0-2, 3-4, and 5.

[34] The differences for Protection of Child, relative to these Physical Neglect Only cases, are between risk levels 0-1, 2-4, and 5 (especially for Dimension-II).

[35] The differences for Fear of Caretaker, relative to these Physical Neglect Only cases, are between risk levels 0, 1-4, and 5.

[36] The differences for Hazards in the Home, relative to these Physical Neglect Only cases, are between risk levels 0-2, 3-4, and 5.

[37] The differences for Basic Needs, relative to these Physical Neglect Only cases, are between risk levels 0-2, 3, and 4-5.

[38] The differences for Self-Protection of Child, relative to these Physical Neglect Only cases, are between risk levels 0-3, 4, and 5.

[39] The differences for Developmental Disability, relative to these Physical Neglect Only cases, are between risk levels 0, 1, 2, 3, and 4-5.

[40] The differences for Response to Disclosure, relative to these Physical Neglect Only cases, are between risk levels 0, 1, and 2-5.

[41] The differences for Stress on Caretaker, relative to these Physical Neglect Only cases, are between risk levels 0, 1-3, and 4-5.

[42] The differences for Nurturance, relative to these Physical Neglect Only cases, are between risk levels 0, 1, 2, 3, and 4-5.

Table 5.10 gives the values for sexual abuse plus others, one of the two multiple abuse categories. Here, we see that the Dimension 1 is again dominated by the sexual abuse/exploitation severity variable, indicating that the sexual abuse component of these multiple abuse referrals dominates the finding decision. Chronicity of CA/N, Recognition of Problem and Parenting Skills are the most important risk factors for Dimension 2. The last two of these factors are typically associated with neglect cases.

Table 5.10
NDA Multiple Fit Values for Sexual Abuse Plus Other(s) Cases

Variable	Dimension-1	Risk*	Dimension-2	Risk*	Total
Finding	.782	N/A	.661	N/A	1.443
Chronicity of CA/N[43]	.036	S	.270	I	.306
Sexual Abuse/Exploitation[44]	.182	S	.055	C	.237
Recognition of Problem[45]	.002	S	.193	I	.195
Emotional Harm/Abuse[46]	.099	S	.070	C	.169
Parenting Skills[47]	.021	S	.103	C	.123
Victimization of Others[48]	.033	S	.066	C	.099
Protection of Child[49]	.011	U	.039	I	.050
Response to Disclosure[50]	.015	S	.029	I	.044

* For Dimension-1, "S" indicates that increased risk on the factor is associated with *Substantiated* decisions, and "U" indicates that increased risk on the factor is associated with *Unsubstantiated* decisions. For Dimension-2, "I" indicates that increased risk on a factor is associated with *Inconclusive* Decisions, and "C" is associated with *more conclusive* finding decisions (i.e., Substantiated/Unsubstantiated). These risk summaries are based on each variable's single category coordinates resulting from the NDA.

Lastly, Table 5.11 shows the multiple fit values for the remaining multiple abuse category, physical neglect plus others except sexual abuse. Dangerous Acts, Chronicity of CA/N, and Parenting Skills are the most important risk factors for Dimension 1, whereas Chronicity of CA/N, Recognition of Problem, Parenting Skills, and Fear of Caregiver are the most important risk factors for Dimension 2.

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[43] The differences for Chronicity of CA/N, relative to these Sexual Abuse plus Other cases, are between risk levels 0, 1, and 2-5.

[44] The differences for Sexual Abuse/Exploitation, relative to these Sexual Abuse plus Other cases, are between risk levels 0-1, 2, 3, and 4-5.

[45] The differences for Recognition of Problem, relative to these Sexual Abuse plus Other cases, are between risk levels 0, 1, and 2-5.

[46] The differences for Emotional Harm/Abuse, relative to these Sexual Abuse plus Other cases, are between risk levels 0-1, 2, and 3-5.

[47] The differences for Parenting Skills, relative to these Sexual Abuse plus Other cases, are between risk levels 0, 1, 2, 3, and 4-5.

[48] The differences for Victimization of Others, relative to these Sexual Abuse plus Other cases, are between risk levels 0, 1, 2, 3-4, and 5.

[49] The differences for Protection of Child, relative to these Sexual Abuse plus Other cases, are between risk levels 0, 1, and 2-5.

[50] The only difference for Response to Disclosure, relative to these Sexual Abuse plus Other cases, is between risk levels 0 (no risk) and risk.

Table 5.11

NDA Multiple Fit Values for Physical Neglect Plus Other(s) *Except* Sexual Abuse Cases

Variable	Dimension-1	Risk*	Dimension-2	Risk*	Total
Finding	.789	N/A	.602	N/A	1.391
Chronicity of CA/N[51]	.069	S	.170	I	.239
Recognition of Problem[52]	.039	S	.170	I	.208
Parenting Skills[53]	.052	S	.118	I	.170
Dangerous Acts[54]	.137	S	.007	C	.144
Fear of Caregiver[55]	.004	S	.116	C	.119
Basic Needs[56]	.013	S	.083	C	.096
Response to Disclosure[57]	.006	S	.063	C	.070
Protection of Child[58]	.001	S	.056	C	.057
Hazards in the Home[59]	.009	U	.048	C	.057
Caregiver History of CA/N[60]	.001	U	.037	C	.038

* For Dimension-I, "S" indicates that increased risk on the factor is associated with *Substantiated* decisions, and "U" indicates that increased risk on the factor is associated with *Unsubstantiated* decisions. For Dimension-2, "I" indicates that increased risk on a factor is associated with *Inconclusive* Decisions, and "C" is associated with *more conclusive* finding decisions (i.e., Substantiated/Unsubstantiated). These risk summaries are based on each variable's single category coordinates resulting from the NDA.

3c. Methodological Results

Entry of the dimensional scores for the risk factors into the NDA model provides scores indicating direction of conclusion and certainty for each case. In logistic regression modeling, a one-dimensional probability indicating direction of conclusion and certainty of group membership is calculated from the model by entering, for each case, the values of the risk factors for that case into the derived logistic regression formula (beta weights). Typically, a probability cutpoint at the midpoint of the probability axis is used to classify cases as belonging to one or the other of the dichotomous dependent variable groups. This predicted group membership is then compared to the actual group membership for each case, to determine the classification accuracy of the model. (Receiver Operating Characteristic, or ROC curves, are used as a more global measure of classification.)

We proceed here in an analogous fashion to determine the classification accuracy of the NDA models described above. Probability cutpoints are selected at the midpoints for both the direction of conclusion and certainty dimensions, then these cutpoints are used to classify (predict) the finding of each case as either unsubstantiated, inconclusive, or substantiated. This predicted group membership is then crosstabulated against the actual findings of each case to determine model classification accuracy. The results are presented for each type of abuse in

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[51] The differences for Chronicity of CA/N, relative to these Physical Neglect plus Other (except Sexual Abuse) cases, are between risk levels 0, 1, and 2-5.

[52] The differences for Recognition of Problem, relative to these Physical Neglect plus Other (except Sexual Abuse) cases, are between risk levels 0, 1, and 2-5.

[53] The only difference for Parenting Skills, relative to these Physical Neglect plus Other (except Sexual Abuse) cases, is between risk levels 0-1, and 2-5.

[54] The differences for Dangerous Acts, relative to these Physical Neglect plus Other (except Sexual Abuse) cases, are between risk levels 0-1, 2, 3, 4-5.

[55] The differences for Fear of Caretaker, relative to these Physical Neglect plus Other (except Sexual Abuse) cases, are between risk levels 0, 1, 2, and 3-5.

[56] The differences for Basic Needs, relative to these Physical Neglect plus Other (except Sexual Abuse) cases, are between risk levels 0, 1-2, and 3-5.

[57] The differences for Response to Disclosure, relative to these Physical Neglect plus Other (except Sexual Abuse) cases, are between risk levels 0-1, 2, 3, and 4-5.

[58] The differences for Protection of Child, relative to these Physical Neglect plus Other (except Sexual Abuse) cases, are between risk levels 0-2, 3-4, and 5.

[59] The only difference for Hazards in Home, relative to these Physical Neglect plus Other (except Sexual Abuse) cases, is between risk levels 0-2, and 3-5.

[60] The differences for Caretaker History of CA/N, relative to these Physical Neglect plus Other (except Sexual Abuse) cases, are between risk levels 0-2, 3, and 4-5.

Table 5.12; it can be seen that the classification accuracies of these models is uniformly excellent.

Table 5.12
NDA Model Classification Accuracy

Type of Abuse	Percentage of Referrals Correctly Classified (Total, Actual N in Parentheses)			
	Founded	Inconclusive	Unfounded	Total
Sexual Abuse Only	89.1% (229)	93.3% (252)	95.9% (245)	92.8% (726)
Physical Abuse Only	87.2% (802)	91.3% (618)	94.7% (645)	90.7% (2065)
Physical Neglect Only	89.2% (910)	91.3% (693)	96.0% (869)	92.2% (2472)
Sexual Abuse plus Other Types	85.1% (242)	97.2% (179)	93.9% (148)	91.2% (569)
Physical Neglect plus Other Types *except* Sexual Abuse	92.3% (508)	94.4% (285)	93.9% (277)	93.3% (1070)

The nonlinear, two-dimensional modeling of the finding decision *via* NDA provides model accuracy superior to either a linear two-dimensional model (linear discriminant analysis) or a nonlinear one-dimensional analysis (neural networks). A comparison of the classification accuracies for each of these three modeling strategies is given in Table 5.13 for physical abuse referrals. Results for the other types of abuse are very similar.

Table 5.13
Comparison of Linear Discriminant Analysis, Neural Network, and Nonlinear Discriminant Analysis Model Classification Accuracy for Physical Abuse Referrals

Model Type	Percentage of Referrals Correctly Classified			
	Founded	Inconclusive	Unfounded	Total
Linear Discriminant Analysis	67.1%	18.1%	72.1%	54.0%
Neural Network	58.2%	41.1%	69.9%	56.8%
Nonlinear Discriminant Analysis	87.2%	91.3%	94.7%	90.7%

4. Overview of Important Risk Factors by Type of CA/N

4a. Predominant Risk Factors
A review of type-specific results found using NDA allows some general observations to be made regarding predominant risk factors. First regarding Dimension 1, for cases involving *abuse* a single type-specific risk factor tends to dominate the conclusion as to whether the case is unsubstantiated or substantiated. For Sexual Abuse Only and Sexual Abuse and Other cases, the factor is *Sexual Abuse/Exploitation*; for Physical Abuse Only cases, the main risk factor on Dimension 1 is *Dangerous Acts*. However, other risk factors do also contribute somewhat to the decision. For Sexual Abuse Only cases *Deviant Arousal*, *Emotional Harm*, *Supervision*, and *Response to Disclosure* also play notable roles in the conclusion, and in cases involving sexual abuse allegations as well as allegations of other types, *Emotional Harm*, *Response to Disclosure* and several other factors beyond Sexual Abuse/Exploitation also play a role in Dimension 1: *Chronicity of CA/N*, *Victimization of Others*, *Parenting Skills*, and *Protection of Child*. However, it should be noted that higher risk levels for Protection of Child were associated with increased likelihood of *unsubstantiation* vs. substantiation for cases with sexual abuse allegations. In Physical Abuse Only cases, beyond the factor of Dangerous Acts, consideration of *Chronicity of CA/N*, *Response to Child's Behavior*, *Physical Injury/Harm*, and even *Hazards in the Home* also can help a caseworker to decide between unsubstantiation and substantiation. For the factor Hazards in the Home, however, higher risk is associated with

unsubstantiation as opposed to substantiation; perhaps this is because that risk factor tends to indicate a neglect case as opposed to physical abuse only, thus influencing the conclusion regarding the physical abuse allegations.

For cases involving *neglect,* in general contrast to abuse cases of either type, Dimension 1 is characterized by several risk factors of *more similar* importance. That is, we found that caseworkers in considering if they tended toward unsubstantiating vs. substantiating neglect cases judged risk factors to be of more *balanced* importance than with abuse. In Physical Neglect Only cases, the main risk factors are (in order of importance on Dimension 1): *Supervision*, *Parenting Skills*, and *Chronicity of CA/N*, and numerous other risk factors were of lesser but still appreciable importance to Dimension 1 (see Table 5.9). Of further note regarding the Physical Neglect Only cases is the finding that higher risk related to Developmental Disability contributed to the cases being *unsubstantiated* vs. substantiated, perhaps because that is considered a somewhat mitigating circumstance. For cases classified as Physical Neglect plus Other(s) Except Sexual Abuse, *Dangerous Acts* was of most importance to Dimension 1 (understandably enough, given that allegations of physical abuse as well as neglect would characterize most cases in this hybrid category), but it was not as predominant a factor as in Physical Abuse Only cases. Because neglect was an issue in these cases, risk factors other than Dangerous Acts also were relatively important to conclusions regarding cases with this mixed type of maltreatment: *Chronicity of CA/N*, *Parenting Skills*, and *Caregivers' Recognition of Problem,* and others too (to a lesser extent) including *Basic Needs* and *Hazards in the Home*.

In keeping with earlier results, across maltreatment types *Chronicity of CA/N* was found to play a role in promoting substantiation of cases over unsubstantiation. This was *least* the case, however, by far, for Sexual Abuse Only cases, and *most so* for cases involving allegations of physical abuse (i.e., Physical Abuse Only or Neglect plus Other Except Sexual Abuse). It is interesting to note that *Chronicity of CA/N* is of somewhat more importance in indicating substantiation vs. unsubstantiation for cases classified as Physical Neglect plus Other Except Sexual Abuse than it is for Physical Neglect Only cases.

In contrast to the Dimension 1 pattern of a single predominant risk factor being evident for abuse cases but much less so for neglect cases, Dimension 2 for cases of *all* maltreatment types is characterized by more of a balance between risk factors. As with Dimension 1, however, the risk factors important *vis-à-vis* Dimension 2 tend to be somewhat distinct regarding the maltreatment type categories, especially for cases with only one type of allegation. An exception to that observation, *Chronicity of CA/N* is relatively important to certainty of the finding decision regardless of maltreatment type, as is evident in Table 5.14, but it is distinctly most important to Dimension 2 for Sexual Abuse plus Other cases. Also it can be noted that regardless of type of maltreatment, Chronicity of CA/N is associated with greater uncertainty regarding the finding decision (i.e. greater likelihood of cases being inconclusive). *Recognition of Problem*, too, is important to Dimension 2 for more than one type of case, though the maltreatment type categories for which this is so all have the possibility of including allegations of physical abuse: Physical Abuse Only, Sexual Abuse plus Others, and Physical Neglect plus Other(s) Except Sexual Abuse. Further, the risk factor related to *Parenting Skills* is important to Dimension 2 for cases in both of the multiple-type categories. Nevertheless, generally, as with Dimension 1, certain type-specific risk factors are distinctly important to certainty regarding cases of single maltreatment types. For Sexual Abuse Only cases, *Child Age Risk Level* and Economic Resources make especially important contributions to Dimension 2. For Physical Abuse Only cases, *Fear of Caregiver* is uniquely important to Dimension 2. And for Physical Neglect Only cases, *Cooperation with Agency* and *Behavior Problems of Child* are especially important regarding the question of whether the case will be found as inconclusive or not.

Highlighting the above is not to imply that there are not other risk factors that are important to Dimension 2, or that no other risk factors serve to increase (or decrease) certainty about finding for more than one type of maltreatment. On the contrary, inspection of Tables 5.7-5.11 reveals many other risk factors associated to some extent with Dimension 2, and some of them do show up as pertaining more or less to certainty for several types of maltreatment, such as *Supervision*, *Response to Disclosure*, *Hazards in the Home*, and there are others. However, though a risk factor may contribute to definition of Dimension 2 for more than one type of maltreatment, it may do so in a different way, indicating greater certainty for one type and greater uncertainty for another type. For example, higher risk related to Supervision is associated with *greater* certainty for cases classified as Sexual Abuse Only and Physical Abuse Only cases, but with *less* certainty for Neglect Only cases. Higher risk related to Response to Disclosure is associated with greater *uncertainty* for Sexual Abuse Only and Sexual Abuse plus Other cases, but greater *certainty* for Physical Abuse Only and Physical Neglect plus Other Except Sexual Abuse cases. Specific considerations regarding these and similar differences, and especially the question of why *higher* risk on certain factors is associated with greater *un*certainty for particular maltreatment types (as shown in Tables 5.7-5.11) is a topic worthy of further consideration.

Considering the results presented thus far as a whole, in the framework of maltreatment types (as is done in Tables 5.4 and 5.14), type-specific patterns of risks important to the finding decision can be somewhat distinctively characterized, especially for the single-type-only cases. First, though, let us note that regardless of maltreatment type assessments of risk of *Dangerous Acts* and *Chronicity of CA/N* play roles in the finding decision. But whereas high risk of dangerous acts inclines a case *away from unsubstantiation*, chronicity of CA/N *detracts* from there being a conclusive outcome of either sort (i.e., chronic cases are more likely to be judged inconclusive), though for more conclusive cases Chronicity of CA/N does influence the decision toward substantiation, as noted above.

Particularly salient to Sexual Abuse Only cases is, of course, risk of *Sexual Abuse/Exploitation*. Other distinctively important risk factors to this type of abuse are *Emotional Harm/Abuse*, *Child Age Risk Level*, and *Response to Disclosure*.   Risk related to (lack of) *Economic Resources* was indicated as decreasing certainty of the decision for this type of maltreatment.   Other risk factors associated with finding decisions especially for this type of case include *Deviant Arousal*, *Supervision*, and *Caregiver Impairments* (tending the case toward unsubstantiation).   Other factors too are of some importance (see Table 5.7), though mostly in their effects on caseworker certainty regarding the finding decisions for these cases, such as *Stress on Caregiver* (less certainty), *Hazards in the Home* and *Cooperation with Agency* (both more certainty).

Physical Abuse Only cases are distinctively characterized by risk issues *of Response to Child's Behavior*, *Physical Injury/Harm*, *Protection of Child* (lack thereof), and *Child's Fear of Caregiver*.   Risk issues that decrease the likelihood of unsubstantiation for Physical Abuse Only cases include (neglectful) *Supervision* or *Medical Care*, *Developmental Disability*, and *Stress on Caregiver*. Several of these factors have notable nonlinear relationships to the finding decision (see Table 5.14), meaning that as risk increases the effect of that factor on the finding outcome suddenly increases or levels off. Other risk factors also play a role in the finding decision for Physical Abuse Only cases, mostly having their effects on the certainty with which a decision can be made (see Table 5.8), most notably *Parenting Skills* and *Response to Disclosure;*, high levels of risk on each of these factors are associated with fewer inconclusive cases of this type.

Distinctively important to Neglect Only cases are risk factors related to *Supervision*, *Parenting Skills*, *Emotional Harm/Abuse*, *Self-Protection by Child*, *Cooperation with Agency*, *Hazards in the Home*, *Basic Needs*, and *Developmental Disability* (increased risk on this factor *raising* the likelihood of the allegations of neglect being unsubstantiated). *Behavioral Problems of Child*, *Caregiver Impairments* and *Protection of Child* by the Caregiver are other risk factors salient to Neglect Only cases, mostly as indicators that increase certainty regarding these cases. Child's *Fear of Caregiver* is relevant to the finding decision in Neglect Only cases, but mostly as it detracts from caseworkers' certainty regarding what their conclusions should be. Also there are indications (from the findings of logistic regression) that a higher *Child Age Risk Level* and *Access/Responsibility for Child* risk issues tend cases *away* from unsubstantiation, and that risk issues related to *Nurturance* and *Pressuring Child to Recant* may incline cases *toward* unsubstantiation.

Cases of mixed types in our categorization (i.e. Sexual Abuse plus Other and Neglect plus Other Except Sexual Abuse), naturally are less distinct than the above in the patterns of risk upon which their finding decisions are based, being hybrid categories as they are. Still, some characteristic risk features may be noted. For both of these mixed types of cases, *Parenting Skills* evidently plays distinctly prominent role in influencing caseworkers' certainty regarding the cases, but in opposite ways. For the Sexual Abuse plus Other cases, risk related to Parenting Skills is associated with greater *certainty*, but for cases of Neglect plus Other Except Sexual Abuse, it is more associated with *inconclusive* cases. Further, *Victimization of Others* seems to be an important risk factor for the mixed-type sexual abuse cases (being associated both with greater likelihood of substantiation vs. unsubstantiation and with greater certainty). Other than that, cases classified as Sexual Abuse plus Other are very similar to Sex Abuse Only cases in terms of the risk factors that are most important to the finding decision, though *Recognition of Problem* is more important to certainty regarding this type of case, and neural networks analysis indicated that this risk factor may interact with Dangerous Acts for this type of case, such that high levels of both decrease the likelihood of unsubstantiation.

The pattern of risks important to cases we have classified as Neglect plus Other Except Sexual Abuse in large part does seem to be a combination of that described for Physical Abuse Only and Neglect Only cases. Evidencing that claim, some prominent risk factors for this type of maltreatment, beyond those mentioned above, are *Parenting Skills, Fear of Caregiver*, *Basic Needs*, *Response to Disclosure*, *Protection of Child*, *Hazards in the Home,* and *Medical Care*. Somewhat distinctively, however, *Caregiver History of CA/N* evidently plays a relatively significant role in increasing certainty regarding findings in this type of case, in contrast to cases of other maltreatment types, and risk associated with (high) levels of *Social Support* may tend cases of this type *away* from unsubstantiation, a finding not discovered for other types of cases. Similarly, joint high levels of risk for *Dangerous Acts* and *Recognition of Problem* were found to be *increase* the likelihood of unsubstantiation, only for this type of case.

A summary of the important model variables by type of abuse is given in Table 5.14. Any entry indicates that the risk factor was significant in the multivariate model(s) for the specified type of maltreatment. "1" indicates that the risk factor was among the three most important in determining the first dimension of the unsubstantiation decision, and "2" indicates that it was among the three most important for the second dimension. Previous tables should be consulted for the quantitative degree of importance (magnitudes of model coefficients). Many of the risk factors in the lower portion of the table, though statistically significant in the models, have small overall model magnitudes and are thus of minimal practical importance.

Table 5.14
Summary of Important Unsubstantiation Model Risk Factors

Multivariate Risk Factor	Type of Abuse/Neglect				
	Sexual Abuse Only	Physical Abuse Only	Physical Neglect Only	Sexual Abuse plus Other(s)	Physical Neglect plus Other(s) Except Sexual Abuse
Chronicity of CA/N	2	↓,R, 2	L,1,2	L,1,2	↓,R,2
Dangerous Acts	L	L,R	L	L	↓1
Sexual Abuse/Exploitation	L,R,C			L,R	
Physical Injury/Harm		↓			
Supervision		-↑	L,R		
Emotional Harm/Abuse	L,R		L	1	
Deviant Arousal	1				
Behavior Problems of Child			2		
Parenting Skills			L,R	2	1,2
Developmental Disability		-L	-L		
Response to Child's Behavior		↑,1			
Response to Disclosure	L				
Child Age Risk Level	L,C		L		
Social Support					-L
Stress on Caregiver		-↓	-L		
Fear of Caregiver		L,C			
Medical Care		L			L
Hazards in the Home			L		L
Recognition of Problem		2		L,C	L,2
Economic Resources	2			-L	
Access/Responsibility for Child			L		
Protection of Child		L			L
Nurturance			-L		
Pressuring Child to Recant			-L		
Cooperation with Agency			L, 2		

L: linear relationship with unsubstantiation

↑: nonlinear relationship that strengthens as risk level increases

↓: nonlinear relationship weakens as risk level increases

-: *increased* risk corresponds to an increased likelihood of unsubstantiation

1: risk factor among the three most important for Dimension 1

2: risk factor among the three most important for Dimension 2

4b. Summary of Findings of Type-Specific NDA Results

- A nonlinear two-dimensional model (resulting from NDA) was found necessary for accurate classification of the finding decision based upon risk factors. The first dimension distinguishes unsubstantiated from substantiated cases. The second dimension distinguishes cases that were *inconclusive* from cases regarding which there was more certainty, i.e. from cases that were either unsubstantiated or substantiated.

- The NDA type-specific models consistently account for 70-76% of variance of the finding decision across maltreatment types, and result in very high classification accuracies (87-95% correct).
- Optimal rescaling of the risk factors allows a detailed look at nonlinear relationships between those predictive factors and finding outcomes, revealing numerous threshold and plateau effects.
- For all risk factors important to distinguishing the inconclusive cases, across all types of CA/N, low to moderately low risk (1 or 2) is associated with inconclusive findings.
- Regardless of maltreatment type, assessments of risk of Dangerous Acts and Chronicity of CA/N play roles in the finding decision.
- Confirming previous results, it was generally found that the relative importance of particular risk factors to the finding decision depends upon the type of maltreatment.
- Chronicity of CA/N, in keeping with earlier results, was found to play a role in promoting *substantiation* of cases across maltreatment types. This was least the case, however for Sexual Abuse Only cases, and most so for cases involving allegations of physical abuse.
- However, Chronicity of CA/N also is associated with increased *uncertainty* in the finding decision, making cases also more likely to be found *inconclusive*. In terms of this greater uncertainty, Chronicity of CA/N is most influential in Sexual Abuse plus Other cases.
- For cases involving *abuse*, a *single* type-specific risk factor tends to dominate Dimension 1 (the conclusion as to whether the case is unsubstantiated or substantiated), whereas for cases involving *neglect*, Dimension 1 is characterized by *several* risk factors of *more similar* importance. Dimension 2, however, is characterized by more of a *balance* between risk factors, for all maltreatment types.
- For some risk factors, higher *risk* is associated with higher rates of *unsubstantiation*, perhaps because such factors may indicate mitigating circumstances or maltreatment allegations of types different from those that prompted the investigation.
- Though a risk factor may contribute to Dimension 2 for more than one type of maltreatment, it may do so in a different way, indicating greater *certainty* for one type and greater *uncertainty* for another type. For instance, regarding Parenting Skills (a risk factor distinctly important to cases with more than one type of allegation), for the Sexual Abuse plus Other cases, risk related to Parenting Skills is associated with greater *certainty*, but for cases of Neglect plus Other Except Sexual Abuse, it is more associated with *inconclusive* cases.

D. General Model, with Summary Risk Information and Narrative Data (analyses based also on data from narrative coding)

A general objective of the foregoing analysis was to describe in detail the elements of risk associated with each possible outcome of the finding decision, and for that purpose statistically significant risk factors were summarized for each of the maltreatment types in our five-fold classification (across the two dimensions resulting from the nonlinear discriminant analysis). The resulting picture, both detailed and comprehensive, is also complex. The purpose of the analyses presented in this section, is to investigate whether a more parsimonious model could be developed which, though less informative regarding the details of risk and their relation to type of maltreatment, nonetheless would have a comparably high level of classification accuracy in spite of its relative simplicity. As a result, a far simpler general model was developed through the analyses described in this section. It is far more parsimonious, in that only 38 parameters are included (19 variables, 2 dimensions), in contrast to the 142 parameters included in the set of five type-specific models presented in the previous section.

The analysis in this section differs from the previous analysis as follows: 1) It builds on the conclusions of previous section, *hence* focusing solely on linear and nonlinear discriminant

analysis; 2) There is one *general* model resulting from the nonlinear discriminant analysis, across maltreatment type; 3) Some of the variables in the general model come from *narrative coding* (described above); 4) Risk information would be included in the general model only in *summary* form (that is, specific risk factors would *not* be included; and 5) for the sake of simplicity, consideration of *interactions* would be excluded. We feel that the level of detail provided by the multivariate analysis in the previous section is necessary in order to examine closely risk factors associated with the CPS finding decision process. This detailed analysis improves our understanding of the nature and character of risk factors that influence the finding decision. However, we are also interested in whether or not a more "parsimonious" model can be developed to help understand the CPS finding decision process.

The organization of Section V.D is as follows: A section describing the screening of variables is followed by results of the nonlinear discriminant analysis that was conducted, and then a concluding summary. Somewhat more attention is given here than in Section V.C, however, to results of the scaling optimizations that were a part of the NDA, mainly because the categorical collapses of the summary variables employed is an especially important consideration in the context of field application. Also, for the sake of continuity, most of the technical results of the screening stage are relegated to Appendixes; however, some summaries of these results are included in the main body of the text.

1. Screening of Variables

Though the aim of the present analyses, as just described, was to develop a general, non-type-specific model, not only a general model but also type-specific models were considered in the course of screening variables, in order to cast as wide a net as possible for variables that could be included in the NDA. For this purpose, though, the type-classification used was slightly different from the foregoing, in that Emotional Abuse Only was broken out as a separate category. A corollary of this decision was that the category "Physical Neglect plus Other(s) Except Sexual Abuse" became a bit more refined – here it simply is "Physical Abuse and Neglect." Along with the general Linear Discriminant Analysis (LDA) Model and a model for "No Type-Classification," this resulted in eight models in this stage of the analysis. The desired goal of the analysis reported in this section was development of a general model of the finding decision, specifically a model having good classification accuracy. For this purpose only the variables included in the LDA general model were found to be needed. However, in the course of the screening procedure, seven other LDA models were constructed in order that additional sets of variables would be available for development of type-specific NDA models, should that be necessary. Because these other models are in themselves somewhat interesting, a brief summary of their general characteristics is presented below, prior to presentation of the more in-depth results of the NDA.

The general procedure by which the variables were screened was as follows. First, a large list of candidate variables was created, based upon a review of the dataset and through consultation with project managers. Next, for 1) the general (non-type-specific) model, 2) the six type-specific models, and 3) a model based upon cases without any maltreatment type classification, linear discriminant analysis was used to develop models with the greatest possible accuracy. Variables were added in blocks, and then those that were not contributing to accurate classification were successively eliminated. Table 5.15 shows for each of these models the number of cases upon which it is based, how many cases were excluded, the number of variables finally included in the model, the percentages of correct classifications for cases with each of the three finding categories, and the overall classification accuracy of the model. Also given in the final column is an estimate of accuracy based upon cross-validation (CV), calculated through a leave-one-out algorithm, in order to help diminish the optimistic bias of the original calculation

of accuracy. Though it should be noted that the leave-one-out estimates of the percentage of correct classifications can still be overly optimistic (SPSS, 1999, p. 260), this calculation at least provides some indication of the robustness of the accuracy estimates. For the technical results of these models, please refer to Appendix J. [61] for an alphabetical list of variables included in one or more of the models, see Appendix K[62]. For an alphabetical list of variables in the original list of candidate variables that was generated, but *not* ultimately included in any of the eight models, see Appendix L. It should be noted that some of the variables not finally included in the models were excluded because of a low N of subjects for which there was data regarding the variable, not because it was determined that the variable was unimportant *per se* to the finding decision.

Though an in-depth consideration of the variables included in the LDA General Model is presented in the course of Chapter V.D.2.b (Optimal Scaling Results, see Table 5.18), the 18 predictive variables are listed here as a central result of the screening procedure:

- Referrer type (professional vs. Community)
- Count of allegations
- Maximum severity of allegations of failure to provide - neglect
- Neglect referred by law enforcement
- Emotional maltreatment alleged at referral
- Direct evidence (exact definition is given in Table 5.24 of Chapter V.D.2.b).
- Region (region 4 or 6 vs. other regions)
- Victim received or is associated with public assistance
- Number of "insufficient information" codes across risk factors
- Are factors which place child in imminent risk of harm present?
- Overall level of risk
- Number of risk domains
- Only emotional maltreatment was alleged
- Injury was accidental
- Issues resolved or family is addressing
- Case ongoing in DCFS
- Social worker framing of incident
- Inconclusive evidence: Unable to tell who did act, conflicting information, etc.

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[61] It will help in interpretation of these results to know that the outcome variable, finding, was coded as follows: unsubstantiated = -1, inconclusive = 0, founded = 1.

[62] Please note that while Appendix K includes the 32 variables that were included in any of the type-specific or the general models, Table 5.16 includes only the 26 variables of the type-specific models.

Table 5.15
Classification Accuracies by Maltreatment Type (Linear Discriminant Analysis)

Type Classification	Tot. N	Excluded*	N vars.	Unsub.	Inconcl.	Founded	Overall**
Sexual Abuse Only	60	1	4	66.7%	52.2%	80.0%	**64.4%** (CV=59.3%)
Physical Abuse Only	522	3	11	65.3%	37.9%	69.1%	**58.2%** (CV=53.8%)
Neglect Only	828	0	8	67.1%	42.3%	69.1%	**60.6%** (CV=59.8%)
Emotional Abuse Only	77	5	4	80.0%	38.9%	68.2%	**62.5%** (CV=59.7%)
Sexual Abuse & Other	114	0	3	69.0%	22.4%	77.8%	**51.8%** (CV=51.8%)
Physical Abuse & Neglect	203	6	8	70.6%	70.4%	63.8%	**68.5%** (CV=62.4%)
No Type-Classification	47	2	6	84.6%	85.7%	77.8%	**82.2%** (CV=75.6%)
General	1,851	0	18	67.8%	42.6%	64.2%	**58.5%** (CV=57.3%)

*If indicated, cases were excluded because there were missing values for a variable included in the model's discriminant functions. ** CV is an abbreviation for cross-validation estimate (leave-one-out method).

Looking over Table 5.15, it can be seen that the number of variables included in the model and the classification accuracy differs considerably between the different types of cases. From the point of view of these linear discriminant analyses, it is most difficult to predict the finding of "Sexual Abuse and Other" cases (only three variables included, overall classification accuracy equals 51.8%). Apart from the cases with "No Type-Classification," this approach has the most success with the "Physical Abuse and Neglect" cases, with an overall classification accuracy of 68.5%. The overall classification accuracy for these eight models ranges from 51.8% ("Sexual Abuse and Other") to 82.2% ("No Type-Classification"). The leave-one-out cross-validation estimates range from 51.8% to 75.6%, and it can be seen that with the exception of the highest model accuracy (82.2% which is deflated to 75.6%), the estimates of classification accuracy do not dramatically change. It can also be observed from this table that generally it is most difficult to accurately predict the cases for which there actually was an "Inconclusive" finding decision, which suggests, that using a second discriminant function, to distinguish inconclusive from unsubstantiated and founded cases, could improve the classification accuracy considerably.

It is interesting that there appears to be such variety both in the number of variables that are useful to include in different models and in their relative success with classifying cases with different finding outcomes. For an extreme contrast to illustrate this latter point, the model for emotional abuse classified correctly 80% of the *unsubstantiated* cases yet only 68.2% of the *substantiated* cases whereas the model for "Sexual Abuse Only" cases, conversely, classified correctly only 66.7% of the *unsubstantiated* cases yet classified accurately 80% of the *substantiated* cases of that group. One might ask what it is that makes it relatively easy for linear discriminant analysis to predict the *unsubstantiated* "Emotional Abuse Only" cases but not the *substantiated* "Sexual Abuse Only" cases. Insight into this type of question might be gained by looking at the specific variables that are included as the basis of making such classifications; a summary of which is presented in Table 5.16.

Table 5.16 summarizes only those variables that were included in one of the LDA models other than the "general" (non-type-specific) one (which is why it does not correspond exactly with the variables listed in Appendix K). The *variables* are arranged in this table (from top to bottom) according to a decreasing number of models that include the variable, and the *models* are

arranged (from left to right) in decreasing order regarding how many variables are included in each model. Thus it is suggested, for instance, that the variables related to the finding decision for Emotional Abuse Only (i.e., risk in the severity domain, victim's gender, referrer's source of information, and number of prior referrals) are best able to discriminate which cases with only emotional abuse allegations were *unsubstantiated*, whereas the variables related to Sexual Abuse and Other cases (i.e., referrer type, case ongoing in DCFS, and nonprotective or uncooperative caregiver) were, in contrast, best able to discriminate which cases with sexual abuse and other types of allegations were *substantiated*. Similar such comparisons can be made for other pairs of models too, but we will not here give further attention to consideration of these results. Though perhaps they are interesting in and of themselves, this screening analysis as a whole was preliminary to the *nonlinear* discriminant analysis, by which both categories of variables and cases (object scores) are distinguished in reference to the finding decision.

Table 5.16
Variables Included in Section V.D.1 Type-Specific Screen Models

Content of Variable	Physical Abuse Only	Neglect Only	Physical Abuse & Neglect	NONE (MMCS)	Sexual Abuse Only	Emotional Abuse Only	Sexual Abuse & Other
Tangible evidence[63]	X	X	X		X		
Sum of maximum risk rating over 37 risk variables	X		X	X	X		
Referrer type (1=professional; 2=community)	X	X					X
Risk in severity domain[64]	X		X			X	
Victim's age (collapsed: 0-3,4-5,6-10,11+)	X				X		
Victim's gender (male or unknown=1; female=2)				X		X	
Referrer's source of information[65]				X		X	
Inconclusive evidence[66]	X	X					
Social worker framing of incident	X	X					
Rating of overall risk	X	X	X				
Number of domains with risk indicated[67]		X		X			
Number of prior referrals						X	
Count of allegations					X		
Family receiving public assistance	X						
Perpetrator has access to victim			X				
CA/N toward another child			X				
Alcohol an issue at the referral			X				
Office size (small, medium, large, extra-large)				X			
Case was ongoing in DCFS							X
Issues were resolved/family was addressing issues	X						
Nonprotective or Uncooperative CG							X
Child fear of caregiver				X			
Num. of risk factors "insufficient info. to assess"		X					
Factors placing child in imminent harm present?		X					
Sum of maximum risk rating over 7 risk variables[68]			X				
Maximum severity of allegations[69]	X						
Number of variables included:	**11**	**8**	**8**	**6**	**4**	**4**	**3**

2. Nonlinear Discriminant Analysis Results

2a. General Observations

A few technical notes are in order regarding the analytic procedure and interrelationships of the numerical results of the NDA analysis, which will help the reader to interpret the following results.[70] As a first step, the analysis was run with the ordinal variables in their original (uncollapsed) form, and the results were then used as the basis of deciding which categories to collapse together for the purposes of optimal scaling. Quantification graphs of the uncollapsed and collapsed ordinal variables are presented throughout the following so that the reader can see how these variables were handled. All *dichotomous* variables were entered as *multiple nominal*; the effects of entering some of them as ordinal were examined, but doing so made little difference. The effect of specifying variables to be multiple nominal is that the quantifications can be different for each dimension. For all other transformation types (including ordinal), a

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[63] Specifically, this variable is coded as 1 if there is victim disclosure w/o recantation, or there is medical evidence of CA/N, or the perpetrator confesses or if there is physical evidence of injury due to CA/N.

[64] The severity domain consists of risk indicated in the following areas: Dangerous Acts, Physical Injury/Harm, Emotional Harm/Abuse, Medical Care, Basic Needs, Supervision, Hazards in Home, Sexual Abuse/Exploitation, Non-Sexual Exploitation.

[65] Referrer's source of information was collapsed as follows: first-hand, victim disclosure, second-hand or circumstantial.

[66] Inconclusive evidence was a coded "other" category. It includes "Unable to tell who did act, conflicting information, etc.)

[67] The risk domains are these: child characteristics, severity, chronicity, caregiver characteristics, caregiver-child relationship, social and economic, and perpetrator access. the risk factors included in each of these domains can be examined in Appendix E.

[68] The seven risk variables that this variable were based upon are: History of CA/N as child, History of domestic violence, Substance abuse, Victimization of other children, Mental/Physical/Emotional impairment, Chronicity of CA/N / Frequency, Hazards in the home".

[69] This formulation of maximum severity used the severity of emotional maltreatment only if other three main types [PA, SA, NEG] were all 0.

[70] The basis of this and subsequent two paragraphs is SPSS Categories 10.0, pp. 134, 137-138, 140.

category has only one quantification, regardless of the dimensionality of the solution. For ordinal variables (and in fact any variables other than multiple nominal), the quantifications multiplied by weights equal the *single category coordinates*[71]**,** which represent the locations of the categories on a line in the object space.[72] The eigenvalue for each dimension indicates how much of the relationship between the two sets of variables is shown by each dimension. The eigenvalues add up to the total fit. The eigenvalue equals one minus the average *loss* for the dimension, which (for each dimension and set) is the proportion of variation in the object scores that cannot be accounted for by the weighted combination of variables in the set.

Specifically, as a result of this analysis we find that (for each set) loss for Dimension I is .225 and loss for Dimension II is .346, indicating that (in terms of the associated eigenvalues), the dimensions respectively account for 54.23% and 45.77% of the total fit of 1.429. The overall eigenvalues are .775 for Dimension 1 and .654 for Dimension 2, their sum, the total finding multiple fit value (presented in Table 5.17), is 1.429, which is 71.45% of the perfect fit value (2.0), indicating a good fit. Over a quarter (28.55%) of the variance in finding decision, however, is *not* fit by this NDA model, which is in part due to the fact that interactions are not included in this (or any) NDA model. Even so, it is a very successful model for being as nonspecific as it is, and the classification accuracy resulting from it also is excellent, as will be seen.

Table 5.17
NDA Multiple Fit Values* for General Model

Variable	Optimal Scaling Level	Dimension I	Dimension II	Total**
Finding	Multiple Nominal	**.775**	**.654**	1.429
Referrer Type (collapsed)	Multiple Nominal	**.022**	**.024**	.046
Count of Allegations	Ordinal	.002	**.098**	.100
Maximum severity of FTP	Ordinal	.000	**.058**	.058
Neglect referred by Law Enforce	Multiple Nominal	**.022**	.007	.029
Emotional maltreatment alleged at referral	Multiple Nominal	.006	**.022**	.028
Direct evidence	Multiple Nominal	**.088**	.000	.089
Region	Multiple Nominal	.002	**.015**	.017
Victim received or associated with public assistance	Multiple Nominal	.005	.000	.005
Insufficient information on risk factors	Ordinal	.002	**.194**	.196
Are factors which place child in imminent harm present?	Multiple Nominal	**.013**	**.016**	.028
Overall level of risk	Ordinal	**.146**	**.068**	.214
Number of risk domains	Ordinal	**.115**	.008	.123
Emotional maltreatment only	Multiple Nominal	**.025**	.000	.026
Injury accidental	Multiple Nominal	**.014**	.002	.016
Issues resolved or family addressing	Multiple Nominal	.007	.002	.009
Case ongoing in DCFS	Multiple Nominal	.006	**.026**	.032
Social worker framing of incident	Multiple Nominal	**.039**	.003	.043
Inconclusive evidence	Multiple Nominal	.001	**.143**	.144

* For the two dimensions, fit values greater than .01 are emboldened. ** Due to rounding, some values appear to be minutely different from the sum of the preceding two columns.

In concordance with the results of Section V.C, the two dimensions resulting from this analysis correspond to what has been labeled "Direction of conclusion" (Dimension 1) and "Certainty"

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[71] The weights equal the standard deviations of the single category coordinates. Moreover, what is termed *single fit* corresponds to the *squared* weight for each variable (and so it equals the variance of the single category coordinates), see SPSS Categories 10.0, p. 133.

[72] In contrast, the *multiple* category coordinates for variables treated as single nominal, ordinal, or numerical represent the coordinates of the categories in the object space *before* ordinal or linear constraints are applied. These values are unconstrained minimizers of the loss. For multiple nominal variables, these coordinates represent the quantifications of the categories. Multiple fit equals the variance of the multiple category coordinates for each variable, so the multiple fit tables can be examined to see which variables discriminate best. (SPSS Categories 10.0, p. 133, 137).

(Dimension 2). Looking at the multiple fit values, it can be seen which variables' categories are most distinct in terms of the dimensions, i.e., the extent to which levels of the variables are associated with differences on the dimensions. Regarding Dimension 1, the variables that discriminate best are the summaries of risk factors: *Overall level of risk* (fit of .146) and *Number of risk domains* (fit of .115). Other than that, variables also predominantly associated with Dimension 1 are the presence of what we have called *Direct evidence* (i.e., victim disclosure without recantation, medical evidence of CA/N, or perpetrator confession) with a fit value of .088, *and Social worker framing of incident* (fit of .039). In contrast, Dimension 2 mainly is associated with *Insufficient information on risk factors* (fit value of .196) and *Inconclusive evidence* (.144). Also relatively distinct in terms of this dimension are *Count of allegations* (.098), *Overall level of risk* (.068), and *Maximum severity of FTP* (.058). So variables most associated with differences in terms of Dimension 1 reflect level of risk and direct evidence (as well as social worker framing of incident), whereas variables most associated with differences in terms of Dimension 2 reflect insufficient information and inconclusive evidence (as well as the number of allegations and the severity of Failure to Provide, if that is alleged). In general, most of the variables included in the model have relatively high multiple fits on only one of the two dimensions. The exceptions, variables that evidently are used both in deciding the direction of conclusion and certainty of judgement are *Overall Level of Risk*, *Referrer Type*, and *Imminent Harm*. Other than that, there is a strong association with just one dimension or the other.

To summarize the results pertaining to multiple fit, the variables associated with pronounced categorical distinctions in terms of Dimension 1 are (in descending order of fit, including the fits greater than .01) are: *Overall level of risk* (**.146**, .068), *Number of risk domains* (**.115**, .008), *Direct evidence* (**.088**, 0.0), *Social worker framing of incident* (**.039**, .003), *Emotional maltreatment only* (**.025**, 0.0), *Neglect referred by law enforcement* (**.022**, .007), *Referrer type* (**.022**, .024), *Injury accidental* (**.014**, .002), and *Are factors which place child in imminent harm present?* (**.013**, .016). For Dimension 2 (again, in descending order of fit, including the fits greater than .01), the summary is: *Insufficient information on risk factors* (.002, **.194**), *Inconclusive evidence* (.001, **.143**), *Count of allegations* (.002, **.098**), *Overall level of risk* (.146, **.068**), *Maximum severity of FTP* (0.0, **.058**), *Case ongoing in DCFS* (.006, **.026**), *Referrer Type* (.022, **.024**), *Emotional maltreatment alleged at referral* (.006, **.022**), *Region* (.002, **.015**), and *Are factors which place child in imminent harm present?* (.013, **.016**). Included variables with relatively small multiple fits in both dimensions (i.e., with the lowest total fits) in this nonlinear multivariate context are *Issues resolved or family addressing* (.007, .002), and *Victim received or associated with public assistance* (.005, 0.0). The variables with the highest total fit, are *Overall level of risk* (total fit = .214) and *Insufficient information on risk factors* (total fit = .196).

The interpretation of the direction of ordinal variables (as well as single nominal or numerical variables) is obtained from the position of the *projected centroids*: a plot of the projected centroids shows how well a variable separates groups of objects, because the centroids are in the center of gravity of the objects. In order to compute the projected centroids, the category centroids are projected onto the vectors defined by the component loadings (see Appendix M)[73]. As a result of this procedure, the projected centroids are put on a line in the object space. In this way, all of the variables are simultaneously taken into account (in that they collectively constitute the object scores) while considering the pattern in the object space of the categories of each predictive variable. For further technical detail, regarding the statistical procedure (OVERALS) used to implement this analysis, please see Appendix I.

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[73] The component loadings (when there are no missing data) are equivalent to the Pearson correlations between the quantified variables and the object scores.

2b. Optimal Scaling Results

As has been described above, the nonlinear canonical correlation analysis becomes in effect a nonlinear discriminant analysis by specifying the outcome variable (finding, in this case) as one "set of variables" and the other (predictor) variables as a second set. *In* this section, the optimal scaling results are reported for variables in each of the two sets. For each of the *multiple nominal* variable tables, the response categories and marginal frequencies (i.e., Ns) are given in the first two columns. Then the quantifications for the two dimensions are reported in the following two columns. These are followed by the category centroids for the two dimensions. Then graphs are presented representing the quantifications and the centroids. The information for the several *ordinal* variables is much the same, but with a few differences. Firstly, the raw and transformed quantifications are presented graphically, so that the reader can see how categories were collapsed in the course of the optimal scaling procedure. Secondly, there is only a *single* vector of category quantifications for ordinal variables; these are reported, as well as the weights for the two dimensions. As mentioned above, the quantifications multiplied by weights equal the single *category coordinates*, which are reported in the next two columns of each table, and graphed below. Lastly, for ordinal variables there are both category centroids and projected centroids for each category. Because it is the *projected* centroids that allow one to see how well a variable separates groups of objects, these are reported in each table, and the results graphed as well.

Table 5.18
Finding (Multiple Nominal)

Category	Marginal Frequency	Quantification	Quantification	*Projected Centroids*	*Projected Centroids*
		Dimension 1	**Dimension 2**	**Dimension 1**	**Dimension 2**
Unsubstantiated	602	-1.109	.564	-1.109	.564
Inconclusive	585	-.018	-1.19	-.018	-1.19
Substantiated	664	1.021	.537	1.021	.537

For this initial variable set, dimension centroids are identical to the dimensions' quantifications, as shown in Table 5.18, so an opportunity is to compare the two types of graphs based upon this same information. in the first graph, Quantifications for Finding Decision, quantifications for the two dimensions are graphed on the same scale. It can be seen that Dimension 1 progresses monotonically from unsubstantiated through inconclusive to substantiated. In contrast, Dimension 2 is equally high for the unsubstantiated and substantiated categories, but negative for inconclusive.

These findings are consistent with those of the previous section (V.C.3), and the present characterizations of the dimensions correspond to the ones described there: Dimension 1, which basically distinguishes unsubstantiated from substantiated cases, we refer to as "*direction of conclusion*," whereas Dimension 2, which distinguishes unsubstantiated *and* substantiated cases from those found to be inconclusive, we refer to as the "*certainty*" dimension.

Figure 5.5
Quantifications for Finding Decision
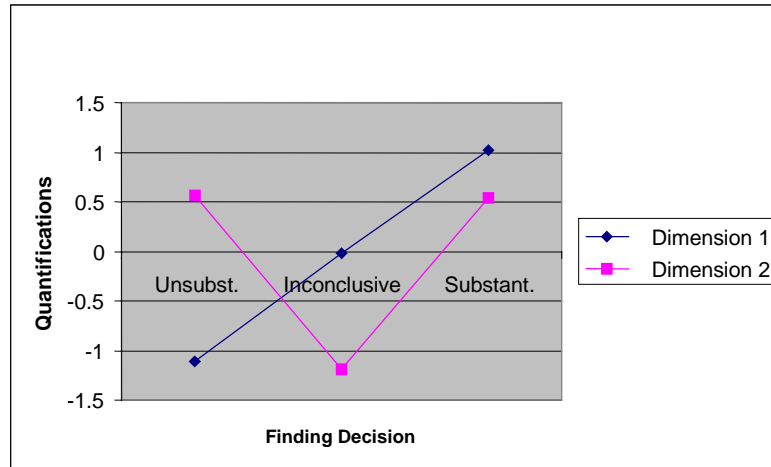
Figure 5.6
Projected Centroids for Finding Decision
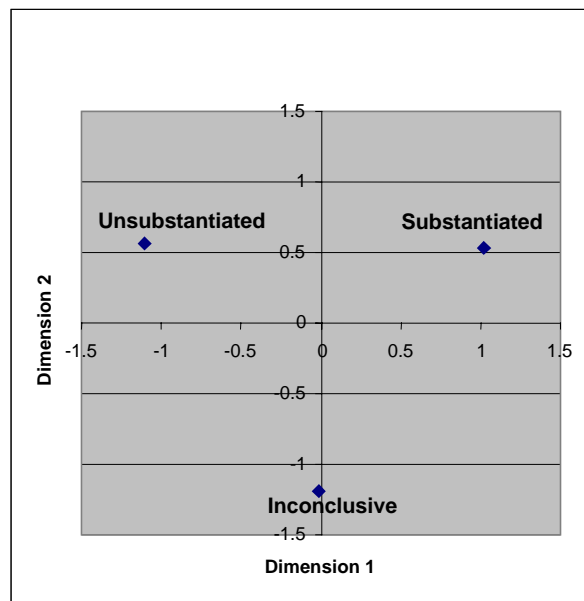
In Figure 5.6, Centroids for the Finding Decision, the centroids are graphed by a plot of coordinates on the orthogonal axes of the two dimensions. It can be seen that the basic pattern here, unsubstantiated and substantiated distinguished by one dimension and both of those contrasted to inconclusive along the other dimension is the same as the result of Section V.C.3 above, though the arbitrary direction of Dimension 2 is inconsequentially reversed.

For this first (criterion) set of variables, if the graphs are compared it can be seen that they are different representations of the same information; for each category, the two dimensional quantifications indicated in the first graph are the coordinates of the categories' centroids that are plotted on the dimensional axes of the second graph. For subsequent pairs of graphs, though, the dimensional quantifications and centroids differ, because those pertain to predictor rather than criterion variables. Nonetheless, because they are related, for each variable the two graphs are presented and discussed as a pair

Table 5.19
Referrer Type (Multiple Nominal)

Category	Marginal Frequency	Quantification Dimension 1	Quantification Dimension 2	*Projected Centroids* Dimension 1	*Projected Centroids* Dimension 2
Professional	1077	.125	.132	.241	.185
Community	774	-.174	-.183	-.336	-.258

For the variable of Referrer Type, as seen in Table 5.19, there is not much difference in the quantifications of the two dimensions: for both, Professional is quantified as slightly positive and Community is quantified as slightly negative. The meaning of this, as can be further seen in the graph of centroids for this variable (Figures 5.7 and 5.8), is that a referral from a professional source (relative to a "community" source) increases both the likelihood that the case will be founded and also the certainty of the decision (i.e., it decreases the likelihood that the case will end up with an Inconclusive finding decision). The variable is roughly symmetric about the origin, indicating that whereas a Professional referral increases the probability of finding as just described, a Community referral works in the opposite direction (increasing the likelihood of both an unfounded decision and an inconclusive decision).

Figure 5.7
Quantifications for Referrer Type
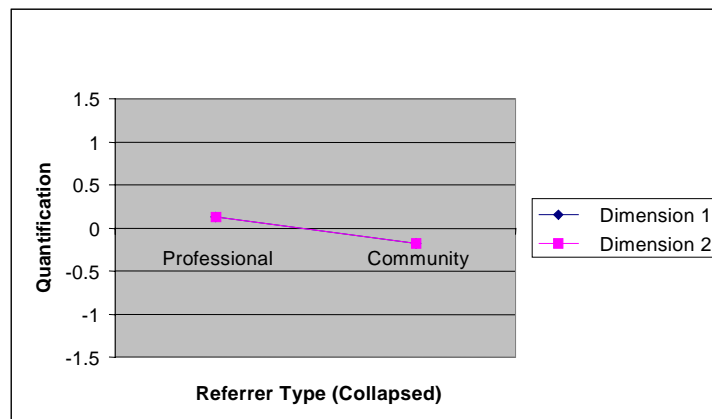
So similar are the dimensional quantifications for this variable that in the first graph the line for Dimension 1 is hidden by that for Dimension 2 (Figure 5.7)

Figure 5.8
Projected Centroids for Referrer Type
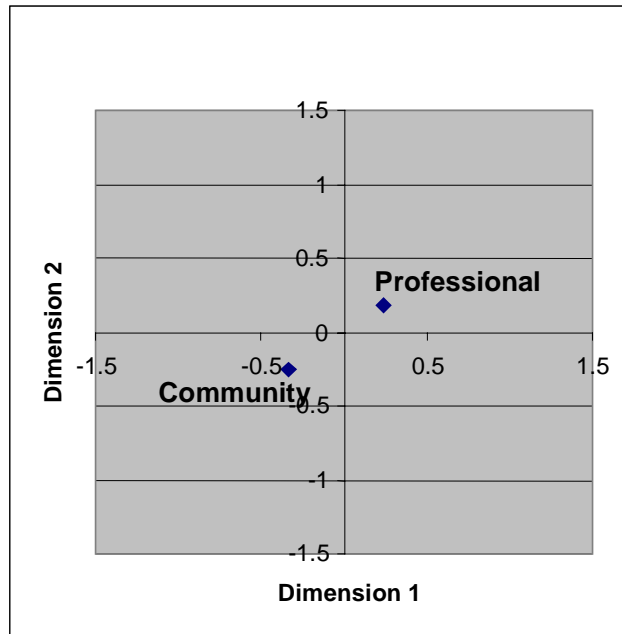
Regarding count of allegations, information about the quantifications, single category coordinates and projected centroids are presented in Figures 5.9-5.11.

Table 5.20
Count of Allegations (Ordinal)

Categories	Marginal Frequency	Quantification (weights: .041, -.313)	Single Category Coordinates Dimension 1	Single Category Coordinates Dimension 2	Projected Centroids Dimension 1	Projected Centroids Dimension 2
0-1*	695	-.886	-.036	.278	.043	.189
2	519	-.301	-.012	.094	.015	.064
3	337	.587	.024	-.184	-.029	-.125
4	167	1.605	.066	-.503	-.079	-.342
5	75	2.111	.087	-.661	-.103	-.45
6	58	2.552	.105	-.800	-.125	-.544

* Just 45 of the cases in this category had no maltreatment allegations.

Because the category quantifications for count of allegations indicated no difference between 0 and 1 allegations, these categories were collapsed (only 45 of the cases had no MMCS-codeable allegations of maltreatment), as shown below in the graph of category quantifications (Figure 5.9). For this, and all other of the ordinal variables, examination of the "single loss" indicated that ordinal treatment of the variable indeed was warranted, as the loss was very slight.[74]

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[74] If single loss was large, it would be better to treat the variables as multiple nominal. For all of the variables considered herein, however, the maximum sum of single loss was .007 (rating of overall level of risk), and for four of the five variables the sum of single loss was .001 or less.

Figure 5.9

Transformation Plot: Count of Allegations

Count of allegations (recoded)
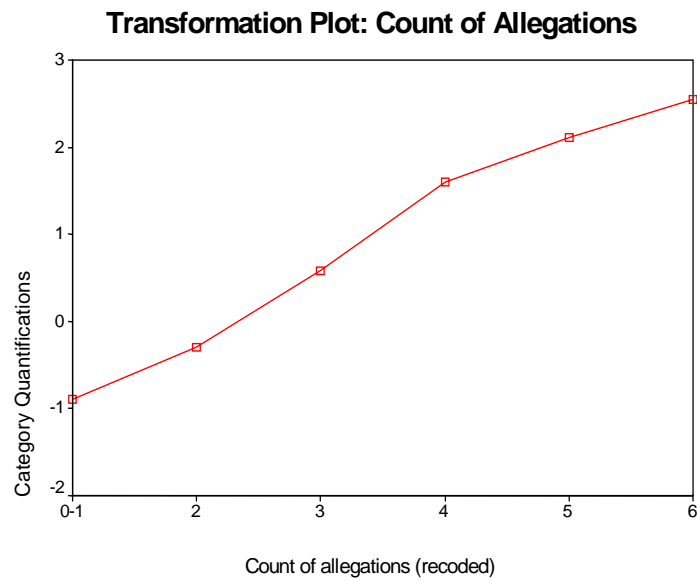
Figure 5.10
Single Category Coordinates for Count of Allegations
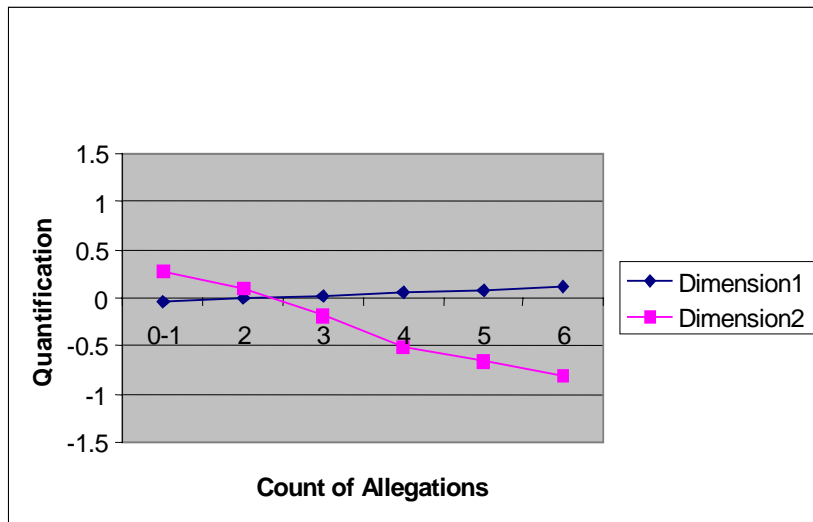
Figure 5.11
Projected Centroids for Count of Allegations
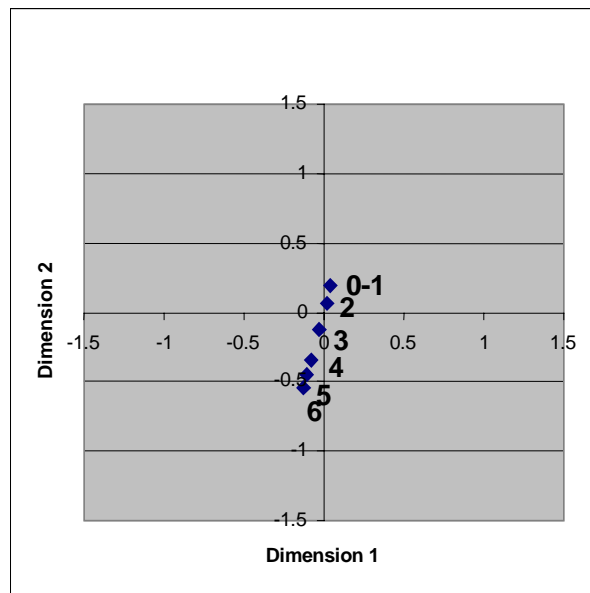
As can be seen from Table 5.20, and also the graph of Single Category Coordinates for Count of Allegations (Figure 5.10), the variable's contribution to Dimension 1 is negligible, though there is a very slight tendency for a higher count of allegations to indicate the unsubstantiated direction. On Dimension 2, though, there is a strong monotonic linear relationship such that the higher the count of allegations the more likely the case is to have a finding decision of Inconclusive, and *vice-versa*. The cross-over point is between two and three allegations; 0-2 allegations indicates an increased likelihood of a decision of unsubstantiated or substantiated, but a count of allegations from 3-6 indicates an increased likelihood of an Inconclusive outcome to the investigation.

In Table 5.21 are presented the quantifications single category coordinates and projected centroids for the maximum severity ratings of failure for provide MMCS maltreatment subtype. The data of Table 5.21 are graphically presented in Figures 5.12-5.15.

Table 5.21
Maximum Severity of "Failure to Provide" (Ordinal)

Categories	Marginal Frequency	Quantification (weights: -.001, .240)	*Single* Category Coordinates	*Single* Category Coordinates	*Projected* Centroids	*Projected* Centroids
			Dimension 1	Dimension 2	Dimension 1	Dimension 2
0	1165	-.720	.001	-.173	.017	-.093
1	132	.233	.000	.056	-.006	.030
2-3	350	-.720	-.002	.295	-.030	.159
4	163	.233	-.002	.417	-.042	.225
5	41	1.228	-.003	.556	-.056	.300

The quantification for Maximum Severity of Failure to Provide was transformed to collapse categories 2 and 3, as shown by the quantification graphs (Figures 5.12 and 5.13).

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Figure 5.12

Maximum Severity of Failure to Provide

Raw maximum FTP (0-5)

Figure 5.13

Transformation Plot: Max Severity of FTP

Max severity of FTP (recoded)
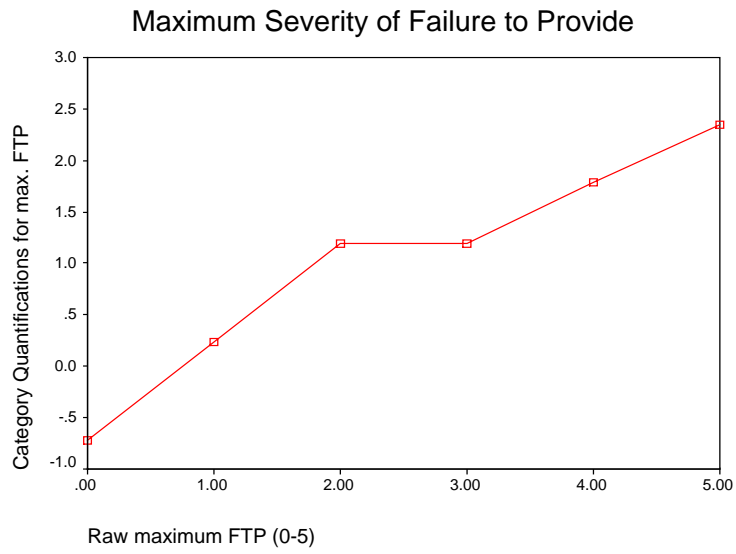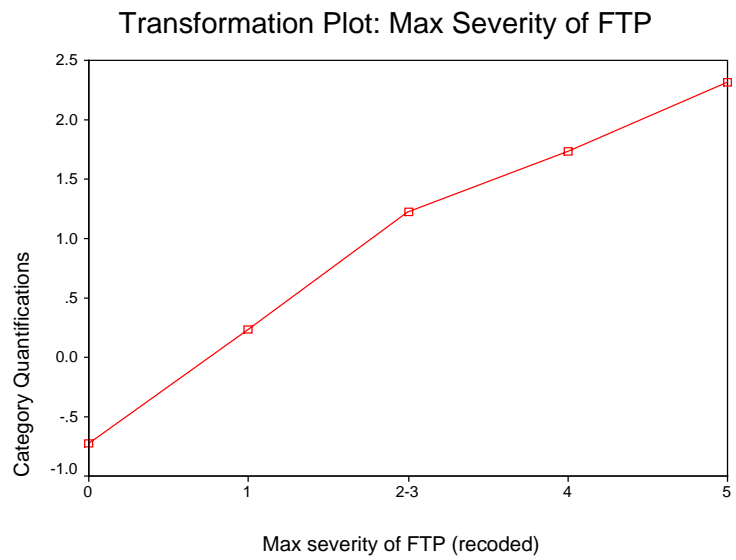
Notice from Table 5.12 and the graph of the single category coordinates (Figure 5.14) that while the quantifications of Dimension 1 are all nearly zero, there is a monotonic increase above zero along the categories for Dimension 2, indicating that this variable serves to increase the *certainty* of the finding decision, such that the greater the maximum severity of the FTP allegation the greater the likelihood of an unsubstantiated or substantiated decision and lesser the likelihood of a finding decision of Inconclusive, as can be seen clearly from the accompanying graph of projected centroids. However, it is also true that a nonlinearity is indicated, such that the *rate* of increase of certainty lessens with the increase in maximum severity to four and to five, as is evident both from the graph of transformed quantification (Figure 5.13) and the graph of projected centroids (Figure 5.15, notice that the distances between the centroids of categories 2-3, 4, and 5 are less than the distances between 0 and 1, and 1 and 2-3).

Figure 5.14
Single Category Coordinates for Maximum Severity of FTP
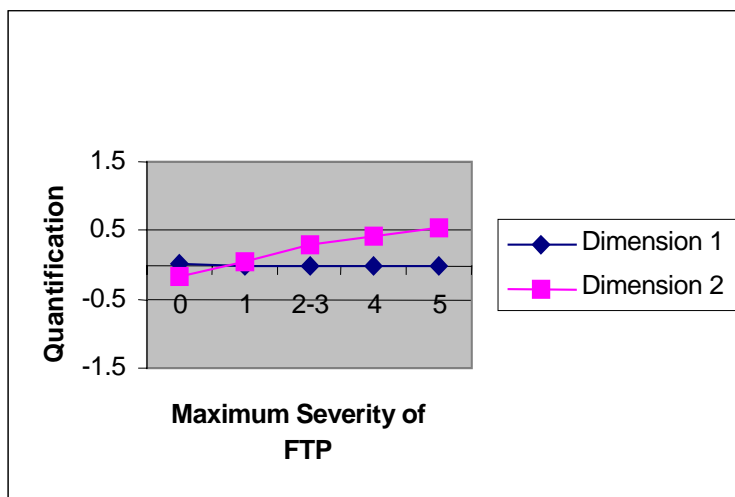
Figure 5.15
Projected Centroids of Maximum Severity of FTP
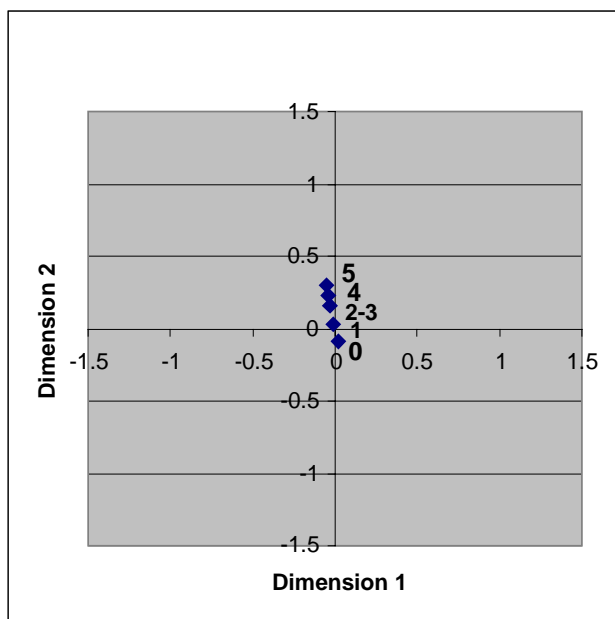
The quantifications and projected centroids for neglect referred by law enforcement are presented in Table 5.22, and are graphically represented in Figures 5.16 and 5.17.

Table 5.22
Neglect Referred by Law Enforcement (Multiple Nominal)

Category	Marginal Frequency	Quantification Dimension 1	Quantification Dimension 2	*Projected Centroids* Dimension 1	*Projected Centroids* Dimension 2
No	1740	-.038	-.021	-.050	-.041
Yes	111	.593	.333	.786	.647

From the quantifications (Figure 5.16) and centroids (Figure 5.17) of the variable Neglect Referred by Law Enforcement, it is clear that while the "No" response conveys virtually no information about the finding decision, a "Yes" response indicates both an increase in the likelihood of a substantiated decision and an increase in certainty about the finding decision. This is to a roughly equal extent for the two dimensions, though there is a slightly greater association with this optimized variable and Dimension 1.

Figure 5.16
Quantifications for Neglect Referred by Law Enforcement
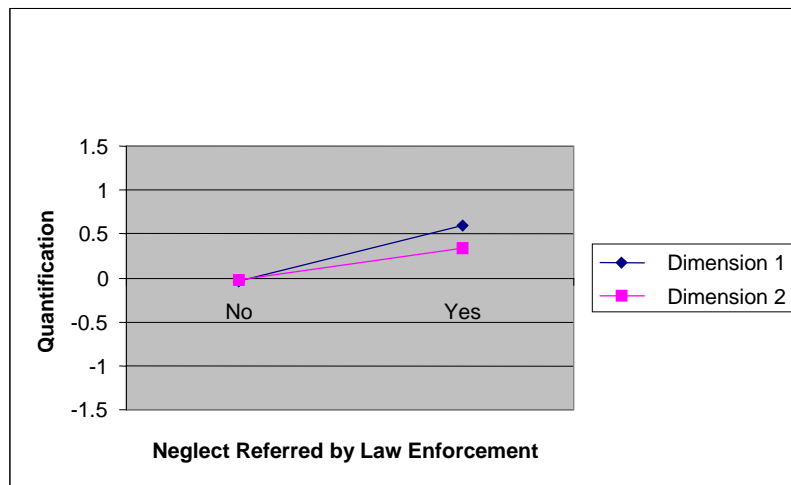
Figure 5.17
Projected Centroids of Neglect Referred by Law Enforcement
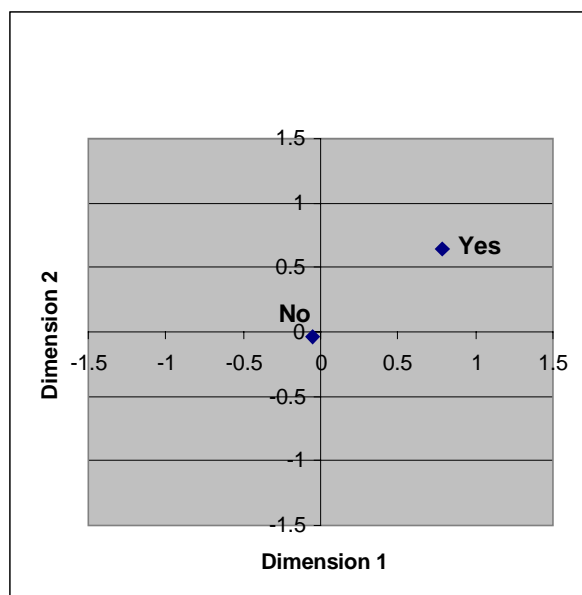
Table 5.23 presents the quantifications and projected centroids for the variable indicating if the referrer alleged MMCS-codeable emotional maltreatment, and this information also is presented graphically, in Figures 5.18-5.19.

Table 5.23
Did referrer allege MMCS-codeable emotional maltreatment? (Multiple Nominal)

Category	Marginal Frequency	Quantification	Quantification	*Projected Centroids*	*Projected Centroids*
		Dimension 1	**Dimension 2**	**Dimension 1**	**Dimension 2**
No	1288	.053	-.097	.012	.0
Yes	563	-.121	.222	-.027	.0

Nonlinear discriminant analysis, as has been pointed out above, has no provision for significance testing – it really is a *descriptive* method. Hence, the variable screening process was conducted as a preliminary analysis, the results of which were reported in the previous section. That said, the NDA is not without power to indicate variables that in the optimized multivariate context appear to do little to explain the finding decision, and the present variable provides an example of that. Though there is a slight (opposite) direction of quantification indicated for the two dimensions for this variable(Figure 5.18), the plot of projected centroids (Figure 5.19) indicates that there is virtually no discrimination by this variable relative to the finding decision, because both centroids are extremely close to the origin with little distance between them. Hence, one result of this analysis is that Referrer Allegations of Emotional Maltreatment really is *not* a variable that appears to be useful in understanding the finding decision when the other (optimized) variables included in this analysis are taken into account.

Figure 5.18
Quanitifications for Allegations of Emotional Maltreatment
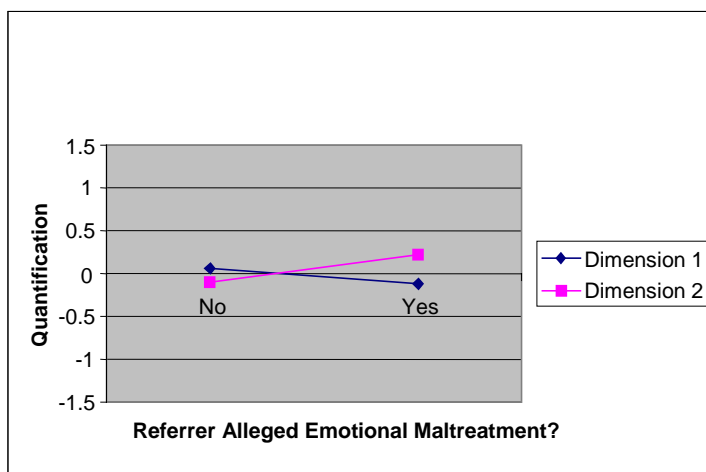
Figure 5.19
Projected Centroids for Referrer Alleged Emotional Maltreatment
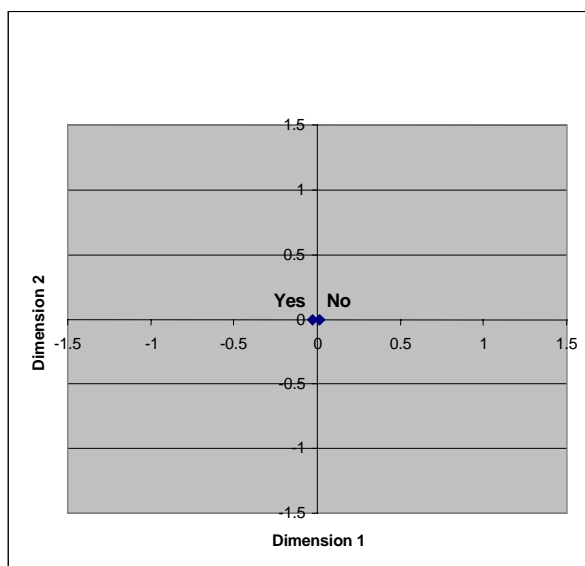
Quantifications and projected centroids for the variable we have called "direct evidence" and presented in Table 5.24, and graphically represented in Figures 5.20 and 5.21. Presence of Direct Evidence, as it is defined herein,[75] appears to be a useful variable, especially for indicating a likelihood that a case will be judged substantiated as opposed to unsubstantiated (see Figures 5.20 – 5.21).

Table 5.24
Direct Evidence (Multiple Nominal)

Category	Marginal Frequency	Quantification	Quantification	Projected Centroids	Projected Centroids
		Dimension 1	Dimension 2	Dimension 1	Dimension 2
No	1289	-.196	.008	-.249	.025
Yes	562	.450	-.018	.570	-.058

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[75] As described above, for the purpose of this analysis there is considered to be "Direct Evidence" if the CPS worker documented 1) there is victim disclosure without recantation, or 2) there is medical evidence of child abuse or neglect, or 3) the alleged perpetrator confesses the maltreatment.

This variable does not appear to pertain much to the "Certainty" Dimension, but does help to distinguish cases on Dimension 1, especially in the direction of substantiated decisions (for the "Yes" category), as can be observed in the graph of projected centroids (Figure 5.21).

Figure 5.20
Quantifications for "Direct Evidence"
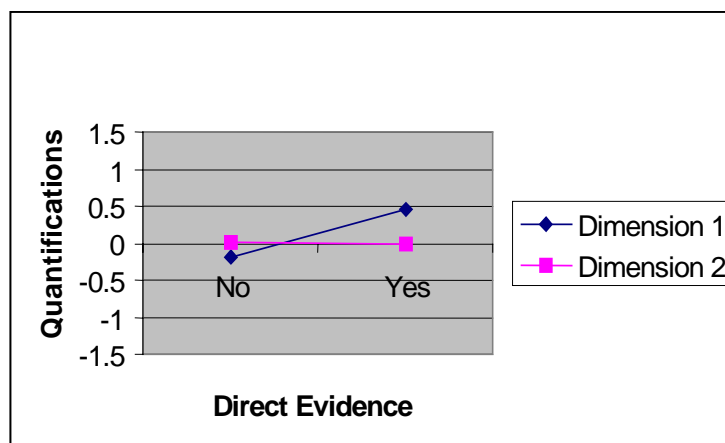
Figure 5.21
Projected Centroids for "Direct Evidence"
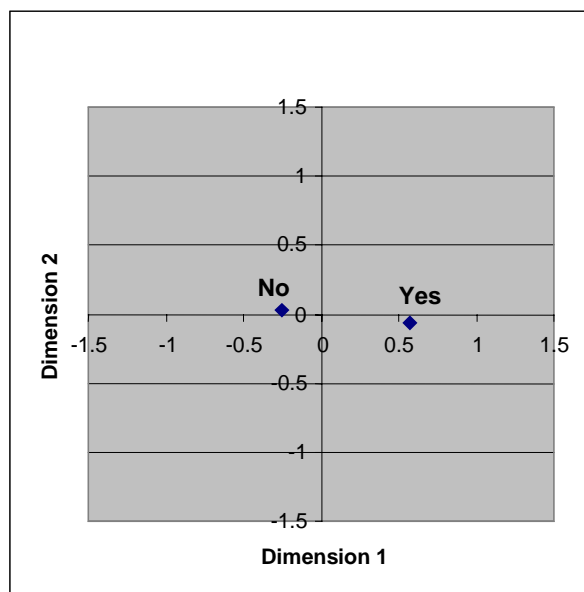
Table 5.25 presents the quantifications and projected centroids for the contrast that was made between regions, namely Region 4 or 6 vs. other regions. Graphs of this information are presented in Figures 5.22 and 5.23.

Table 5.25
Region (Multiple Nominal)

Category	Marginal Frequency	Quantification Dimension 1	Quantification Dimension 2	*Projected Centroids* Dimension 1	*Projected Centroids* Dimension 2
Other (1, 2, 3, 5)	1058	.036	-.107	.088	-.102
Regions 4 or 6	793	-.048	.143	-.118	.136

The optimized variable Region, i.e., the collapsed variable that was used in this analysis,[76] does seem to have some importance to the finding decision, in both dimensions that resulted from the analysis. Specifically, it appears that seen in this nonlinear multivariate context there is a slight to moderate tendency for cases which are in Region 4 or Region 6 to be both more likely to be unsubstantiated than cases in other regions and for there to be a higher level of certainty about the finding decisions, as can be seen in the plot of centroids for the two categories of this variable.

Figure 5.22
Quantifications for Region
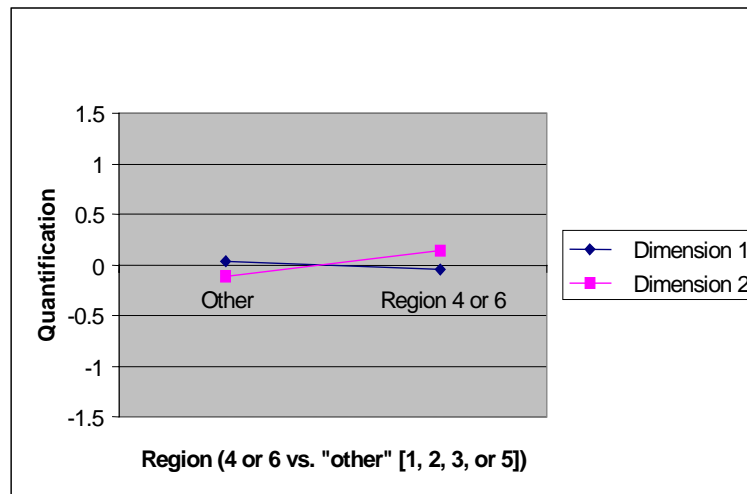
Figure 5.23
Projected Centroids for Region

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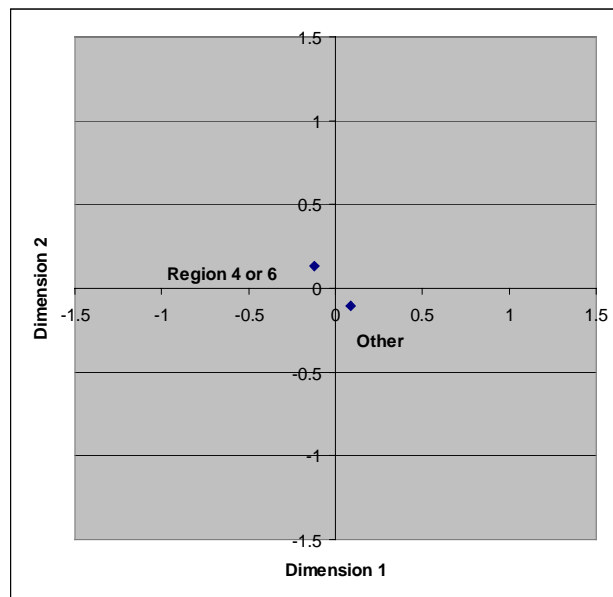
[76] For the purpose of this analysis region was collapsed as follows regions 1, 2, 3, or 5 = 1; regions 4 or 6 = 2.

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The quantifications and projected centroids for whether the victim received or was associated with public assistance during the period of 9/96 – 8/97 are presented in Table 5.26, and graphically shown in Figures 5.24 and 5.25. "Client receiving public assistance" is another variable with only a slight effect showing up in this analysis, and the effect is almost entirely on Dimension 2.

Table 5.26
Victim Received or Was Associated with Public Assistance During
the Period of 9/96-8/97 (Multiple Nominal)

Category	Marginal Frequency	Quantification Dimension 1	Quantification Dimension 2	*Projected Centroids* Dimension 1	*Projected Centroids* Dimension 2
No	534	.114	-.019	.034	-.087
Yes	1317	-.046	.008	-.014	.035

To put this finding in context, data in Table 5.26 indicate the effect size on the *Certainty Dimension*, such as it is (.122), is slightly less than that of moving from a maximum severity of FTP of 1 to a maximum severity of FTP of 2 or 3 (.129). The effect on *Dimension 1* of the Public Assistance variable (.058) is *less than half* the size of the effect for Dimension 2. Figures 5.24 and 5.25 show that there is little distinction between the quantifications for the two dimensions or between the projected centroids.

Figure 5.24
Quantifications for Public Assistance
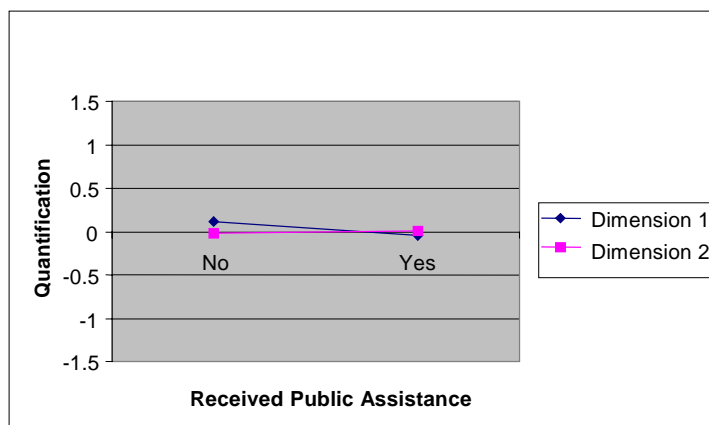
Figure 5.25
Projected Centroids for Received Public Assistance
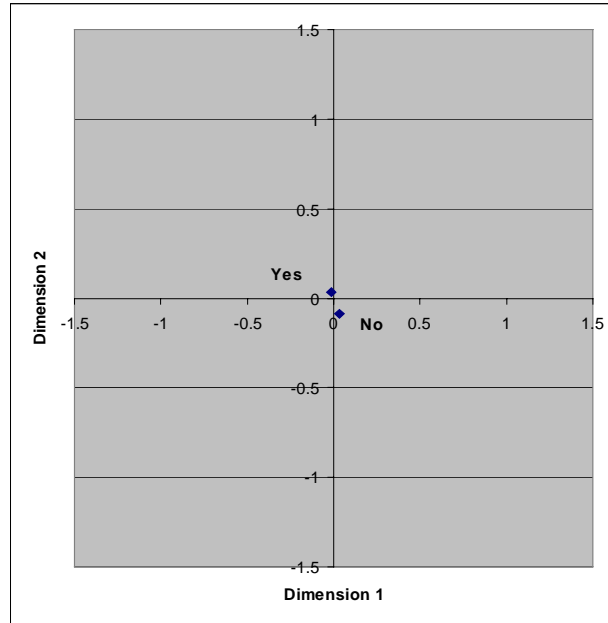
Results regarding the number of risk factors marked "insufficient information to assess" are presented in Table 5.27. The original and recoded category quantifications are shown in Figures 5.26 – 5.27, the single category coordinates are graphed in Figure 5.28, and a graph of the projected centroids for the categories is shown in Figure 5.29.

Table 5.27
Insufficient Information to Assess Risk Factors (Ordinal)

Categories	Marginal Frequency	Quantification (weights: .046, -.440)	*Single* Category Coordinates	*Single* Category Coordinates	*Projected* Centroids	*Projected* Centroids
			Dimension 1	Dimension 2	Dimension 1	Dimension 2
0-11	1397	-.503	-.023	.221	-.014	.257
12-32	379	1.244	.057	-.548	.034	-.636
33-43	51	2.110	.097	-.929	.058	-1.078
44-49	10	3.556	.163	-1.566	.097	-1.817
50-58	13	6.014	.276	-2.648	.165	-3.073
59	1	9.344	.429	-4.115	.256	-4.774

Regarding the transformed quantification of "Insufficient Information to Assess Risk Factors," the extreme category, 59 risk items[77] rated "insufficient information to assess," was left as a separate category in the collapsed quantification, even though it includes only one case. The reasons for this were: 1) the category quantification based upon the raw scores was dramatically elevated from the prior category (see Figure 5.26), and 2) the category is qualitatively distinct, indicating as it does that *no* risk factor was rated as *other* than "insufficient information to assess." However, due to a concern that almost-empty categories are more likely than other categories to dominate the solution, the analysis also was run collapsing this extreme case into the previous category, but doing so made only trivial differences in the results, so the extreme category was kept as a part of the model. Another consideration is that it is likely that in the population of cases as a whole there would over time be multiple cases in this category, so, given

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[77] Of the 37 risk factors, 15 were assessed singly whereas the other 22 were assessed for both primary and secondary caregivers (if there were both in a case). So there were 59 opportunities in each assessment for an "insufficient information to assess risk level" code to be given (if only one caregiver, the second item of each of the 22 pairs is left blank).

that it seems to be distinct in its relation to the finding decision, it probably is most useful to keep it as a separate category as was done for present purposes.

Figure 5.26

Insufficient Info. to Assess Risk Factors

Raw number of risk factors with insufficient info. (0-59)

Figure 5.27

Transformation Plot: Insufficient Information

Insufficient Information (recoded)
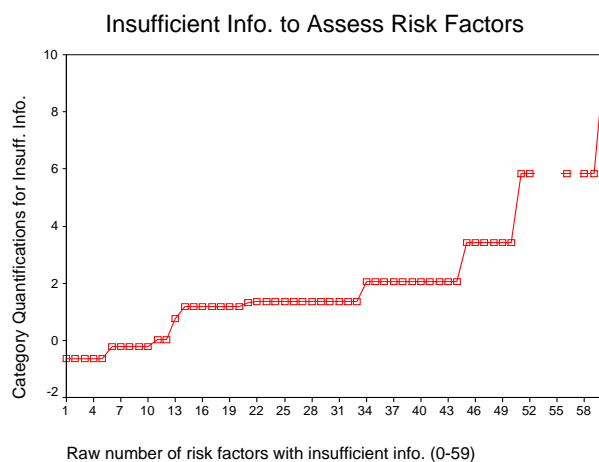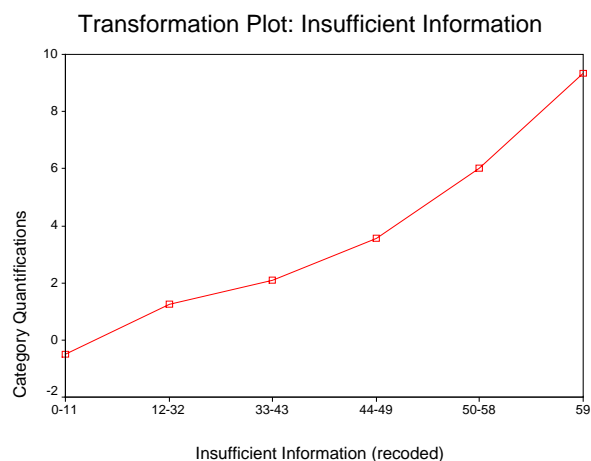
As can be seen from the graphs of single category coordinates (Figure 5.28) and the projected centroids (Figure 5.29), though there is a slight association with increasing levels of Insufficient Information to Assess with a decision of substantiated, the dramatic effect for this optimized variables is with the Dimension 2, and that is almost entirely in the direction of increasing the likelihood of an inconclusive finding. The effect of recording 50 or more risk factors coded "insufficient information to assess" on decreasing certainty of the finding decision is very powerful according to the results of this analysis, as evidenced most clearly in the plot of the projected centroids of the categories of this variable.

Figure 5.28
Single Category Coordinates for Insufficient Information to Assess
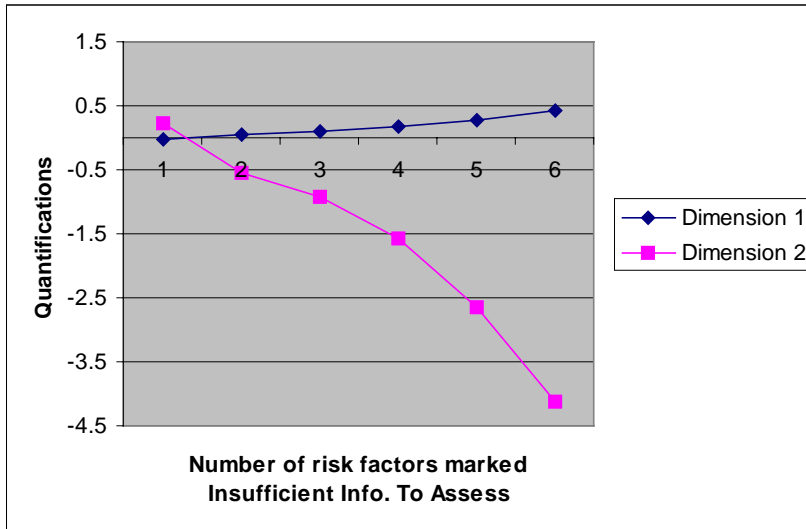
Figure 5.29
Projected Centroids for Insufficient Information to Assess
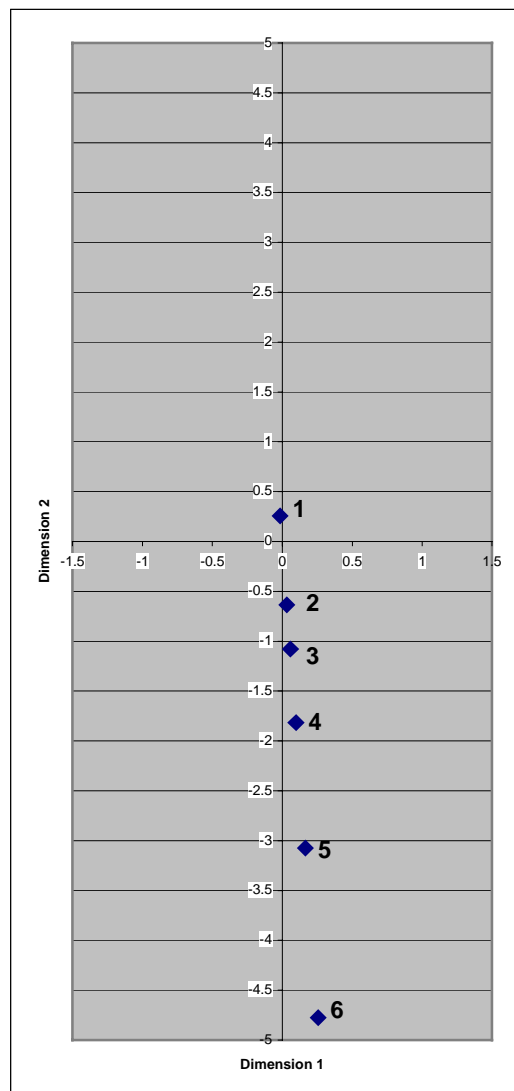
Table 5.28 presents the quantifications and projected centroids for the variable indicating whether factors placing the child in imminent harm were present, and this information is graphically represented in Figures 5.30-5.31.

Table 5.28
Are factors which place child in imminent harm present? (Multiple Nominal)

Category	Marginal Frequency	Quantification Dimension 1	Quantification Dimension 2	Projected Centroids Dimension 1	Projected Centroids Dimension 2
no, unknown, or missing	1642	-.040	-.045	-.089	-.053
present	209	.315	.352	.701	.417

The optimized variable concerning whether factors which place child in imminent harm are present is similar to that related to neglect being referred by law enforcement, in that a negative response conveys little information[78] but an affirmative response evidently moves the decision maker both in the direction of substantiated and away from inconclusive, though the effect is somewhat stronger for Dimension 1 (See Figure 5.31).

Figure 5.30
Quantifications for Imminent Harm

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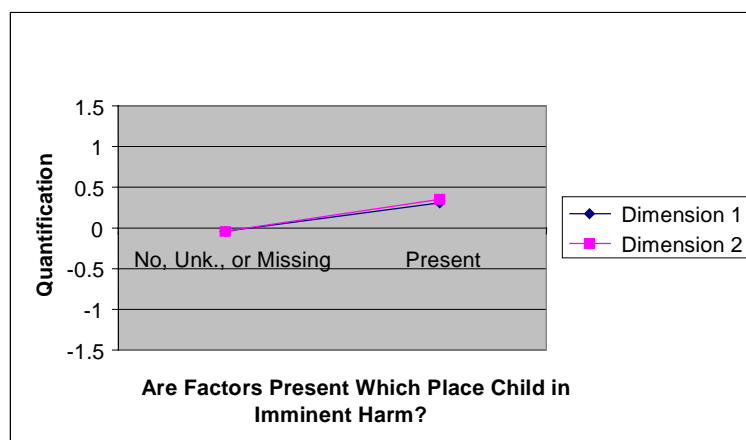
[78] In part because negative responses are so common, 94% (Neglect Reported by Law Enforcement) and 88.7% (Imminent Harm).

Figure 5.31
Projected Centroids for Imminent Harm
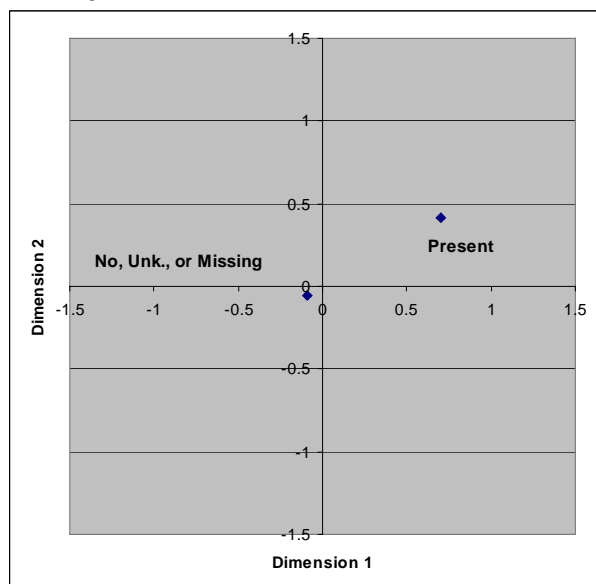
Table 5.29 presents results for overall Rating of Risk: weights and quantifications, single category coordinates, and projected centroids. The category quantifications for the original variable and the collapsed form of it are presented in Figures 5.32–5.33. A graphic representation of the single category coordinates is shown in Figure 5.34, and a graph of the projected centroids is shown in Figure 5.35.

Table 5.29
Overall Rating of Risk (Ordinal)

Categories	Marginal Frequency	Quantification (weights: .380, -.251)	*Single* Category Coordinates Dimension 1	*Single* Category Coordinates Dimension 2	*Projected* Centroids Dimension 1	*Projected* Centroids Dimension 2
0	206	-1.483	-.564	.372	-.925	.282
1	677	-.827	-.314	.207	-.516	.157
2	538	.551	.209	-.138	.344	-.105
3-4	337	1.208	.459	-.303	.754	-.230
5	93	1.736	.660	-.435	1.083	-.330

A main result of this analysis presented in Section V.D is to confirm Section V.C findings regarding the relevance of risk assessment in understanding the finding decision, as will be discussed further, in summary, below. In great contrast to Section V.C, however, risk *per se* was represented here by just two variables: 1) Overall Risk Rating and 2) Number of Risk Domains. In fact, these variables were found to have considerable importance in the present analysis. The transformed quantifications for Overall Risk Rating involved a collapse of risk levels 3 and 4, as shown in the graphs immediately below (Figures 5.32-5.33). In both of the quantification plots, the nonlinearity of increase (the sharp increase) between 1 and 2 risk factors can be observed. From Table 5.29 and the graph of the single category coordinates (Figure 5.34) it can be seen that with increasing categories of risk there both is an increase in likelihood of a substantiated judgement and a decrease of certainty about that judgment. The effect on Dimension 1 is of the greatest extent, though the effects on both of the dimensions are relatively strong. So the overall pattern is that at low overall risk ratings (0-1) a judgement of unsubstantiated is most probable and certainty regarding that judgment is *high*, but that at higher overall risk ratings (2, and especially 3-4 and 5), the tendency is for there to be a substantiated decision (relative to one of unsubstantiated) but the judgment is far less certain (see Figure 5.35 for an illustration of this result).

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Figure 5.32

Overall Rating of Risk
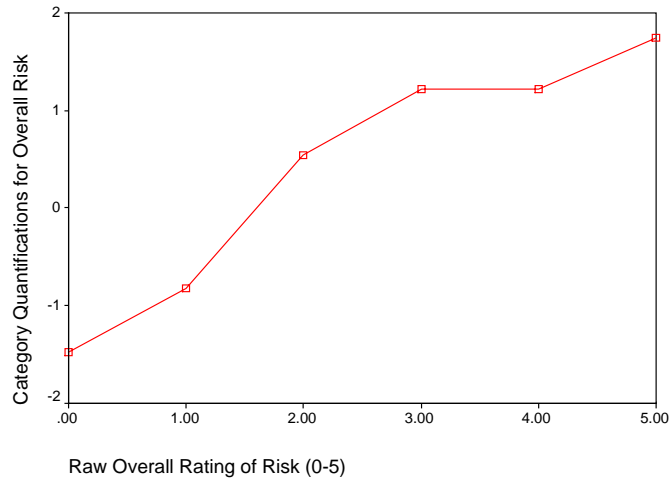
Figure 5.33

Transformation Plot: Overall Rating of Risk
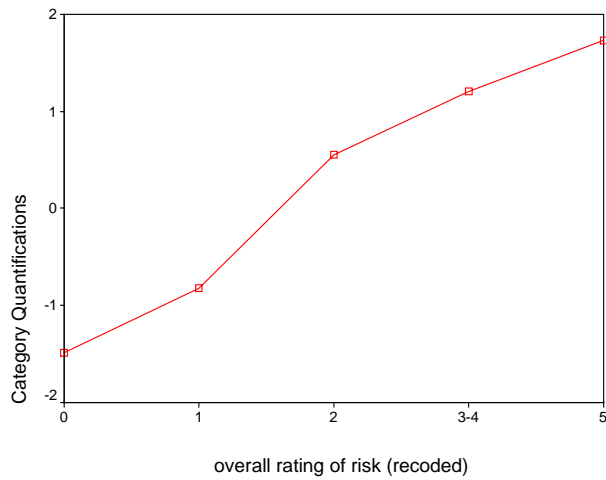
Figure 5.34
Single Category Coordinates for Overall Rating of Risk
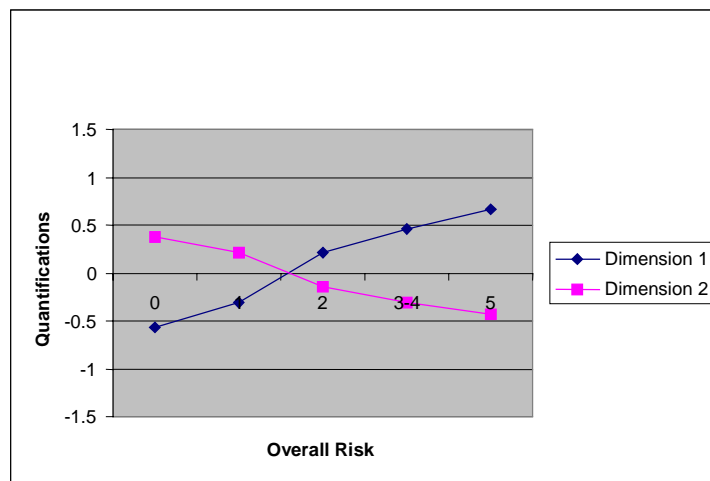
Figure 5.35
Projected Centroids of Overall Rating of Risk
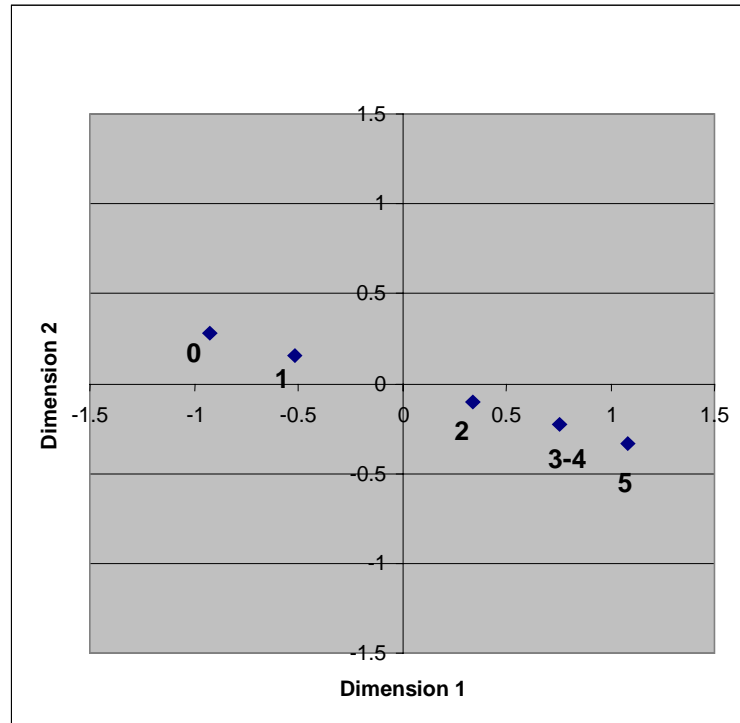
This variable, Number of Domains with Risk, was a count of risk domains that had one or more categories coded as having risk present (i.e., any risk rating of 1-5). Specifically, the seven risk domains are Child Characteristics, Severity, Chronicity, Caregiver Characteristics, Caregiver-Child Relationship, Social and Economic, and Perpetrator Access. The risk factors included in each of these domains can be examined in Appendix E. Results pertaining to the number of domains with risk are presented in Table 5.30. The category quantifications for the original and collapsed versions of the variable are presented in Figures 5.36-5.37. Figures 5.38-5.39 show graphically the single category coordinates and projected centroids.

Table 5.30
Number of Domains with Risk (Ordinal)

Categories	Marginal Frequency	Quantification (weights: .339, .085)	*Single* Category Coordinates Dimension 1	*Single* Category Coordinates Dimension 2	*Projected* Centroids Dimension 1	*Projected* Centroids Dimension 2
0-3	340	-1.430	-.485	-.121	-.832	-.081
4	196	-1.052	-.357	-.089	-.612	-.060
5	309	-.666	-.226	-.057	-.388	-.038
6-7	1006	.893	.303	.076	.520	.051

Unlike Overall Rating of Risk, which was important to both of the two dimensions, Number of Domains with Risk was associated in this analysis only with Dimension 1 (Table 5.30). There are marked nonlinearities in the variable Number of Domains with Risk that show up as a result of the optimization procedure. For one, there is no difference in quantification of the first four categories (0, 1, 2, and 3 domains of risk), all of which indicate an equally strong association with the unsubstantiated decision. Secondly, the quantification plots for Number of Domains with Risk (Figures 5.36-5.37) show a sharp increase in importance of the variable after risk being evident in five domains. Thirdly, there is no discernable difference between risk in six and seven domains, both of which indicate an equal association with a substantiated decision. The

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discontinuity between five domains of risk and more also entails a qualitative distinction (see the plot of projected centroids). Specifically, zero *through five* domains with risk recorded indicates a likelihood of an unsubstantiated decision (decreasing, however, as the number of domains with risk increases to four and then five), whereas *six or seven* domains with risk indicates a pronounced likelihood of a substantiated decision.

Figure 5.36

Number of Domains with Risk

Raw number of domains with risk (0-7)

Figure 5.37

Transformation Plot: No. of Domains with Risk

Number of domains with risk (recoded)
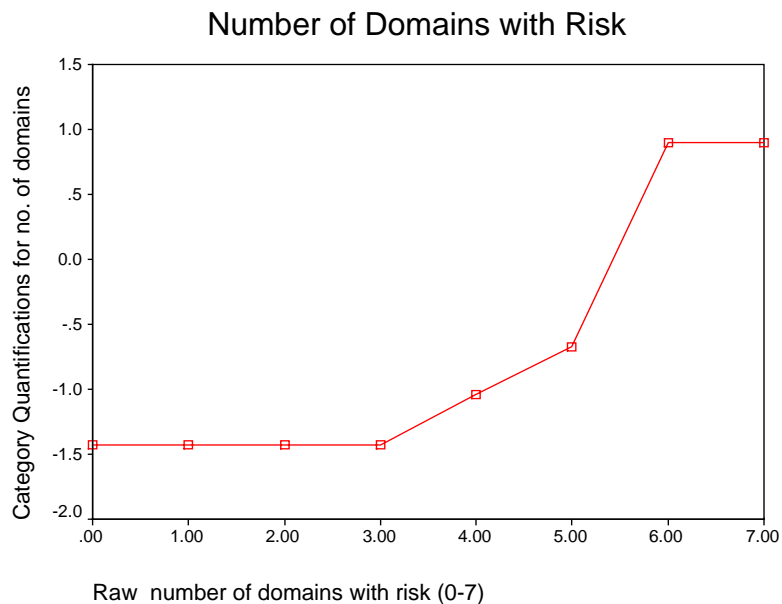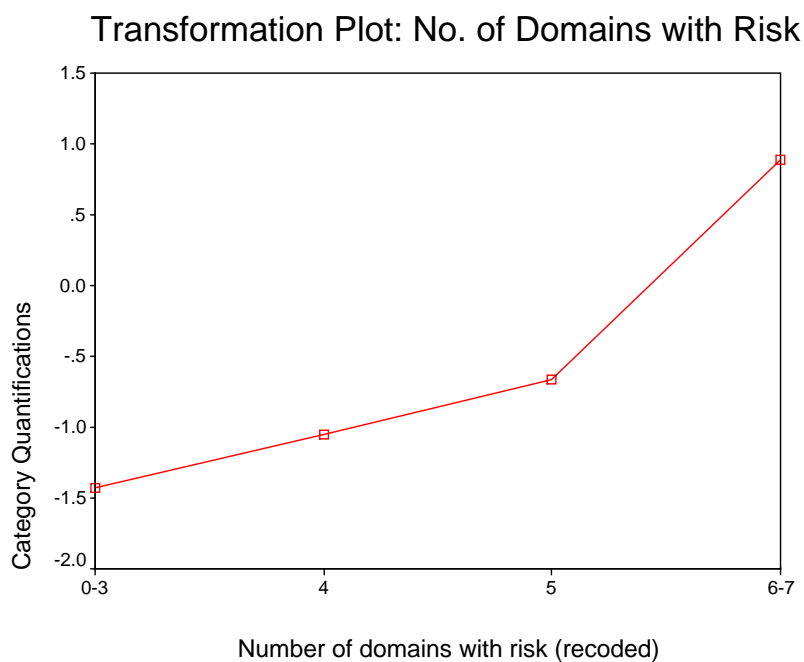
Figure 5.38
Single Category Coordinates for Number of Risk Domains
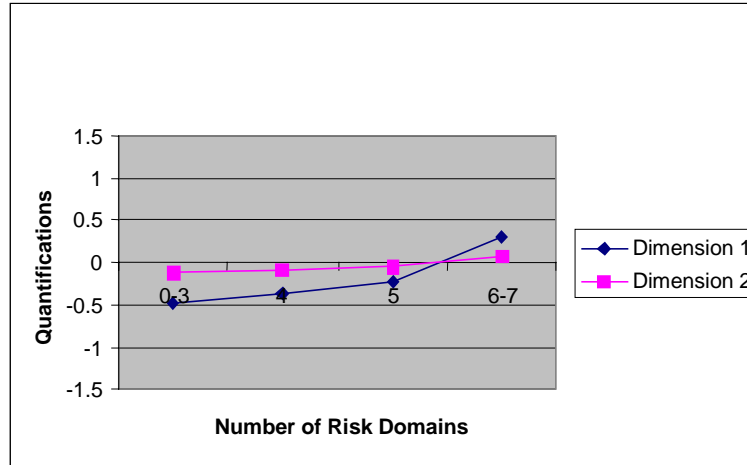
Figure 5.39
Projected Centroids of Number of Risk Domains
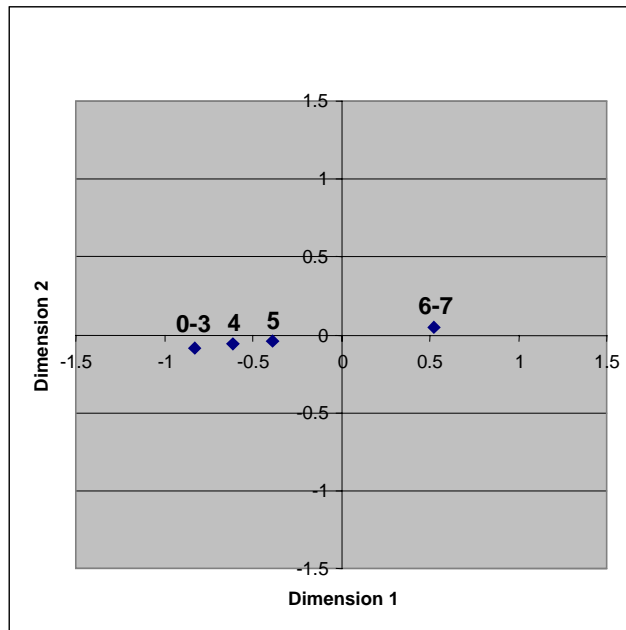
Quantifications and projected centroids for the variable indicating when *only* emotional maltreatment was alleged are reported in Table 5.31, and are represented graphically in Figures 5.40 and 5.41. The variable of Emotional Maltreatment *Only* Being Alleged evidently is important to the finding decision, in contrast to the other variable involving emotional maltreatment, in effect *any* emotional maltreatment being alleged, which was of negligible import.

Table 5.31
Emotional Maltreatment Only Alleged (Multiple Nominal)

Category	Marginal Frequency	Quantification Dimension 1	Quantification Dimension 2	*Projected Centroids* Dimension 1	*Projected Centroids* Dimension 2
No	1774	-.033	.003	-.031	-.013
Yes	77	.766	-.061	.713	.301

So one conclusion of this analysis is that while emotional maltreatment being alleged at all is not evidently related to the finding decision, if that is the *only* type of allegation it *is* of importance. In that case, there is a clear increase in the likelihood that a case will be substantiated, as can be seen in Figure 5.41 graph of the "Yes" category centroid.

Figure 5.40
Quantifications for Emotional Maltreatment Only Alleged
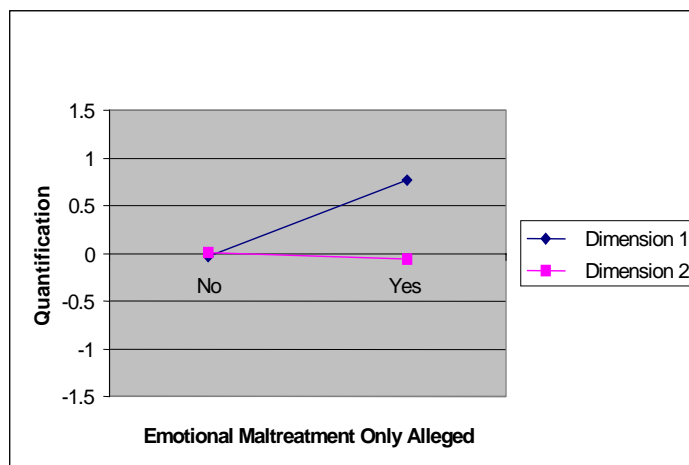
Figure 5.41
Projected Centroids for Emotional Maltreatment Only Alleged
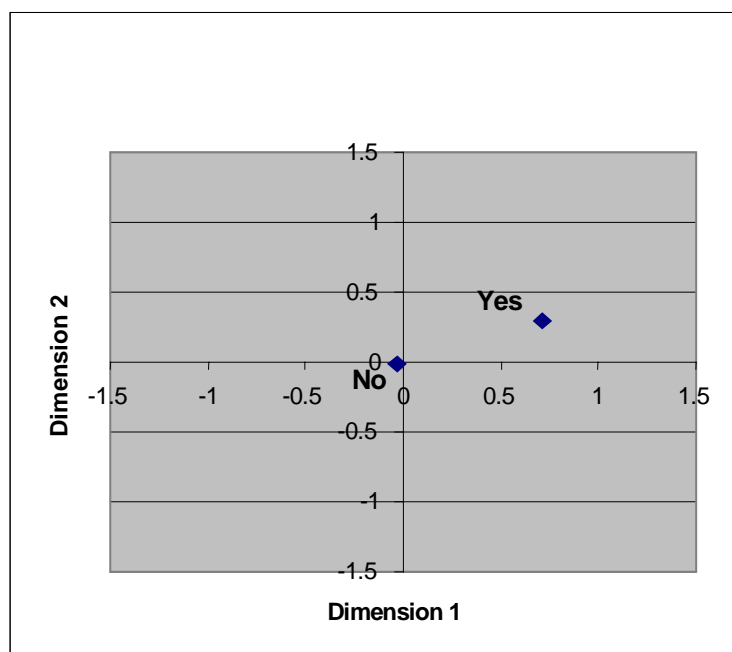
Table 5.32 presents the quantifications and projected centroids for the "injury accidental" variable. The quantifications for the two dimensions are shown graphically in Figure 5.42 and the graph of projected centroids is shown in Figure 5.43. As can be see in Table 5.32, Injury Accidental variable has only 32 cases in the "Yes" category, but for those cases there is a clear association with the unsubstantiated decision, because the category is associated with an extreme negative value on Dimension 1 (-1.28) as well as a substantial positive value on Dimension 2 (.406).

Table 5.32
Injury Accidental (Multiple Nominal)

Category	Marginal Frequency	Quantification Dimension 1	Quantification Dimension 2	*Projected Centroids* Dimension 1	*Projected Centroids* Dimension 2
No	1819	.016	-.005	.023	-.007
Yes	32	-.893	.292	-1.280	.406

This makes considerable sense, and in fact whereas only 32.5% (602) of the cases in this sample were unsubstantiated, 68.8% (22) of the 32 cases with Injury Accidental marked "Yes" were unsubstantiated, which is an extremely significant association (p<.0001, X^2 test). When the other optimized variables are taken into account, the association with a "Yes" response on this variable and the unsubstantiated category is even stronger. In Figure 5.43 graph of category centroids the centroid for the unsubstantiated category has been indicated with an asterisk, and it can be seen that the location in object space of the "Injury Accidental – Yes" category is almost at the same spot, indicating that the center of density of the object scores of cases with Injury Accidental marked yes was almost the same as that of unsubstantiated cases as a whole.

Figure 5.42
Quantification of Injury Accidental
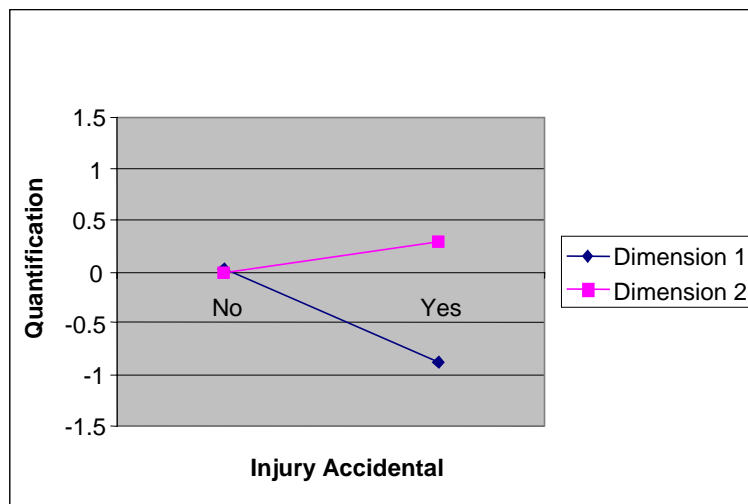
Figure 5.43
Projected Centroids for Injury Accidental
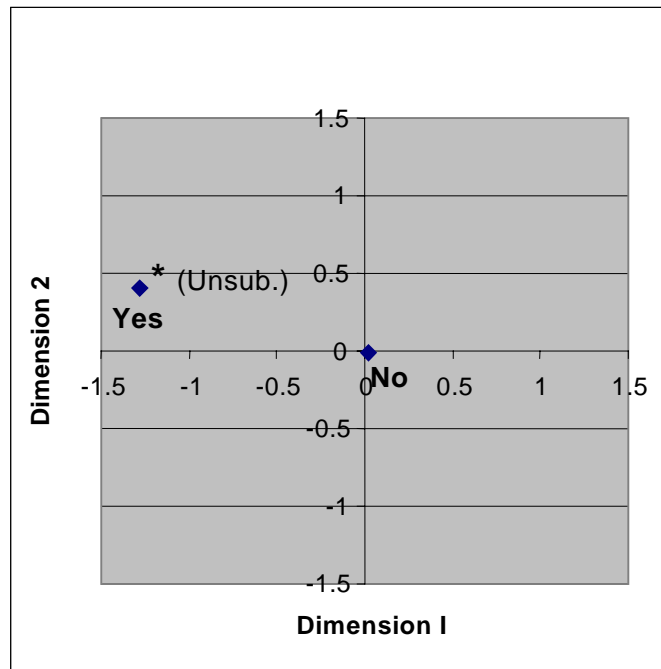
Table 5.33 presents results for the variable indicating if issues are resolved or the family is addressing them. The quantifications also are presented, graphically, in Figure 5.44, and the projected centroids are shown graphically in Figure 5.45. If the social worker has recorded that the issues in the case are resolved or that the family is addressing them ("Yes" N=287), there is evident in this multivariate context some tendency for the case to be substantiated, which stands to reason because of the implicit acknowledgment that there *are* issues to be "resolved" or "addressed" related to a potential finding.

Table 5.33
Issues Resolved or the Family Is Addressing Them (Multiple Nominal)

Category	Marginal Frequency	Quantification	Quantification	*Projected Centroids*	*Projected Centroids*
		Dimension 1	**Dimension 2**	**Dimension 1**	**Dimension 2**
No	1564	-.036	.019	-.034	.005
Yes	287	.195	-.103	.186	-.029

However, as indicated by the data in Table 5.33 and Figure 5.45, there are no implications evident with regard to the *certainty* of that potential finding decision.

Figure 5.44
Quantifications for Issues Resolved or Family Addressing
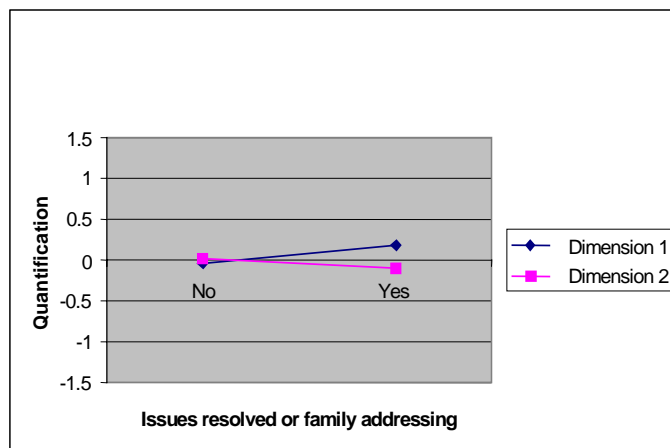
Figure 5.45
Projected Centroids for Issues Resolved or Family Addressing
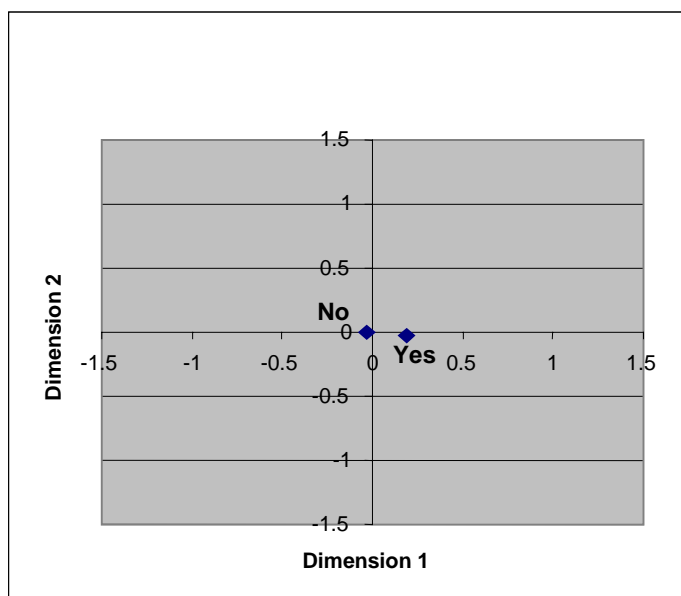
Table 5.34 presents the quantifications and projected centroids for whether cases were ongoing in DCFS, and this information also is presented graphically, in Figures 5.46-5.47. That a case is ongoing in DCFS evidently contributes somewhat both to the likelihood of a substantiated decision and to the certainty with which the finding decision is made.

Table 5.34
Ongoing in DCFS (Multiple Nominal)

Category	Marginal Frequency	Quantification	Quantification	Projected Centroids	Projected Centroids
		Dimension 1	Dimension 2	Dimension 1	Dimension 2
No	980	-.071	-.153	-.241	-.157
Yes	871	.080	.173	.271	.177

In contrast, as indicated in Table 5.34, that a case is *not* ongoing in DCFS evidently both increases a bit the likelihood that a case will be unsubstantiated and also detracts from the certainty of the finding decision, though the effect for the "No" category is not as strong as that for the "Yes" category.

Figure 5.46
Quantifications for Ongoing in DCFS
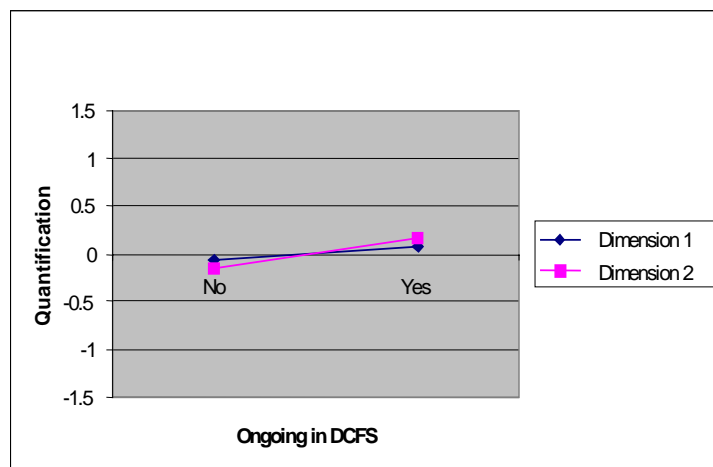
Figure 5.47
Projected Centroids for Ongoing in DCFS
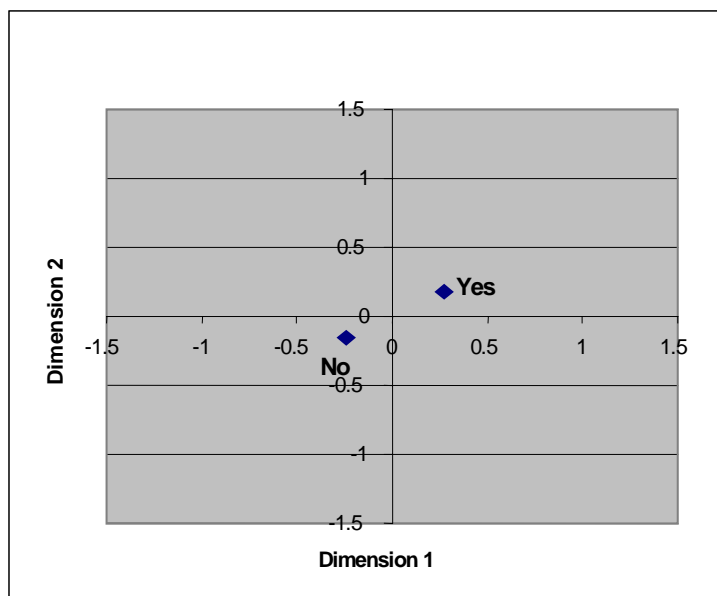
Table 5.35 reports the quantifications and projected centroids for social worker framing of incident, and this information also is presented graphically in Figures 5.48 and 5.49. Data in Table 5.35 indicate social worker framing of incident evidently has virtually nothing to do with the dimension of *certainty* regarding the finding decision, but *is* important to the dimension of "Risk/Seriousness."

Table 5.35
Social Worker Framing of Incident (Multiple Nominal)

Category	Marginal Frequency	Quantification Dimension 1	Quantification Dimension 2	*Projected Centroids* Dimension 1	*Projected Centroids* Dimension 2
No	1674	.065	.018	.086	.008
Yes	177	-.611	-.169	-.809	-.077

The effect that is evident as a result of this analysis is that social worker framing of incident (Yes N = 177) is associated with an increased tendency to judge the cases to be unsubstantiated (as opposed to substantiated, see Figure 5.48 and 5.49), which points to the fact that "framing of the incident" involves consideration of alternative explanations and/or mitigating circumstances. [79]

Figure 5.48
Quantifications for Social Worker Framing of Incident

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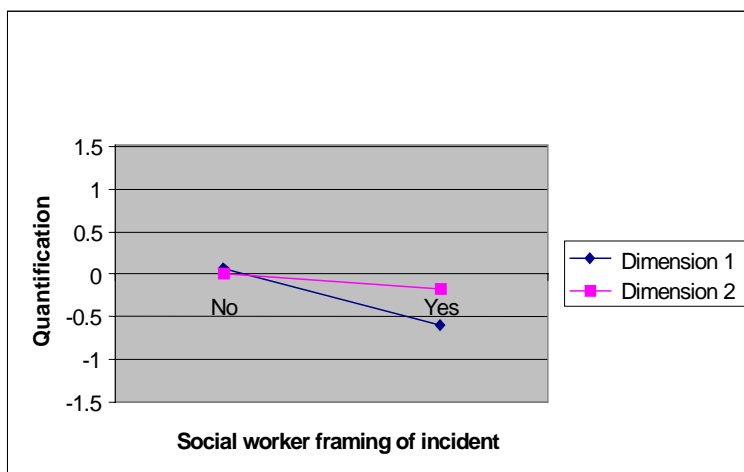
[79] As specified in Section II, "Social Worker Framing of Incident" includes such statements as "social worker believed that this is a one-time incident, injury was minor/insignificant/superficial, plausible explanation/excuse for situation/injury, credible explanation for incident, low priority case, allegation was a misunderstanding, this is not a CA/N issue due to context of CA/N (attempting to control child, cultural exceptions, situational factors), parents doing the best they can, parent will never live up to standards, parent did not intend harm or CA/N, lifestyle issue instead of CA/N, family conflict, not CA/N."

Figure 5.49
Projected Centroids for Social Worker Framing of Incident
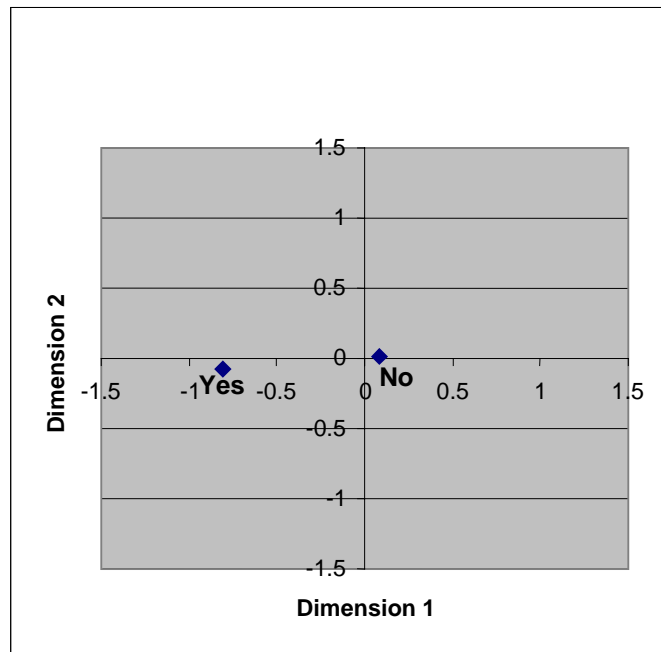
Table 5.36 presents results for the variable indicating inconclusive evidence. Quantifications and projected centroids are given in this table and shown graphically in Figures 5.50-5.51. Unsurprisingly, Inconclusive Evidence (unable to tell who did the act, conflicting information, etc.) is a variable (one of only two) that strongly indicates an inconclusive finding decision, as indicated by the graph of centroids for this optimized variable.

Table 5.36
Inconclusive Evidence: Unable to Tell Who Did Act, Conflicting Information, Etc.
(Multiple Nominal)

Category	Marginal Frequency	Quantification	Quantification	*Projected Centroids*	*Projected Centroids*
		Dimension 1	Dimension 2	Dimension 1	Dimension 2
No	1780	.005	.076	-.004	.088
Yes	71	-.137	-1.895	.090	-2.199

In fact, as can be seen in Table 5.36, of the 71 cases for which this variable was responded to in the affirmative, 50 (70.4%) were judged inconclusive, though only 31.6% of cases in this sample overall had an inconclusive finding.

Figure 5.50
Quantifications for Inconclusive Evidence

Inconclusive Evidence: unable to tell who did action, conflicting info., etc.
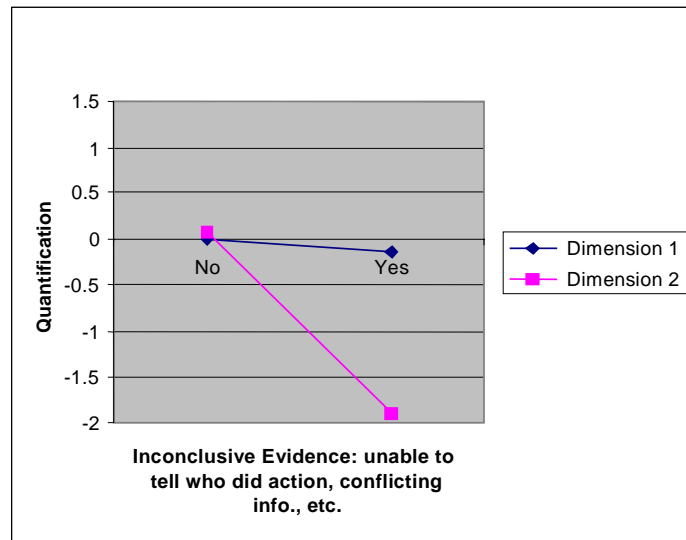
Figure 5.51
Projected Centroids for Inconclusive Evidence
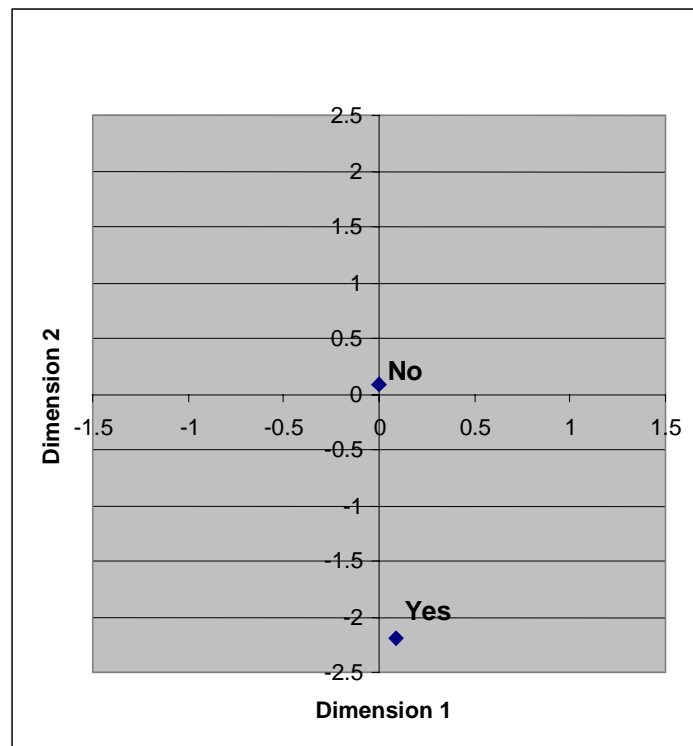
In conclusion, the following graphic shows the locations of important categories of the predictive variables[80] in the object space (i.e., the categories that are most distinctive). Most notable is the following asymmetry: whereas the extremes of Dimension 1 are differentiated by a large number of variables, two variables are predominant in Dimension 2, and their extreme categories are in the negative direction (the two variables, as we have seen, are Insufficient Information to Assess Risk and Inconclusive Evidence). This observation suggests that the general task of predicting finding decisions would be helped considerably by identification of a variable, if such exists, that indicates an *increase* in certainty as dramatic as the *lack* of it indicated by these two variables. The best we have in that regard here are (for increasing certainty *generally*) Maximum severity of FTP (severity=5, centroid = -.003, .556), for increasing certainty of a *substantiated* decision Neglect Referred by Law Enforcement ("yes," projected centroid = .786, .647) and, for increasing certainty of an *unsubstantiated* decision, Injury Accidental ("yes," projected centroid = -1.28, .406), and none of these or others of a similar order can compare to the strength of the extreme categories that indicate in the direction of inconclusive.

Figure 5.52
Projected Centroids of Selected Variable Categories
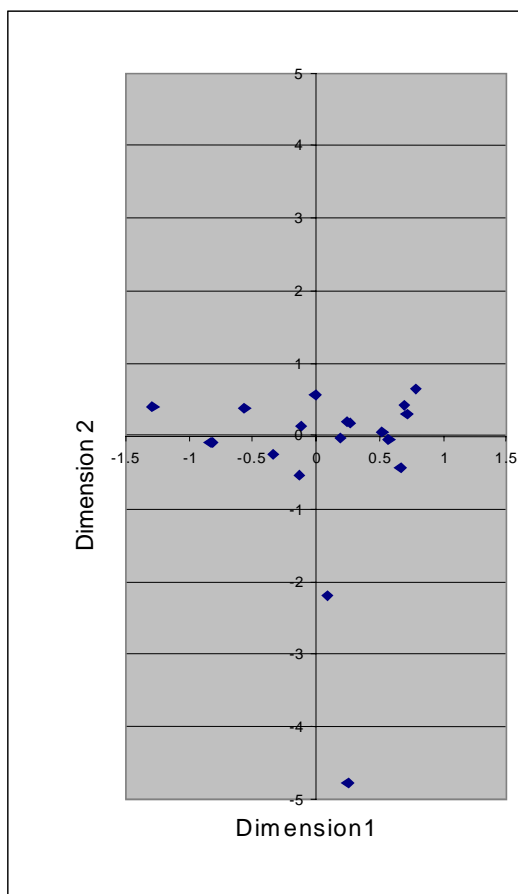
2c. Accuracy of the General NDA Model

As described above in the Methods Section, the nonlinear canonical correlation analysis was specified to use two sets of variables, the first set including only the *finding* variable, which in effect made the method a nonlinear discriminant analysis. Consequently, in the course of NDA, predictive variables were quantified in terms of the two dimensions in such a way that objects (i.e., cases) were segregated according to their *finding* status as much as possible in the two-dimensional space. The *finding* category quantifications are the means of the object scores for each of the three *finding* groups, and these joint means (which taken as pairs are centroids) are implicit in the distribution of object scores. This is because the primary effect of the analysis is to quantify object scores of cases in such a way that the centroids of the *finding* categories are as mutually distant as possible.

If the goal were to classify *new* cases, the basis of such a classification would be the minimum distance of the cases' pairs of object scores (these points based only upon predictive variables now) from the previously established centroids: A new object would be classified as belonging to the *finding* category with the nearest centroid. A classification of the *present* cases made in this way shows excellent classification accuracy. However, other methods also could be used to estimate classification accuracy. Further, K-Means cluster analysis was extremely effective in estimating the centroids of the three *finding* groups, and as a result the classification accuracies based upon it were nearly identical to those found using the actual centroids (see row 2 of Table 5.37)[81]. An even simpler method is to base the classifications upon cutpoints set at midpoints (means) of each object score distribution (i.e., each dimension), as was done in Section V.C (and hence which will be the basis of comparison to the models of that section). Nevertheless, even this method, in spite of its rigidity, resulted in very high classification accuracies (see row 4 of Table 5.37); the general classification accuracy still was over 90%.[82] A good way to get an unbiased estimate of classification accuracy would be to use an independent cross-validation sample (a task for future research), but the present results at least indicate that the model that resulted from this analysis does very well in classifying the cases upon which it was based, which would not be possible if the predictive variables were not strongly related to the finding decisions. A series of applications of logistic regression further confirmed this conclusion. Entering the two object score vectors as the predictive variables, substantiated cases were distinguished from others (i.e., unsubstantiated or inconclusive) with an extremely high rate of classification accuracy (95.8% of substantiated cases correct, 96.9% general classification accuracy). Similar good results were found for cases with other finding decisions, i.e. unsubstantiated cases (94.5% classified correctly, with a 96.5% GCA) and inconclusive cases (91.1% classified correctly, with a 94.4% GCA).

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[81] In fact, the classification based upon the cluster analysis estimation of centroids was even slightly *more* accurate (by one case).
[82] If Figure III-B-1 is examined, it can be seen why using a cut-point of 0 on Dimension II results in an extremely sensitive classification of Inconclusive cases, to the detriment of sensitivity of the other two *finding* categories.

Table 5.37
Various Estimates of Classification Accuracies for NDA General Model of Chapter V

Basis of Accuracy Estimates	Unsubstantiated Classification Accuracy	Inconclusive Classification Accuracy	Substantiated Classification Accuracy	General Classification Accuracy[83]
Actual centroids of historical groups ("finding" category quantifications)[84]	96.5% (581)	94.5% (553)	95.0% (631)	95.35% (1765)
Cluster-analysis-based estimates of centroids[85]	96.5% (581)	94.0% (550)	95.0% (631)	95.19% (1762)
Midpoints of the dimensions (means)	89.2% (537)	99.1% (580)	84.0% (558)	90.49% (1675)
Logistic Regression (three analyses)	94.5% (569)	91.1% (533)	95.8% (636)	94.4% - 96.9% (1747-1793)

3. Summary of General Model Results

In conclusion, we will consider the nature of the predictive variables in this analysis in terms of how cases with the various findings are characterized,[86] based upon the projected centroids of the categories. To begin with, the picture that has emerged of *inconclusive* cases is that they are associated with a relatively *high count of allegations* (especially 4, 5, or 6 allegations). Most definitively, though, inconclusive cases are marked by *a high number of risk factors marked insufficient information to assess* (12 or more, and especially 33 or more), and *inconclusive evidence* (unable to tell who did the act, conflicting information, etc.). Also, there is an elevated chance for cases to be judged inconclusive if there is a *high rating of overall risk* in the case (especially for risk ratings of 3, 4, and 5), though this often will be offset by the even greater increased likelihood that these cases will be decided as *substantiated*. Mitigating *against* an inconclusive finding decision, certainty regarding the finding decision *increases* with *increasing maximum severities of Failure to Provide*.

Beyond the association of high *rating of overall risk* with **substantiated** cases, having *6 or 7 domains with risk* evident also is associated with an increased likelihood that the case will be substantiated. Other variables that somewhat increase the likelihood of a substantiated decision are what we have referred to as "direct evidence" (which is considered to be present if there was *victim disclosure without recantation*, *medical evidence* of child abuse or neglect, or a *confession of maltreatment* by the alleged perpetrator). Recognition of *issues in the case being resolved or the family addressing them* also is associated with cases that are substantiated, though less powerfully than the other variables summarized in this paragraph. If the case is one in *which neglect was referred by law enforcement*, one in *which imminent harm is present*, or a case in *which only emotional maltreatment was alleged*, both the likelihood that the case will be substantiated *and* the certainty with which the decision is made are increased, as is also the case if the person who made the referral is a professional, and/or if the case is ongoing in DCFS.

In contrast, the likelihood that the case will be **unsubstantiated** is increased and the certainty with which the decision is made are *decreased* if the person who made the referral is a *non*professional (i.e., it is from a "community" referent) and/or if the case is *not* ongoing in DCFS. Unsubstantiated cases are more likely to have only 1- 5 *domains with risk* evident, and the *fewer* domains with risk, the more likely it is that the case will be unsubstantiated. A *low rating of overall risk* is associated both with cases being unsubstantiated and also with a high

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[83] These numbers are based on an N to be classified of 1851.

[84] The actual centroids based upon the historical finding results of the cases (i.e., the category quantifications), are these:
   Unsubstantiated: -1.108, .566; Inconclusive: -.021, -1.189; Founded: 1.023, .535.

[85] The centroids estimated by the K-Means cluster analysis (3 groups) are very close to the actual centroids of the finding groups:
   Unsubstantiated: -1.09, .58; Inconclusive: -0.1, -1.24; Founded: 1.04, .56 .

[86] For *quantified* estimates of the effects of these variables, however, one should return to the preceding section, because in the present summary the associations are catalogued only in general.

certainty of the finding decision - the lower the rating of overall risk, the more (in both regards) this is so. Social worker *"framing of incident"* is rather strongly associated with cases being unsubstantiated rather than substantiated. Recognition that *injury was accidental* both increases the likelihood that the case will be unsubstantiated and increases the certainty of the finding decision. Finally, it appears (taking all of the variables into account) that *cases in regions 4 or 6*, are slightly more likely than cases in other regions to be unsubstantiated, and furthermore that the finding decision in regions 4 and 6 are characterized by a bit more certainty as well, though neither of these two effects are large. It also bears mentioning that two of the variables considered herein, *client receiving public assistance* and *any* emotional maltreatment being alleged by the referent did *not* appreciably help to discriminate the finding decisions in this nonlinear multivariate analysis.

In conclusion, we offer some thoughts regarding a pair of findings that struck us as somewhat puzzling, regarding Count of Allegations and Direct Evidence.
the results regarding Count of Allegations may at first glance seem as paradoxical, because it was found that the greater the number of allegations, the more likely that a case decision would be *inconclusive*. One idea that would explain this result is that if the referrer reports one or more allegations conveying what certainly would qualify as child maltreatment the intake worker may leave it at that and forward the case for investigation as quickly as possible, but when there is a *lack* of certainty about whether there is a clear indication of maltreatment that CPS intake workers are most likely to probe for *further* allegations.

We had supposed that the presence in a case of direct evidence would increase certainty of the finding decision, so it seemed odd to find that what we have called "direct evidence" was not at all associated with Dimension 2 (which we have labeled "Certainty") by the NDA. In order to look into this puzzle, the relationships of the finding decision and each of the variables that are the *basis* of the "direct evidence" computed variable were examined by looking at the adjusted standardized residuals of an SPSS crosstabs procedure, which indeed clarified the matter considerably. Though inconclusive cases were *not* significantly less likely to have a "yes" coded for the variable "Physical evidence of injury due to CA/N" (.9)[87] they *were* significantly less likely to have a "yes" coded for "medical evidence of CA/N" (-2.3) and for "perpetrator confession" (-3.8), indicating that with medical evidence or a perpetrator confession, indeed certainty about the decision increases (in the sense that the case is less likely to be judged to be inconclusive).   However, inconclusive cases were *more* likely than would be expected (from the relative proportion of cases that were decided to be inconclusive) to have victim disclosure without recantation (3.8). So the reason that the overall "Direct Evidence" variable does not show an association with Dimension 2 is that the effects for medical evidence and perpetrator confession and the effect for victim disclosure on balance cancel out.

- In the *general* (non-type-specific) model some *narrative-coded* variables were found useful in understanding the finding decision, when considered along with *summary* risk variables.
- Although this is a relatively *parsimonious* model (38 parameters compared to 142 in the set of type-specific models of the previous section), it still results in comparably high classification accuracy in terms of the finding decision (about 95%, generally and for the three finding categories).
- The character of the two dimensions found in this general model was consistent with that of the dimensions found in the previous section (i.e., in the type-specific models based solely on risk factors). We again characterize them as *direction of conclusion* and *certainty*.

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[87] The critical value for a *two-tailed* significance test (at the p<.05 level) for these adjusted standardized residuals is 1.96, because they follow a normal distribution.

- Consistent with earlier results, numerous *nonlinearities* were discovered in the relationships of predictor variables with findings, as indicated by trends of the predictor variable category quantifications.
- Variables differ in the extent to which their categories are distinct in terms of the dimensions: some are associated with substantiation vs. unsubstantiation, some associated with more or less certainty about the decision, and some are associated with *both* of those dimensions. However, most of the variables included in the model fit substantially on *only one* of the two dimensions. The exceptions, variables that are fit to *both* dimensions, are *Overall level of risk*, *Referrer type*, and *Imminent harm*.
- Dimension 1 mainly distinguishes the categories of summaries of risk factors, *Overall level of risk* and *Number of risk domains*. Other than that, it is most associated with what we have called *Direct evidence* (i.e., victim disclosure without recantation, medical evidence of CA/N, or perpetrator confession), but other variables also are associated with the distinction between unsubstantiation and substantiation.
- Dimension 2 mainly distinguishes the categories of *Insufficient information on risk* and *Inconclusive evidence*. Some other variables also are associated with this dimension, however.
- Most prominently associated with *substantiated* cases are high *Overall level of risk*, as well as *6-7 domains with risk* evident. Another variable that somewhat increases the likelihood of a substantiated decision are what we have referred to as "direct evidence" (see above). Recognition of *Issues in the case being resolved or the family addressing them* also is associated with cases that are substantiated, though perhaps only because of the implicit acknowledgement that issues are present.
- Both the likelihood that the case will be substantiated *and* the certainty with which the decision is made are increased if the case is one in *which neglect was referred by law enforcement*, one in *which imminent harm is present*, or a case in *which only emotional maltreatment was alleged*. This also is the case if the person who made the referral is a *professional*, and/or if the case is *ongoing in DCFS*. Conversely, the likelihood that the case will be *unsubstantiated* is increased and the certainty with which the decision is made are *decreased* if the person who made the referral is a *non*professional (i.e., it is from a "community" referent) and/or if the case is *not* ongoing in DCFS.
- While emotional maltreatment being alleged *at all* is *not* evidently related to the finding decision, if emotional maltreatment is the *only* type of allegation it *is* of importance. Specifically, there is a clear increase in the likelihood that a case will be *substantiated* if emotional maltreatment is the *only* type of allegation.
- *Unsubstantiated* cases are more likely to have only 1- 5 *domains with risk* evident, and the *fewer* domains with risk the more likely it is that the case will be unsubstantiated.
- A *low Overall level of risk* is associated both with cases being *unsubstantiated* and also with a high *certainty* of the finding decision, as is recognition that *injury was accidental*.
- It appears that, taking all of the variables into account in this multivariate context, *cases in regions 4 or 6* are slightly more likely than cases in other regions to be *unsubstantiated*, and furthermore that the finding decision in regions 4 and 6 are characterized by more *certainty* as well, though neither of these two effects are large.
- *Inconclusive* cases are indicated by *a high number of risk factors marked insufficient information to assess* (12 or more, and especially 33 or more), and *Inconclusive evidence* (unable to tell who did the act, conflicting information, etc.), as well as being associated with a relatively *high Count of allegations*. Also, there is an elevated chance for cases to be judged inconclusive if there is a *high Overall level of risk* in the case (especially for risk ratings of 3, 4, and 5), though this often will be offset by the even greater increased likelihood that these cases will be decided as *substantiated*. Mitigating *against* an inconclusive finding decision,

certainty regarding the finding decision *increases* with *increasing Maximum severities of Failure to Provide*.

VI. Overall Summary of Phase I

Findings from prior research indicate that many factors influence the CPS finding decision, including factors associated with the specific alleged maltreatment incident, family context and the CPS system context. Furthermore, factors that are important in the decision process appear to vary by type of alleged maltreatment. The purpose of Phase I of this study is to continue an empirical examination of the CPS finding process based on data that are available in case record narrative and electronic case data files in one state CPS system. The Phase I analysis examines case specific factors associated with the finding decision, as well as some CPS context (system issues). The first section of the Phase I report provides an overview of the goals and objectives for this study. Chapter II provides a summary of research findings from other studies on this topic. Chapter III contains descriptive and bivariate analyses based upon narrative coded data. Chapter IV presents findings associated with tests of hypotheses, and Chapter V presents results of the multivariate analyses conducted. To put this report in context, Phase II of this series of reports examines specific CPS system issues from the CPS Social Worker's perspective. The Phase III report explores the impact of investigation on family life from the family's perspective.

The primary focus of Phase I is an empirical analysis of case factors associated with the CPS finding decision. In the past 15 years, several studies have examined the CPS decision to find or substantiate a CPS referral, resulting in secondary findings associated with the decision to unsubstantiate a CPS referral. Phase I of this series of reports specifically focuses on factors that might influence the decision *not* to substantiate (unsubstantiate) a CPS referral. Most state Child Protective Services systems have a two-tiered finding process, that is, founded (substantiated) or unfounded (unsubstantiated). Washington State is a three-tiered finding state; a CPS worker can classify a case as substantiated, inconclusive or unsubstantiated. This study examines all three finding options, contrasting each to the others for the purpose of understanding similarities and differences associated with different CPS finding decision options.

Prior to the integration of electronic case data systems, researchers had to rely on hand-coded case information in order to analyze data. This process necessarily limited researchers' ability to analyze comprehensive factors that may influence the CPS finding decision process. The onset of computerized case data files increased our ability to examine many potentially interesting variables in depth and our ability to examine factors across the decision context for different maltreatment types. Drawing on both approaches, the Phase I study was conducted as follows. First, we hand-coded narrative data for 2000 randomly selected CPS referrals. This process enabled us to examine factors associated with case characteristics and the finding decision as documented by CPS workers in CPS case narrative summaries. Second, we examined electronically coded case characteristics on over 12,000 CPS referrals. Third, we combined data from the narrative coding and the electronic case files to further examine factors that might influence the CPS finding decision, specifically the decision to unsubstantiate a CPS referral. In addition to providing a rich set of descriptive data about cases that are referred to and investigated by CPS, this process allowed us to examine the salience of different factors to the CPS finding decision and the association of these findings to one outcome of interest, post-investigation re-referral to CPS.

For reference purposes, readers are reminded that the data from the narrative coding section represent 2000 moderate or high risk CPS referrals that received a face to face investigation by a CPS social worker. The majority of cases in this data set were not considered emergent, and most families had been referred to CPS on at least one prior occasion. Overall, the finding rate for this sample was 33%, and most cases were closed after investigation. One-third of the sample re-referred to CPS within 12 month. Furthermore, readers also are reminded that this data reflects factors that *are currently* associated with the CPS finding decision, not necessarily the factors that *should* be associated with this decision.

The variables examined for this analysis included electronic data from the Case and Management Information System (CAMIS) in numeric and narrative text format. The narrative data was reviewed and coded into quantifiable data. The numeric data included child/family demographics (age, ethnicity, gender), case characteristics (risk at intake, type of referent, standard of investigation, type of CA/N alleged), investigation findings (summary risk assessment, overall level of risk, finding classification) and outcomes (re-referral and placement characteristics). The narrative data included CA/N allegations and severity at intake, alleged perpetrator, caregiver risk issues at intake and summary, child risk issues at intake and summary, family context issues at intake and summary, referral history, physical evidence due to CA/N, type and severity of CA/N at summary, finding classification, and outcome information regarding placement and re-referral.

A. Selected Findings from Narrative Analysis
An important overall finding from this study confirms that factors related to the specific alleged incident, the family and the CPS system context are associated with the CPS finding decision.

First , it was confirmed that factors related to the specific alleged incident are important to the finding decision. One would expect the CPS finding decision to be based on the fundamental question "Did this alleged incident happen or not?" One also would expect that the primary focus of the investigation would be on the allegations that brought the referral into the CPS system. Therefore, a focus on the incident (factors describing the maltreatment experience) is appropriate. However, from a protection perspective, risk is also an important consideration and should be part of the decision process.

Consistent with the previous 1994 CPS Decision-Making Study, the present study also found that the incident factors are just *one* set of factors that influence the CPS finding decision. Child and family context factors are also important influences on the CPS finding decision. For example, if *any* risk is identified based on the WRM risk model, a case is significantly *less* likely to be unsubstantiated. We also found that some cases are *unsubstantiated* even with allegations that indicate harm or serious potential for harm. However, having said that, low to moderate levels of risk for dangerous acts, physical harm, emotional maltreatment and lack of supervision are significantly *more* likely to be classified as inconclusive *not* unsubstantiated or substantiated. In practical terms (based on the WRM) this means that children with allegations which place a child at risk of significant pain or moderate injury (but no actual injury), an injury that might not require medical attention, child behavior problems related to CA/N, or a child who is not supervised, indicate a child at risk of cumulative harm (pattern), however these allegations are more likely to result in an uncertain (inconclusive) finding.

In general, this study indicates that if there are *no* risk indicators across the WRM Caregiver Risk Domain a referral is significantly more likely to be unsubstantiated. If moderate risk for caregiver risk factors is indicated, but the CPS worker identifies some "mitigating" or "protective" factor, the case is more likely to be classified as inconclusive or substantiated.

For example, if there is assessed risk associated with victimization of other children, caregiver mental/emotional or physical problems, substance abuse, sporadic domestic violence, or caregiver history of victimization as a child, but the family is assessed as recognizing the problem and taking responsibility for protecting the child, the case might be classified as inconclusive. If similar risk factors are present and the caregiver is assessed as not being protective of the child the case is more likely to be classified as substantiated. These findings suggest that the CPS finding decision is a result of a combination of "did it happen" or "do I believe it happened but can't prove it", and/or "is there risk of *it* happening again" (based on past and current assessed risk behaviors).

Interesting too, is the finding associated with the role of a family's prior history of CPS referrals. If there is no record of prior referral to CPS, a referral is significantly more likely to be classified as unsubstantiated. If there is a history of one or two prior referrals a referral is more likely to be classified as inconclusive, and if there are three or more prior referrals a new referral is more likely to be classified as substantiated. It appears from these data that a pattern of referrals does influence the CPS finding decision and that there are "threshold or plateau effects" based on the *number* of prior CPS referrals.

Many other factors influencing the CPS finding decision were identified in the narrative analysis. For the purposes of this summary, however, only one other finding will be referenced. An interesting finding (and one that continues throughout the three different phases of this study) is the issue of referent credibility and the effect assessment of referent credibility has on the finding decision. Specifically, if the referent is assessed as lacking credibility, the referral is significantly more likely to be classified as inconclusive.

Based on these findings, the specific maltreatment allegations, incident, caregiver/family context, caregiver/child interaction, history and source of referral can all influence the CPS finding decision. However, data from this study reveal additional complexities in the finding decision process beyond those previously indicated. Not only does the CPS worker have to reach a conclusion that the alleged incident occurred (more likely than not), but they also have to be able to *prove* that it occurred. One of the central features of this study is to examine the types of information or evidence reported or documented by the CPS worker in connection with the finding decision. Phase I examined the types of information documented in case narrative associated with the finding decision. Phase II provides data on CPS worker verbal report of types of information or evidence that influence their finding decision in general, and for specific cases by maltreatment type.

In the narrative section of case summaries, we found that the most frequently documented type of information associated with the finding decision was the *physical* or *emotional condition of the child*. When mentioned, *negative* child behavior as a condition was referenced more frequently than *positive* child behavior. Less frequent, differentially associated with different types of maltreatment, were references to the home environment, victim disclosure and perpetrator admission. Perpetrator admission and victim disclosure were most frequently referenced in physical abuse cases. Finally, CPS workers include "mitigating" circumstances in their documentation associated with the finding decision – primarily associated with the decision to unsubstantiate or to classify a case as inconclusive.

Overall, the finding rate for this sample is higher (33%) than current referrals to CPS in general in Washington State, although there is some variation by sub-type of maltreatment. An examination of case characteristics and the finding decision revealed no relationship between gender, ethnicity or socio-economic status and whether a case was classified as unsubstantiated,

inconclusive, or substantiated. In other words, there were no differences in finding status for male and female, ethnic minority and majority, or children who reside in high or low income families. There were however, other interesting effects by age, referral source, prior history and assessed risk at intake and after investigation. For example, children age 3 to 12 referred from the community at large, assessed as moderate risk at intake with no prior referrals or many prior referrals (6+), and classified as no or low risk after investigation, were significantly more likely to be unsubstantiated. A series of complicated and interrelated findings were discovered during these analyses confirming that the finding decision process is complex and influenced by multiple factors across multiple domains.

Another interesting finding from this study is that the boundaries between unsubstantiated and the other two finding classifications seem to be clearer than the boundaries between inconclusive and substantiated. Many of the identified risk factors are associated with both the inconclusive and substantiation decision and it is the assessed degree of risk that influences which classification is accepted. There is some indication that overall, caregiver strengths such as recognition and assumption of responsibility for their behavior might promote inconclusive findings. However, the findings related to re-referral post-investigation are concerning. Despite an assessment that an allegation was unsubstantiated or inconclusive, considered no or low risk and closed post-investigation, one-third of the children in this study re-referred to CPS on a new allegation of maltreatment within 12 months of the last investigation. Furthermore, an additional 105 (5%) siblings were referred with an allegation of maltreatment within 12 months. These findings are troubling. Why are so many children re-referred to CPS on a new allegation of maltreatment after they have already been investigated, assessed as low or no risk and had their case closed? What factors influence the finding decision in these cases? Based on the data from the narrative portion of the study, and data collected in other phases of this study, the answer to that question is complex. In the empirical phase of this study, we learn that cases with a *higher* level of risk associated with the alleged maltreatment incident, along with child and caregiver risk factors, are associated with the decision to substantiate maltreatment. This finding is as one would expect. Moderate risk factor ratings are associated with inconclusive findings, which indicate risk for new incidents or allegations is present, but the information or evidence is insufficient to *prove* that maltreatment has occurred. Families can be referred to services, however, there is no mechanism to compel involvement if the family does not choose to engage or does not recognize the effect or risk of their behavior for the child. We also learned from the Phase II analysis that context variables in the CPS work environment influence the decision process.

Even if substantiation does occur, it does not necessarily equate to case opening. Again, if the family does not recognize the problem and/or is not willing to cooperate and there is insufficient evidence to request legal authority to compel intervention, the case will be closed. The same risk factors when assessed as "less serious" in degree, at least based on the information available to the CPS worker at the time the decision is made, are associated with *not* finding maltreatment.

Apparently, based on the data from this study, assessing degree of risk adequately, and/or having sufficient evidence to go to court, and/or having appropriate resources to serve families all influence findings and case outcomes. However, we also learned from these analyses that the single best predictor of re-referral is prior history. Furthermore, we also learned that there appears to be a plateau effect for prior history, where regardless of its predictive value for re-referral or recurrence, cases with multiple priors are more likely to be classified as inconclusive or unsubstantiated.

B. Selected Findings from Hypotheses Tests

To further explore some of the questions raised by the earlier 1994 CPS Decision-Making Study we tested specific hypotheses in this study. These findings clarify some of the factors that influence the CPS finding classification process associated with risk factors and types of information or evidence. From the hypotheses tests we confirmed the importance of (lack of) physical evidence to unsubstantiated findings, that a finding of substantiation is associated with the likelihood that a family will engage in services post-investigation, and that an unsubstantiated finding is not clearly linked to the severity of the subsequent re-referral.

Furthermore, from the hypotheses tests we learned that neglect referrals with multiple prior referrals are not significantly more likely to be unsubstantiated than other types of maltreatment, and that neglect cases are not significantly more likely to be classified as inconclusive compared to other types of maltreatment. With regard to re-referral we found that families who are unsubstantiated do *not* re-refer at the same rate as families classified as inconclusive and substantiated and that unsubstantiated cases do differ on assessed level of risk at intake upon referral (identified as lower risk). Regarding case history, we found that the presence of priors increased the chance that a physical neglect case would be substantiated, but there was no such effect for physical abuse and sexual abuse cases. In contrast, the presence of priors decreased the chance that a sexual abuse case would be substantiated. Cases absent evidence of physical harm were significantly more likely to be unsubstantiated regardless of the level of risk rated for the dangerousness of the act.

Finally, finding classification appears to have an impact on the likelihood that families will engage in post-investigation services, independent of placement. Families whose children were not placed, who had a CPS referral classified as inconclusive were less likely to engage in services. Families whose referral was substantiated or classified as inconclusive were also significantly more likely to re-refer. When reinvestigated these families were more likely to have the new investigation classified in the same way as the previous investigation.

C. Selected Findings from Empirical Analyses

In the empirical analyses of Phase I we had three purposes: 1) to further explore different modeling methods to determine the most appropriate analytical method for examining complex and nonlinear maltreatment data; 2) to further analyze data associated with the finding decision, including separate analyses of maltreatment sub-types; 3) to explore whether a parsimonious, generic model could be developed for classification of cases likely to be classified as substantiated, inconclusive or unsubstantiated.

The analyses conducted in the empirical section are very complex and dense analyses. The details have been provided for other researchers who have an interest in exploring the best analytical approaches to use with complex multi-dimensional maltreatment data. However, many of the readers of this report are not technically oriented. Therefore, for the purposes of this summary the overall general findings will be highlighted. Those who are interested in the technical details are referred to the appropriate sections in the report and the Appendixes. It is important for technical and non-technical readers alike to understand, however, that analysis of maltreatment data are and should be a complex process. Findings from the earlier 1994 CPS Decision-Making Study indicated that individual variables often included in child maltreatment research have different properties – some behave in a linear fashion relative to each other and others are non-linear, some variables interact with each other to have joint effects on outcomes and others do not. It is clear that complex and nonlinear effects are not rarities in this field of research, and successful analytic methods need to take them into account.

In this new empirical analysis we wanted to explore the data in detail and examine different modeling methods in order to be able to identify the most appropriate approach to the modeling of the CPS finding decision. What we found is that different statistical modeling methods each have their strengths and weaknesses. We conclude that no one modeling method provides any single *best* or *correct* model for analysis of maltreatment data. We further conclude that different modeling approaches in effect provide different *views* of the data, and that we can equally learn from these different *views*. Furthermore, different maltreatment sub-types require different modeling approaches as some types, e.g. multiples, require both interaction terms and nonlinearities for adequate modeling of the decision process.

Consistent with plateau effects for certain risk variables noted earlier, the empirical analysis also indicates an overall saturation effect. The likelihood of unsubstantiation declines with increasing risk, but reaches a point where increases in risk do not cause further decline in the likelihood of unsubstantiation. Particularly interesting is the indication that CPS workers do use some risk factors as *mitigators* or indicators of *strength* which increase the likelihood of unsubstantiation even if the workers believe abuse and/or neglect occurred.

Of additional interest is the finding related to dangerous acts (incident factor) and the finding decision, especially in relationship to CPS referrals with multiple allegations. The data suggest that a CPS worker's assessment of the dangerousness of the alleged act (absent physical evidence) influences their assessment of risk of other non-incident risk factors. This is a key and significant issue since the overwhelming majority of CPS referrals do not refer with allegations of "manifestations of harm," but "potential for harm" based on parental omissions or commissions. This data also indicate the significance of assessing risk for "significant others" in the household.   Incorporating this assessment increases the importance of the incident factors compared to the earlier study, which did not include secondary caregiver risk factors in the analysis.

In the nonlinear discriminant analysis (NDA) we explored two dimensions associated with the finding decision. We identified one dimension that differentiated between unsubstantiated and substantiated cases, and another dimension that discriminated inconclusive from substantiated and unsubstantiated cases. These NDA models produced very high classification accuracy's (87-95%). In general, we found that lower risk ratings (Levels 1 and 2) were associated with inconclusive findings, except for dangerous acts and chronicity.

We also confirmed earlier findings that different risk factors are associated with different types of maltreatment. This is especially the case for Dimension 1 (that is, in terms of classifying a case as substantiated versus unsubstantiated). However, for Dimension 2 (inconclusive versus substantiated or unsubstantiated), there is a greater balance among risk factors important to decisions regarding different types of allegations.

Finally, although the initial complex multivariate modeling undertaken in this study is revealing and necessary for a better understanding of the nature and character of factors associated with the finding decision within maltreatment types, we also wished to explore whether a more parsimonious, but still accurate, model could be identified across maltreatment types. To conduct this analysis we combined data available from the case narrative recording and the available electronic data fields. As with the earlier analysis we found numerous nonlinearities in variable relationships of predictor variables with findings. In these analyses, we found some variables are associated with *more* or *less* certainty of the finding decision and some are associated with both certainty *and* uncertainty. Variables with categories most distinct in terms of Dimension 1 (i.e., factors that differentiate unsubstantiated from substantiated), were post-investigation assessment

of overall risk by CPS workers and the number of risk domains indicated, plus the presence of direct evidence (victim disclosure, medical evidence, perpetrator confession). A threshold of 6 to7 risk domains distinguished substantiated from unsubstantiated referrals. However, some variables are associated with increased likelihood of *unsubstantiation*, e.g., referent source (friends, family, neighbors), and having fewer domains with risk evident (e.g., all the risk factors cluster in one of the seven risk domains). Finally, inconclusive cases are indicated by a high number of risk factors marked insufficient information to assess (e.g., 12 or more, and especially 33 or more) and inconclusive evidence. Of final note, based on the coding of severities using the MMCS, the higher the maximum severity of alleged failure to provide neglect allegations the less likely the case would be classified as inconclusive.

D. Implications for Policy and Practice

The data from this study suggest that the finding decision is complex and is influenced by many factors over and above the question – did maltreatment in this incident occur? From a protection perspective, including risk in the decision process is likely to protect children in cases where there is "insufficient evidence" from a legal perspective. On the other hand, from an "intrusion perspective", taking mitigating circumstances into account which results in not labeling families abusive when there is no continued protection issues for a child, seems reasonable. The issue, however, from a policy perspective, is that one can be fairly certain that substantiation means maltreatment "more likely than not" occurred. However, at the same time, one cannot be sure that a finding of "unsubstantiated" means maltreatment did not occur. Furthermore, inconclusive cases in this study looked a lot more like substantiated than unsubstantiated cases.

From a practice perspective, the re-referral rate indicates that something is "amiss" in the assessment process. If risk (which influences the finding decision) were more accurately assessed more cases would likely be substantiated. Risk associated with the number and type of prior referrals seems to be an especially critical issue requiring additional analysis. What is it about chronically referring families that precipitates a decision not to substantiate? How do the "evidentiary" or "lack of evidence" issues play into this decision process? Given the emerging substantive knowledge about the long-term effects of chronic maltreatment (especially neglect) on child outcomes, perhaps issues about the kind of "proof" necessary in these types of cases should be re-examined.

Finally, we learned in this study that substantiation is associated with engagement in services. However, engagement in services is also predicated on the availability of services and the effectiveness of the available services. An examination of the processes associated with the finding decision cannot be examined in isolation of these other considerations.

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APPENDIXES

List of CAMIS Variables

Domain & Variables	Source
Case Characteristics:	
Age of child	CAMIS Download
SSN of child	CAMIS Download
Ethnicity of child	CAMIS Download
Person ID of child	CAMIS Download
Ethnicity of Subject/Caregiver	CAMIS Download
Family Relationship of Subject	CAMIS Download
Role of Primary Caregiver	CAMIS Download
Person ID of Primary Caregiver	CAMIS Download
Person ID of Subject	CAMIS Download
Referral ID number	CAMIS Download
Date of Referral	CAMIS Download
Acceptance Decision	CAMIS Download
Standard of Investigation	CAMIS Download
Risk Tag at Intake	CAMIS Download
Case Number	CAMIS Download/Text
CAMIS Type of CA/N Code	CAMIS Download/Text
Referrer Type	CAMIS Download/Text
Type of CA/N at Intake (MCS-R	CAMIS Text
Severity of CA/N at Intake (MCS-R2)	CAMIS Text
Alleged Perpetrator of CA/N	CAMIS Text
Risk Issues mentioned at Intake:	CAMIS Text

    Substance Abuse
    Caregiver Domestic Violence
    Mental Illness of Caregiver
    Child Problems
    Child Fear of Caregiver
    Child No Fear of Caregiver
    Caregiver Physical Health/Developmental Delay
    Self-report/Request for Services
    CA/N toward Other Children
    Lack of CPS/CA/N History
    Caregiver History of CA/N as a Child
    Protective Caregiver
    Non-Protective Caregiver

Other Issues mentioned at Intake:	CAMIS Text

    Custody Battle
    Unstable Living Condition
    Caregiver in Jail/Arrested
    Child Sexually Acting Out
    Other Assaultive/Violent Behavior/Gang Involvement
    Caregiver Cooperative w/Agency
    Caregiver Not Cooperative w/Agency
    Lack of Credibility of Child

Victim Recanted
Lack of Credibility of Referrer
Child No Longer in Original Home
Perpetrator Not Currently in Home
Unable to Locate Family, so Unable to Complete Investigation

Public Assistance Information	ACES/CAMIS Text
Employment Information	ACES/CAMIS Text
CPS Referral History	CAMIS Text
Summary Assessment ID Number	CAMIS Download
Summary Assessment Date	CAMIS Download
Investigation Findings	CAMIS Text
Perpetrator of CA/N	CAMIS Text
Overall Level of Risk at Summary	CAMIS Download
Risk Issues mentioned in Summary	CAMIS Text

Substance Abuse
Caregiver Domestic Violence
Mental Illness of Caregiver
Child Problems
Child Fear of Caregiver
Child No Fear of Caregiver
Caregiver Physical Health/Developmental Delay
Self-report/Request for Services
CA/N toward Other Children
Lack of CPS/CA/N History
Caregiver History of CA/N as a Child
Protective Caregiver
Non-Protective Caregiver

Other Issues mentioned in Summary	CAMIS Text

Custody Battle
Unstable Living Condition
Caregiver in Jail/Arrested
Child Sexually Acting Out
Other Assaultive/Violent Behavior/Gang Involvement
Caregiver Cooperative w/Agency
Caregiver Not Cooperative w/Agency
Lack of Credibility of Child
Victim Recanted
Lack of Credibility of Referrer
Child No Longer in Original Home
Perpetrator Not Currently in Home
Unable to Locate Family, so Unable to Complete Investigation

Physical Evidence of Injury due to CA/N	CAMIS Text
No Physical Evidence of Injury due to CA/N	CAMIS Text
Past Out-of-home Placement of Primary Victim	CAMIS Text
Past Out-of-home Placement of Siblings	CAMIS Text
Placement since Referral for Primary Victim	CAMIS Text
Duration of Placement Episode for Primary Victim	CAMIS Text
Placement Since Referral for Siblings	CAMIS Text

Outcomes:

Number of Re-referrals in 6 months	CAMIS Text

for 1st Re-referral:

Risk tag at Intake	CAMIS Download
CA/N Type (MCS-R2)	CAMIS Text
Severity of CA/N (MCS-R2)	CAMIS Text
Alleged Perpetrator	CAMIS Text
Investigation Findings	CAMIS Text
Overall Risk Rating at Summary	CAMIS Download

WASHINGTON ASSESSMENT OF RISK MATRIX (WRM)

The six components of the Washington Assessment of Risk Model (WRM) are as follows:

1. **Screening for sufficiency:** A sufficiency screen is applied to all referrals made to child protective services. Four criteria are applied to each referral as follows: a). There must be sufficient information to locate the alleged victim, *and*, b). the alleged perpetrator must be a parent or caretaker of the child, or a person acting in loco parentis, or the parent must be negligent in protecting the child from abuse/neglect. In addition there must be, c). a specific allegation of child abuse and/or neglect which meets statutory or policy definitions in Washington State, *and/or* available information indicates that there is d). risk of imminent harm to the child. If "a, b and c" or "a, b and d" are satisfied, the referral is accepted and assigned for investigation or the family may be referred to community-based services. If these criteria are not satisfied, the referral is designated as information only or third-party, and there is no CPS investigation.

2. **Assignment of level of risk at intake (Risk tag):** Every case that passes a sufficiency screen and is accepted for investigation is assigned a level of risk at intake. Level of risk at intake is assigned on a six point scale with 0 equals no risk, 1 equals low risk, 2 equals moderately low risk, 3 equals moderate risk, 4 equals moderately high risk, and 5 equals high risk. Since 1993, cases assigned a risk level 1 or 2 could receive a low standard of investigation (see below) and be referred to community-based services or diverted to an alternative response system in the community. Risk tag levels 3, 4, and 5 are to be assigned a high standard of investigation.

   Level of risk at intake is assigned based on the information typically available at intake from the referent, information available from collateral contacts, and information available from an examination of any prior history with CPS. Initial assessments of risk are based on the severity of the alleged maltreatment, chronicity of the current and past allegations, child vulnerability, perpetrator access, and other risk information available at intake. An assessment of these factors determines the immediacy and intensity of the CPS response at intake.

3. **Standard of investigation:** Guidelines for differential investigation based on level of risk state that risk level 0 does not require an investigation, risk level 1 and 2 may receive a low standard of investigation, and risk level 3, 4 and 5 require a high standard of investigation. Low standard investigations are defined as a review of prior CPS involvement and collateral contacts to determine if further investigation should occur. Low standard of investigations do not require a face to face contact with the child or caregiver. No findings of maltreatment are made for low standard of investigation cases. A high standard of investigation includes review of prior CPS involvement, collateral contacts, face to face interview with child and caretaker, and any additional assessments required to determine whether or not abuse/neglect occurred and whether there is potential risk to the alleged victim. All cases assigned as risk level 3, 4, or 5 at intake require a high standard of investigation and a finding associated with the referral.

4. **Comprehensive assessment of risk:** The centerpiece of the WARM is a 37 item Risk Assessment Matrix based on an ecological model of child maltreatment. The Risk Matrix consists of eight risk domains associated with the child, the severity of child abuse/neglect (CA/N), chronicity of CA/N, caretaker characteristics, parent-child relationship, socio-economic factors, and alleged perpetrator access (see Appendix B for a copy of the Risk Matrix). The theoretical basis for the risk factor guidelines is that child abuse and neglect is a multi-dimensional process that can be influenced by child, caretaker, or environmental factors (See English & Aubin, 1991 for discussion).

5. **Summary assessment:** The summary assessment component of the model includes assignment of post investigation level of risk and case planning. After a comprehensive assessment of risk, CPS workers assign an overall level of risk and make a finding concerning maltreatment. The overall level

of risk is based on two dimensions. The first dimension is associated with an assessment of the likelihood that a child will be abused/neglected in the future, and if so, an assessment of the likely degree of seriousness that future abuse/neglect could be. In addition to the assessment of post-investigation level of risk, CPS workers must make a finding associated with the referral that initiated the investigation. Washington has a three level substantiation system, that is, a CPS worker can assign one of three finding categories. These three finding categories include founded, inconclusive, or unfounded (Washington Department of Social & Health Services, Division of Children and Family Services Practices and Procedures Guide, 1995).

Founded means: Based on the CPS investigation, there is reasonable cause for the social worker to believe that either the allegations on the referral are true or that sufficient evidence exists to reasonably support the conclusion that the child has been, or is at risk of being, abused or neglected by a parent or caretaker.

Unfounded means: Based on the CPS investigation, there is reasonable cause for the social worker to believe that the allegations on the CPS referral are untrue or that sufficient evidence exists to reasonably conclude that the child has not been abused or neglected nor is at risk of abuse or neglect.

Inconclusive means: There is not significant evidence for the social worker to reasonably conclude that a child has or has not been abused or neglected or is at risk of abuse or neglect.

The risk assessment guidelines were developed to orient the CPS program to the assessment of risk including the likelihood of re-referral or recurrence of child maltreatment rather than strictly focusing on substantiation of past abuse/neglect. The guidelines also expanded the entry criteria for CPS to allow cases to enter the CPS system based on risk factors alone. If a CPS referral included risk factors that indicated that a child was at risk of imminent harm, services could be offered to families even if there were not specific findings of abuse.

The risk guidelines are meant to ensure that the immediacy, intrusiveness, and extent of CPS intervention is commensurate with the degree of risk assessed in any given case. The guidelines are also meant to ensure that a comprehensive and consistent assessment of risk based on specific risk factors believed to be predictive of future abuse/neglect occurs. Finally, the guidelines are designed to assist CPS in identifying specific cases that could benefit from less intrusive services and possible referral to community-based services for intervention.

After a CPS worker has completed a comprehensive assessment of risk, the information is organized in a summary assessment format that includes an assessment of risk, strengths, interaction of risk factors, overall level of risk, and a decision regarding the offer of services. Services can be offered on a voluntary or court-ordered basis. The model calls for the identification of changeable risk factors and interventions associated with the reduction of risk. Service planning can include the placement or reunification of children with their families based on assessed risk.

6. **90-day rule:** Under the "90 day rule," a CPS worker has 90 days to complete a CPS investigation. During that time period, a worker may offer a family services, but in order to continue services past the 90 days, there must be a voluntary service agreement with the client, or court intervention, or the case must be closed. If the CPS worker assesses risk in the family, but the family is not willing to voluntarily participate in services, and there is insufficient evidence to take the case to court, the case is closed regardless of level of risk assessed.
in summary, the Washington Risk Assessment Model includes a sufficiency screen, risk assessment guidelines, and a set of procedures and guidelines outlining how and when the model is to be used in decision-making. Once a CPS referral has been screened and accepted for investigation, the CPS worker uses the procedures and guidelines to determine a course of action. The fundamental underlying principle of the risk assessment model is that the worker should complete a comprehensive assessment of the likelihood and severity of future harm to the child absent intervention. Based on this assessment certain actions are open to the worker regarding intervention.

The level of intrusiveness should be commensurate with the level of risk assessed and the willingness of the family to participate in services. If risk is not an issue, the case should be closed. If risk is an issue, then the family should be engaged in voluntary services, if possible, and mandated services if necessary. If there is insufficient evidence to obtain mandated intervention when risk is identified and a family is unwilling to participate in services, guidelines are provided for case closure. The aim of the risk assessment model is to shift the focus of CPS intervention from substantiation of past or ongoing maltreatment to the evaluation of likely future maltreatment absent intervention.

APPENDIX C
RISK MATRIX

Table C.1
Operational Definitions of Key Variables of Interest

RISK FACTOR MATRIX   REFERENCE SHEET

RISK FACTOR:	FAMILY STRENGTHS	LOW (1)	MODERATE (3)	HIGH (5)
I. CHILD CHARACTERISTICS				
a. Age		12-17	6-11	0-5
b. Physical, Mental or Social Development	No physical, mental, social or developmental delay	Mild physical, mental, social or developmental delay	Significant physical, mental, social or developmental delay	Profound physical, mental, social or developmental delay
c. Behavioral Issues	Child displays normal, age appropriate behavior	Child displays minor behavioral problems	Child is behaviorally disturbed	Child is severely behaviorally disturbed
d. Self Protection	Child is willing and able to protect self	Child displays consistent ability to protect self	Child displays occasional ability to protect self	Child is unable to protect self
e. Fear of Caretaker or Home Environment	Child is comfortable with caretaker and/or home environment	Child evidences mild doubt or concern about caretaker and/or home environment	Child evidences anxiety and/or discomfort about caretaker and/or home environment	Child is extremely fearful about caretaker and/or home environment
II. SEVERITY OF CA/N				
f. Dangerous Acts	Parents exercise care and control to ensure child's safety and not cause injury to child	Acts which place the child at risk of minor pain or injury	Acts which place the child at risk of significant pain or moderate injury	Acts which place the child at risk of impairment or loss of bodily function
g. Extent of Physical Injury or Harm	No injury and no medical treatment required	Superficial injury, no medical attention required	Significant injury, unlikely to require medical attention	Major injury requiring medical treatment
h. Extent of Emotional Harm or Damage Exhibited by Child	Child exhibits normal behavior and social functioning	Minor distress or impairment in functioning related to CA/N	Behavior problems related to CA/N that impair social relationships or role functioning	Extensive emotional or behavioral impairment related to CA/N
i. Adequacy of Medical and Dental Care	Routine and crisis care provided consistently	Failure to provide routine medical, dental or prenatal care	Failure to provide appropriate medical care for injury or illness that usually requires treatment	Failure to provide treatment for a critical or life-threatening condition
j. Provision for Basic Needs	Food, clothing, shelter and hygiene needs adequately met	Failure to provide for basic needs places child at risk of minor distress/comfort	Failure to provide for basic needs places child at risk of cumulative harm	Failure to provide for basic needs places child at risk of significant pain, injury or harm
k. Adequacy of Supervision	Supervision meets normal standards appropriate to child's age	Lack of supervision places child at risk of minor discomfort or distress	Lack of supervision places child at risk of cumulative harm	Lack of supervision places child at risk of imminent harm
l. Physical Hazards or Dangerous Objects in the Home or Living Environment	Living condition are safe	Conditions in the home place the child at risk of minor illness of superficial injury	Conditions in the home place the child at risk of harm that is significant but unlikely to require treatment	Hazards in the home environment place the child at risk of serious harm that would likely require treatment
m. Sexual Abuse and/or Exploitation	Adult has a non-sexualized relationship with child and consistently protects from sexual abuse or exploitation	Caretaker makes sexually suggestive remarks or flirtations with child without clear overtures or physical contact	Adult makes sexual overtures, or engages child in grooming behavior	Adult engages child in sexual contact or sexually exploits child
n. Exploitation (Non-Sexual)	Adult has a non-exploitative relationship with the child and does not use the child in any manner for personal gain	Adult occasionally uses the child to obtain shelter or services that will benefit them both	Adult depends upon the child to sustain home environment and assist in illegal activities to obtain money	Adult engages child in dangerous activities to support or benefit the adult
III. CHRONICITY				
o. Frequency of Abuse/Neglect	Child is treated appropriately and there have been no incidents of child abuse or neglect in the past	Isolated incident of abuse or neglect	Intermittent incidents of abuse or neglect	Repeated or ongoing pattern of abuse or neglect
IV. CARETAKER CHARACTERISTICS				
p. Victimization of Other Children by Caretaker	Caretaker is positive and appropriate with children	Evidence of minor abuse or neglect toward other children	Evidence of moderate abuse or neglect toward other children	Evidence of serious abuse or neglect toward other children
q. Mental, Physical or Emotional Impairment of Caretaker	Caretaker is physically, mentally and emotionally capable of parenting a child	A physical, mental or emotional impairment mildly interferes with capacity to parent	A physical, mental or emotional impairment interferes significantly with the capacity to parent	Due to a physical, mental or emotional impairment, capacity to parent severely inadequate
r. Deviant Arousal	Adult is not sexually aroused by children	Adult is sexually aroused by children and is motivated to have sexual contact with children (all risk levels)		
s. Substance Abuse	Parent does not abuse alcohol or drugs; parent does not sell drugs	History of substance abuse but no current problem	Reduced effectiveness due to substance abuse or addiction	Substantial incapacity due to substance abuse or addiction
t. History of Domestic Violence and Assaultive Behavior	Caretakers resolve conflicts in non-aggressive manner	Isolated incident of assaultive behavior not resulting in injury	Sporadic incidents of assaultive behavior which results in, or could result in, minor injury	Single incident or repeated incidents of assaultive behavior, which results in, or could result in, major injury
u. History of Abuse or Neglect as a Child	Caretaker was raised in a healthy, non-abusive environment	Occasional incidents of abuse or neglect as a child	Repeated incidents of abuse or neglect as a child	History of chronic and/or severe incidents of abuse or neglect as a child
v. Parenting Skills and Knowledge	Caretaker provides environment which is child-friendly	Caretaker has some unrealistic expectations of child and/or gaps in parenting skills	Significant gaps in knowledge or skills that interfere with effective parenting	Gross deficits in parenting knowledge and skills or inappropriate demands and expectations of child

IV. CARETAKER CHARACTERISTICS (continued)			
w. Nurturance	Caretaker is openly accepting of child, interacts with child, and provides appropriate and adequate stimulation	Caretaker provides inconsistent expression of acceptance, and inconsistent stimulation and interaction	Caretaker withholds affection and acceptance, but is not openly rejecting or hostile to child	Caretaker severely rejects child, providing no affection, attention or stimulation
x. Recognition of Problem	Caretaker openly acknowledges the problem and it's severity and is willing to accept responsibility	Caretaker recognizes a problem exists, and is willing to take some responsibility	Caretaker has a superficial understanding of the problem, but fails to accept responsibility for own behavior	Caretaker has no understanding or complete denial of the problem, and refuses to accept any responsibility
y. Protection of Child by Non-Abusive Caretaker	Caretaker is willing and able to protect child from persons and dangerous situations	Caretaker is willing, but occasionally unable, to protect child	Caretaker's protection of the child is inconsistent or unreliable	Caretaker refuses or is unable to protect child
z. Cooperation with Agency	Caretaker is receptive to social worker intervention	Caretaker accepts intervention and is intermittently cooperative	Caretaker accepts intervention but is non-cooperative	Caretaker is extremely hostile to agency contact or involvement with family
V. CARETAKER RELATIONSHIP			
aa. Response to Child's Behavior or Misconduct	Caretaker responds appropriately to child's behavior	Caretaker responds inappropriately to child's behavior	Caretaker responds to child's behavior with anger, frustration or helplessness	Caretaker consistently responds abusively to child's behavior
bb. Attachment and Bonding	Secure parent-child attachment	Mild discrepancies or inconsistencies are evident in the parent-child relationship	Parent-child relationship evidences an anxious or disturbed attachment (or lack of attachment)	Obvious lack of bonding between child and parent
cc. Child's Role in Family	Roles and responsibilities in family are assigned appropriately	Child is given inappropriate role with no immediately apparent detrimental effects	Child's role in family has detrimental effect on normal development	Child's role in family severely limits or prevents normal development
dd. Child is Pressured to Recant or Deny	Caretaker supports and insulates child from any pressure to recant or deny the abuse	Caretaker supports and insulates child from outside pressure to recant or deny	Caretaker indirectly puts pressure on the child to recant or deny, and allows others to directly pressure the child	Caretaker directly pressures child to recant or deny, and solicits or encourages others to do so
ee. Personal Boundary Issues	Personal boundaries are clear and respected	Personal boundaries are usually clear and respected; violations occur occasionally	Personal boundaries are usually clear but non-abusive violations occur occasionally	Even though personal boundaries are usually clear, violations occur regularly, including physical violations
ff. Parental Response to Abuse	Caretaker believes disclosure, shows concern and support for the child, and wants to protect	Caretaker will consider the possibility that abuse occurred, shows support and concern for child and expresses desire to protect	Caretaker does not believe disclosure, but shows concern for child and is willing to protect	Caretaker does not believe disclosure, shows anger toward child and supports offender
VI. SOCIAL AND ECONOMIC FACTORS			
gg. Stress of Caretaker	Caretaker has no significant life stresses	Caretaker is experiencing mild stress	Caretaker is experiencing significant stresses or life changes	Caretaker is experiencing multiple and/or severe stress or life changes
hh. Employment Status of Caretakers	Caretaker is employed at a level that is consistent with training and personal expectations or unemployed by choice	Caretaker is under-employed or unemployed with immediate prospects for employment	Caretaker is unemployed but with marketable skills and potential for employment	Caretaker is unemployed with no prospects for employment
ii. Social Support for Caretaker	Frequent supportive contact with friends or relatives and appropriate use of community resources	Occasional contact with supportive persons; some use of available community resources	Sporadic supportive contact; under-use of resources	Caretaker geographically or emotionally isolated and community resources not available or not used
jj. Economic Resources of Caretakers	Family has resources to meet basic needs	Family's resources usually adequate to meet basic needs	Family's resources inadequate to meet basic needs	Family's resources grossly inadequate to meet basic needs
VII. PERPETRATOR ACCESS			
kk. Perpetrator Access (Abuse)	Perpetrator's access to the child is limited, planned and structured to ensure child's safety and well-being	Perpetrator access is supervised and usually controlled or limited	Limited supervised access or primary responsibility for care of child	Unlimited access to the child or full responsibility for care of the child

APPENDIX D

Office of Children's Administration Research/LSN/ARS/CPS
REFERRAL DATA COLLECTION
Originally 10/96

(9/8/1998 revision for CPS Unsubstantiation Project)

REVIEWER NAME: _____

1. REVIEWER ID #: _____

2. TODAY'S DATE: __ __/__ __/__ __

3. DCFS CASE NUMBER: __ __ __ __ __ __ __ __ __ __

CPS REPORT INTAKE INFORMATION

---

4. DATE OF REFERRAL: __ __/__ __/__ __

5. REFERRAL NUMBER: __ __ __ __ __ __

6. RISK TAG AT INTAKE: _____

7. REFERRER TYPE: _____

8. CPS MALTREATMENT TYPE AT INTAKE :
  (Enter 1 for all that apply to the victim.)

a. ____ Physical ABUSE	f. ____ Emotional Maltreatment
b. ____ Sexual Abuse	g. ____ Prenatal Injury
c. ____ Physical NEGLEC	h. ____ Abandonment
d. ____ Medical Neglect	i. ____ None Given
e. ____ Exploitation	j. ____ Other: _____

9. MMCS-R2 ALLEGED (AT INTAKE):

MALTREATMENT TYPE	SEVERITY	PERPETRATOR(S)	
a1) _____	a2) _____	a3) ___/___/___	a3a) ___/___/___
b1) _____	b2) _____	b3) ___/___/___	b3b) ___/___/___
c1) _____	c2) _____	c3) ___/___/___	c3c) ___/___/___
d1) _____	d2) _____	d3) ___/___/___	d3d) ___/___/___
e1) _____	e2) _____	e3) ___/___/___	e3e) ___/___/___
f1) _____	f2) _____	f3) ___/___/___	f3f) ___/___/___

10. RISK ISSUES MENTIONED IN THE INTAKE ALLEGATION TEXT:
  (Circle all that apply.)   (Yes=1)   (No=2)

  a. **Substance Abuse**   Yes   No

(Write in the details from the intake text that led you to believe that substance abuse is an issue.)

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a1. _____

_____

b. **Caregiver Domestic Violence**	Yes	No
c. **Mental Illness of Caregiver**	Yes	No
d. **Child Problems**	Yes	No
e. **Child Fear of Caregiver**	Yes	No
f. **Child Has No Fear of Caregiver**	Yes	No
g. **Caregiver Physical Health/DD**	Yes	No
h. **Request for Services**	Yes	No
i. **CA/N Toward Other Children**	Yes	No
j. **Lack of CPS/CA/N History**	Yes	No
k. **Caregiver HX of CA/N as Child**	Yes	No
l. **Protective Caregiver**	Yes	No
m. **Not Protective Caregiver**	Yes	No

11. OTHER ISSUES AT INTAKE: (Circle all that apply.)

a. **Custody Battle**	Yes	No
b. **Unstable Living Situation**	Yes	No
c. **Caregiver in Jail/Arrested**	Yes	No
d. **Child Sexually Acting Out**	Yes	No
e. **Other Assaultive/Violent Behavior/ Gang Involvement**	Yes	No
f. **Caregiver Cooperative w/Agency**	Yes	No
g. **Caregiver Not Cooperative w/Agency**	Yes	No
h. **Lack of Credibility of Child**	Yes	No
i. **Victim Recanted**	Yes	No
j. **Lack of Credibility of Referrer**	Yes	No
k. **Child No Longer in Original Home**	Yes	No
l. **Perpetrator Not Currently in Home**	Yes	No
m. **Unable to Locate Family/Family Fled so Unable to Complete Investigation**	Yes	No
n. **Other:**	Yes	No

    n1. *(Please write-in 'Other')*_____

12. EMPLOYMENT STATUS AT INTAKE: (Yes=1)   (No=2)   (UNK=3)

a. **Employed**	Yes	No	UNK
b. **Public Assistance**	Yes	No	UNK

REFERRAL HISTORY

(**Please use the exclusion criteria in the code book to determine which referrals to count.)

13. DATE OF PRIOR REFERRAL ON VICTIM which was received most immediately before this referral: ___/___/___

14. NUMBER OF PRIOR REFERRALS on this *family* (which involve victim or siblings) received *prior* to the date of this referral: _____

RE-REFERRAL

(**Please use the exclusion criteria in the Appendix pg.1 to determine which referrals to count.)

15. NUMBER OF RE-REFERRALS on this *family* (involve the victim or siblings) within 1 year following the sample referral date_____

16. Please record the referral ID#, date, and CA/N allegations for the ***first re-referral regarding the victim*** which has been received within 1 year following the sample referral. If there is no re-referral on the victim which meets the exclusion criteria, leave #16-19 blank & skip to #20.

RE-REFERRAL ID #   RE-REFERRAL DATE

16a. _____   16b.   ___/___/___

17. RE-REFERRAL MMCS-R2 CA/N ALLEGED for the Victim

MALTREATMENT TYPE	SEVERITY	PERPETRATOR(S)	
a1) _____	a2) _____	a3) ____/___/____	a3a) ____/___/____
b1) _____	b2) _____	b3) ____/___/____	b3a) ____/___/____
c1) _____	c2) _____	c3) ____/___/____	c3a) ____/___/____
d1) _____	d2) _____	d3) ____/___/____	d3a) ____/___/____
e1) _____	e2) _____	e3) ____/___/____	e3a) ____/___/____
f1) _____	f2) _____	f3) ____/___/____	f3a) ____/___/____

18a. IS THERE AN INVESTIGATION MODULE FOR THIS RE-REFERRAL?

       1 = Yes   2=No

18b. RE-REFERRAL INVESTIGATION SCREEN FINDINGS FOR VICTIM:

1 = Founded	**4 = DK:** CA/N code listed for victim has missing finding code.
2 = Unfounded	**7 = N/A:** No Investigation Module for this referral.
3 = Inconclusive	

1. ____ Physical ABUSE   6. ____ Emotional Maltreatment

2. ____ Sexual Abuse   7. ____ Prenatal Injury

3. ___ Physical NEGLECT	8. ___ Abandonment
4. ___ Medical Neglect	9. ___ None Given
5. ___ Exploitation	10. ___ Other: _____

19a. IS THERE A SUMMARY ASSESSMENT FOR THIS RE-REFERRAL?

    1 = Yes   2 = No

19b. RE-REFERRAL SUMMARY ASSESSMENT FINDING CODE:

    1 = Founded
    2 = Unfounded
    3 = Inconclusive
    4 = DK: (Summary Assessment has no Finding Code entered.)
    7 = N/A: (No summary assessment for this re-referral.)

CPS FINDINGS & SUMMARY ASSESSMENT for SAMPLE REFERRAL

---

20. IS THERE A SUMMARY ASSESSMENT FOR THIS REFERRAL? (Circle one.)

      Yes=1   No=2

21. SUMMARY ASSESSMENT ID # : _____

22. SUMMARY ASSESSMENT COMPLETE DATE: __ __/__ __/__ __

23. SUMMARY ASSESSMENT FINDING CODE:

    1 = Founded
    2 = Unfounded
    3 = Inconclusive
    4 = DK: (Summary Assessment has no Finding Code entered.)
    7 = N/A: (No summary assessment for this referral.)

24. IS THERE AN INVESTIGATION MODULE FOR THIS REFERRAL?

    1 = Yes, with Finding(s) for the victim.
    2 = Yes, but no Finding code(s) entered for the victim.
    3 = No.

25. FINDING FOR CPS MALTREATMENT TYPE:
♦ If the answer to #24 was 1 or 2, then Code each CPS subtype for the identified victim, using the appropriate conclusion code (per Type 2 instructions in the code book.)
♦ If the answer to #24 was 3, but #20 was 1, complete the following section using the Type 1 rules from the code book.
♦ If the answer to #24 was 3 and #20 was 2, leave the next section blank and skip to Placement section.

CONCLUSION CODES	
1 = Founded	**4 = DK** (Type 1: Summary assessment has missing finding code)

a. ____ **Physical ABUSE**   f. ____ **Emotional Maltreatment**

b. ____ **Sexual Abuse**   g. ____ **Prenatal Injury**

c. ____ **Physical NEGLECT**   h. ____ **Abandonment**

d. ___ **Medical Neglect**   i. ____ **None Given**

e. ___ **Exploitation**   j. ____ **Other:** _____

FINDINGS FROM NARRATIVE SUMMARY

26. FINDINGS AND MMCS-R2 ISSUES per Summary Assessment Text:

CONCLUSION CODE (per #25)	MALTREATMENT TYPE	SEVERITY		PERPETRATOR(S)	
a1) _____	a2) _____	a3) _____	a4) ___/___/____	a4a) ___/___/___	
b1) _____	b2) _____	b3) _____	b4) ___/___/____	b4b) ___/___/___	
c1) _____	c2) _____	c3) _____	c4) ___/___/____	c4c) ___/___/___	
d1) _____	d2) _____	d3) _____	d4) ___/___/____	d4d) ___/___/___	
e1 _____	e2) _____	e3) _____	e4) ___/___/____	e4e) ___/___/___	
f1) _____	f2) _____	f3) _____	f4) ___/___/____	f4f) ___/___/___	

27. RISK ISSUES INCLUDED IN NARRATIVE/SUMMARY:
(Circle all that apply.)   (Yes=1)   (No=2)

a. **Substance Abuse**   Yes   No

(Write in the details from the intake text that led you to believe that substance abuse is an issue.)
a1. _____

_____

b. **Caregiver Domestic Violence**   Yes   No

c. **Mental Illness of Caregiver**   Yes   No

d. **Child Problems**   Yes   No

e. **Child Fear of Caregiver**   Yes   No

f. **Child Has No Fear of Caregiver**   Yes   No

g. **Caregiver Physical Health/DD**   Yes   No

h. **Request for Services**   Yes   No

i. **CA/N Toward Other Children**   Yes   No

j. **Lack of CPS/CA/N History**   Yes   No

k. **Caregiver HX of CA/N as Child**   Yes   No

l. **Not Protective Caregiver**   Yes   No

28. OTHER ISSUES FROM SUMMARY ASSESSMENT: (Circle all that apply.)

a.   Custody Battle   Yes   No

b.   Unstable Living Situation   Yes   No

c.   Caregiver in Jail/Arrested   Yes   No

d.   Child Sexually Acting Out   Yes   No

e.   Other Assaultive/Violent Behavior/
Gang Involvement   Yes   No

f.   Caregiver Cooperative w/Agency   Yes   No

g.   Caregiver Not Cooperative w/Agency   Yes   No

h.   Lack of Credibility of Child   Yes   No

i.   Victim Recanted   Yes   No

j.   Lack of Credibility of Referrer   Yes   No

k.   Child No Longer in Original Home   Yes   No

l.   Perpetrator Not Currently in Home   Yes   No

m. Unable to Locate Family/Family Fled
so Unable to Complete Investigation   Yes   No

n.   Other: Yes   No

   n1. *(Please write-in 'Other')* :_____

29. DOCUMENTED EVIDENTIARY FACTORS:
(Circle all that apply.)   (Yes=1)   (No=2)

a.   Physical Evidence of Injury due to CA/N   Yes   No

b.   No Physical Evidence of Injury due to CA/N   Yes   No

c.   Medical Evidence of CA/N   Yes   No

c1. write in detail: _____

d.   Victim Disclosure   Yes   No

   d1. CA/N type & to whom child disclosed.
   _____

e.   Victim Did Not Disclose CA/N   Yes   No

e1. brief description: _____

f.   Perpetrator Confession   Yes   No

   f1. type of CA/N & which perpetrator:
   _____

g.   No Admission of CA/N   Yes   No

h.   Observed Home Environment Factors   Yes   No
   h1. Write in who observed and what was observed:
_____

_____
_____

    i. Observed Condition of Child Factors   **Yes**   **No**
       i1. Write in who observed and what was observed:

_____

         _____
         _____

    j. Other Evidentiary Factor   **Yes**   **No**
    j1. write in detail: _____

30. ADDITIONAL DOCUMENTED CASE OUTCOME INFORMATION:
    (Circle all that apply.)   (Yes=1)   (No=2)

      a. Injury Determined to be Accidental   **Yes**   **No**

      b. No Resources/Services for family   **Yes**   **No**

      c. Referred to/Aware of Services/Resources   **Yes**   **No**

      d. Family Engaged in Service   **Yes**   **No**

      e. Issues Resolved/Family Addressing Problem   **Yes**   **No**

      f. Other Documented Case Outcome Information **Yes**   **No**

      f1. write in detail: _____

31. EMPLOYMENT STATUS at Time of Summary Assessment:
                                (Yes=1)   (No=2)   (UNK = 3)
      a. Employed   **Yes**   **No**   **UNK**

      b. Public Assistance   **Yes**   **No**   **UNK**

32. ONGOING in DCFS? (Circle one.)   **Yes=1**   **No=2**

PLACEMENT INFORMATION

Look up the identified victim through *Person Search* in CAMIS to determine *official* placement data for that child and his/her siblings.

WE ARE ONLY CONCERNED WITH OFFICIAL PLACEMENTS WHICH ARE FOUND IN CAMIS/ Informal Placements which may be found in case narrative should be noted elsewhere.

PAST PLACEMENTS

---

33. Does the victim have an official placement prior to the date of the initial referral?
    *Only consider placement episodes which involved more than just protective custody, (placement longer than 5 days.) Circle appropriate response.

    Yes=1   **No=2**

34. Are there prior official placements of other children in the family?
*Only consider placement episodes which involved more than just protective custody, (placement longer than 5 days.) Circle appropriate response.

      Yes=1   No=2

PLACEMENTS SINCE THE REFERRAL

---

35. Has the victim been in <u>any</u> official placement within 1 year since the date of the initial referral (or that began on the date of the referral)? (Circle appropriate response.)
      Yes=1   No=2 (If "No," skip to #39.)

36. If yes, what is the Original Placement Date (OPD) of the placement episode most immediately after the date of this referral (or that began on the date of the referral) ?

      OPD: __ __/__ __/__ __
      (Leave blank if victim has not been in placement within 1 year of the referral.)

37. What is the duration of the placement episode which began on the date noted in #36?

      Number of days: _____
    (Code "**999**" if placement episode was **ongoing** at 1 year past the referral date.)
      (Leave blank if victim has not been in placement within 1-year of the referral.)

38. Did any placement episode within 1 year after the referral (or that began on the date of the referral) last longer than 5 days? (Circle appropriate response.)

      Yes=1

      No=2   (Use 'No' all placements were protective custody only.)

      (Leave blank if victim has not been in placement within 1 year of the referral.)

39. Have there been official placements of other children in the family within 1 year following the referral (or that began on the date of the referral)?

*for sibling placements, only consider placement episodes which involved more than just protective custody, (placement longer than 5 days.) Circle appropriate response.

      Yes=1   No=2

September 8, 1998
CPS DECISION-MAKING MALTREATMENT CODE BOOK
Revised for CPS Unsubstantiation Project Data Collection

This code book and the coding form have been revised to incorporate the goals of the Unsubstantiation Research Project. Many new items have been added to the form, primarily some Other Issues and the Documented Evidentiary Factors & Additional Documented Case Outcome sections. The placement information, referral history, and re-referral sections have been changed to provide different information which is more applicable to this project. A primary change to this coding process is a change from family-orientation to victim orientation. This is in part to simplify the process of recording substantiation decisions & outcome measures, now that the new investigation module has been implemented. Many of the detailed sections of re-referral information have been simplified since the last project which used this form was a Re-Referral Phase of the CPS Decision-Making Project, and that is no longer a primary focus of the current study.

This section will be the entry of factual information, such as correct dates, identification numbers and assigned values.

REVIEWERS NAME: the name of the individual completing this form.

1. **REVIEWER ID #:** the ID # assigned to the individual reviewer.

2. **TODAY'S DATE**: the date the file is being reviewed for data collection.

3. **DCFS CASE #:** the CPS unique identifying number assigned to the family.

CPS REPORT

This section refers to the specifics of the report made to CPS.

Note: Please see the Appendix for important details of how to **identify referrals which will be excluded** from coding in the study.

4. **REFERRAL DATE**: the actual date that this specific allegation was made to CPS. .

5. **REFERRAL NUMBER**: the actual number assigned as a unique identifier for the report made to CPS.

6. **RISK TAG**: the level of risk assigned to the referral at intake by CPS;
   - 0 = Assessed as No risk   3 = Moderate risk   9 = No Risk Tag
   - 1 = Low risk   4 = Moderately High risk
   - 2 = Moderately Low risk   5 = High risk

7. **REFERRER**: the person or agency reporting the incident to CPS. Please select the collapsed category code from the list below which reflects the type of referrer for this referral.

   - 1 = Social Services
   - 2 = Medical
   - 3 = Legal/Justice
   - 4 = Education
   - 5 = Child Care Providers
   - 6 = Victims
   - 7 = Parents
   - 8 = Other Relatives
   - 9 = Friends/Neighbors
   - 10 = Perpetrators
   - 11 = Others
   - 12 = Anonymous
   - 13 = Self

8. **CPS MALTX TYPE AT INTAKE:**   If a CPS CA/N code (or CA/N codes) is/are identified on the referral, then determine which of the CA/N codes apply to the *victim*. Enter a "1" on the coding form next to the CA/N type (or types if there is more than 1 type identified) that relate to the victim.

   If specific CA/N codes clearly apply to allegations of CA/N toward other children in the home, do not record those CA/N codes in this section. Simply circle "Yes" in the Risk Issues section #10h, "CA/N Toward Other Children."

   This info. is found just below the "Persons Identified in Referral" & just above the "Incident Address" in REFSUMDR. If no CA/N type is given here, then enter a "1" next to "None Given."

If the CA/N code listed on the intake is "*Mental Injury*" or "*Emotional Abuse*," please record this in the "Emotional Maltreatment" field #8f.

If the CA/N code listed on the intake is "*Death by CA/N*" or "*Sexual Exploitation*," please record them in #8j "Other", and write-in the CA/N code in the space provided.

ALLEGATION

This section refers to the specific allegation made known to the CPS agency. Only the reported incident information should be coded.

9. **MMCS-R2 ALLEGED (at Intake)**: Use the coding system found in the Maltreatment Coding Scheme, Revision 2, (MMCS R-2) to code all allegations in the referral which involve the *victim*, (up to six.) If there are allegations of CA/N which clearly relate only to another victim in the home, do not record these allegations in this section; allegations of current or past CA/N to other children should be recorded by circling "Yes" in the Risk Issues section #10i, "CA/N Toward Other Children."

the maltreatment code for the allegation goes in the first column, the corresponding severity of the allegation goes in the second column, and the identified perpetrator(s) of the specific allegation goes in the 3rd & 4th columns. (See Appendix page 2 for perpetrator codes.)

If there is an undefined allegation of Physical Neglect, Emotional Abuse, or Sexual Abuse that does not meet MMCS-R2 Coding Standards, please write this info. in #11n, "Other".

If there are NO allegations of CA/N which meet the MMCS-R2 Coding Standards, please leave this entire allegation section (#9) blank and move on to the Risk Issues section.

10. **RISK ISSUES MENTIONED IN THE INTAKE ALLEGATION TEXT:** Code all 'Caregiver' risk issues for primary caregivers in a caregiving role, within the allegation. Code the 'Child' risk issues for the *victim* only. The allegation must specifically state these risk issues, i.e. "Mom has a drinking problem," in order to code them. If they are not mentioned, or if there is no allegation information, then code "No."

   a. ***Substance Abuse***: A history of substance abuse or any current substance use/addiction that may limit capacity or causes incapacity of the caregiver's ability to effectively parent the child. (This risk issue has the same meaning as the Risk Matrix Factor Substance Abuse by Caretaker.)

   a1. ***Substance Abuse Narrative Detail:*** Please write in the details from the intake text that led you to believe that substance abuse might be an issue for the family. This detail information will be analyzed and categorized after data collection.

   Examples might include: 1) family lives in crack house,
   2) caregiver is violent when drinking,
   3) caregiver incapacitated from intoxication.
   4) U/A results for caregiver
   *Please record the type of drug(s) allegedly used if that information is available in the text.

   b. ***Caregiver Domestic Violence***: Assaultive behavior/violence between intimate partners, one of whom must be a caregiver. (This issue does not have the same definition as any particular Risk Matrix Factor.)

   (This does not include violence between other persons in the home, i.e. violence between an adolescent and parent, roommates, among sibs, toward a friend, neighbor, other relative residing in the home, etc. Please record other known

history of violence, property destruction, animal abuse, criminal assault charges, gang involvement etc. in #11e as appropriate.)

c. ***Mental Illness of Caregiver****:* A mental illness or instability of the caregiver that interferes with their ability to adequately parent the child. (Note: Chemical dependency is not included here as an impairment, but is coded as substance abuse.) (This issue does not have the same definition as any particular Risk Matrix Factor.)

d. ***Child Problems****:* Victim has diagnosed behavior problems or is behaviorally disturbed. This category applies to extremely assaultive children and children with Juvenile Justice involvement. This category also includes behavior problems and difficulty of care related to child's disability (i.e., autism, ADHD, suicidal ideation, chemical dependency, <u>substance abuse by child</u>, severe physical disability or developmental delay.) (This issue does not have the same definition as any particular Risk Matrix Factor.)

e. ***Child Fear of Caregiver***: Victim experiences doubt, concern, anxiety or fear of caregiver. (This issue does not have the same definition as any particular Risk Matrix Factor.)

f. ***Child Has <u>No</u> Fear of Caregiver***: Victim does not evidence doubt, concern, anxiety, or fear of caregiver. Victim expresses a lack of fear of caregiver. (This issue does not have the same definition as any particular Risk Matrix Factor.)

g. ***Caregiver Physical Health/Developmental Delay***: A mental/intellectual or physical impairment of the caregiver that interferes with their ability to adequately parent the child. Note: Chemical dependency and Mental Illness are not included here, but are coded under Substance Abuse and Mental Illness of Caregiver, respectively. (This issue does not have the same definition as any particular Risk Matrix Factor.)

h. ***Request for Services****:* Use this factor <u>only</u> when a caregiver self-refers to CPS and is <u>requesting concrete services or assistance</u>, (i.e. Day Care, housing, placement, etc.). Without this assistance from the agency, there would be serious risk to the child(ren). This factor also applies if a request for services is made by a *direct advocate* for the parent, who is calling CPS at the request of the parent. (Note: This factor was previously known as "Serious Resource Need" and the original definition has been retained.) (This issue does not have the same definition as any particular Risk Matrix Factor.)

i. ***CA/N Toward Other Children:*** Evidence of CA/N toward other children by caregiver. An example of this factor would be if the referral alleges that other children have *previously* been removed or abused by the caregiver or that other children in the home are *currently* being victimized by the caregiver. (This issue does not have the same definition as any particular Risk Matrix Factor.)

j. ***<u>Lack</u> of CPS/CA/N History***: Caregiver does not have history with CPS. Caregiver does not have history of CA/N towards children. This must be stated in the text in order to code. (This issue does not have the same definition as any particular Risk Matrix Factor.)

k. ***Caregiver History of CA/N as a Child:*** Caregiver experienced abuse or neglect as a child. This factor may also be inferred if the report mentions the caregiver's history as a child with CPS. (This factor has the same meaning as the Risk Matrix factor History of Abuse or Neglect as a Child.)

l. ***Protective Caregiver:*** BE VERY LITERAL WITH THIS FACTOR, DO NOT INTERPRET! Caregiver is willing and/or able to provide protection of the child from the perpetrator of CA/N. This must be stated in the text in order to code. (This issue does not have the same definition as any particular Risk Matrix Factor.)

m. ***<u>Not</u> Protective Caregiver:*** BE VERY LITERAL WITH THIS FACTOR, DO NOT INTERPRET! Caregiver is unable or unwilling to provide protection for the child from the perpetrator of CA/N. This must be stated in the text in order to code. (This issue does not have the same definition as any particular Risk Matrix Factor.)

11. **OTHER ISSUES AT INTAKE**: the allegation text must specifically state these issues in order to code them. If these issues are not mentioned, then code "No."

   a. **Custody Battle**: the allegation text clearly states that a custody battle is present and/or may be a motivating factor for the CPS report.

   b. **Unstable Living Situation**: Caregiver moves frequently within a limited time frame, caregiver and child live with friends/relatives but have no official residence. Family is going to be or is in the process of being evicted. *Homelessness was collapsed into this factor when mentioned as "Other Risk."*

   c. **Caregiver in Jail/Arrested:** Caregiver is in Jail or has been arrested. (Do not record references to old criminal history here, this is for jail/charges which are **currently** affecting the family.)

   d. **Child Sexually Acting Out**: Victim is exhibiting behavioral signs of having been sexually abused, or having been exposed to sexually explicit stimuli.

   e. **Other Assaultive/Violent Behavior/Gang Involvement:** Other violence, current or historical, which does not meet the strict criteria for the #10b, 'Caregiver Domestic Violence' risk issue.
      Examples include:
      1) Family violence
      2) Property destruction
      3) Animal cruelty/abuse
      4) Threats of violence/death
      5) Gang involvement in the home
      6) Violence by caretakers to others
      7) Violence between other persons in the home
      8) Stalking/Terrorizing Behavior

   f. **Caregiver Cooperative with Agency:** BE VERY LITERAL WITH THIS FACTOR, DO NOT INTERPRET! Caregiver is willing to cooperate with social worker/agency investigation and accept intervention or services. This must be stated in the text in order to code. (This item has the same meaning as the Risk Matrix factor Cooperation with Agency, when rated as family strength.)

   g. **Caregiver _Not_ Cooperative with Agency:** BE VERY LITERAL WITH THIS FACTOR, DO NOT INTERPRET! Caregiver is unwilling to cooperate with social worker/agency investigation, intervention, or services. Caregiver denies the social worker access to the home or child. Caregiver is hostile toward social worker or refuses agency intervention. This must be stated in the text in order to code. (This item has the same meaning as the Risk Matrix factor Cooperation with Agency, when rated as low-high risk.)

   h. **Lack of Credibility of Child**: Narrative text states that victim is not a credible witness or source of information. This would include such expressions as "child is a liar," "child has a history of false accusations," "child changed his/her story," or "child appears to be lying to protect caregiver."

   i. **Victim Recanted**: Narrative text states that the victim recanted his/her disclosure of CA/N.

   j. **Lack of Credibility of Referrer**: Narrative text states that the referrer lacks credibility due to ulterior motive, mental illness, custodial conflict, neighborhood dispute, etc.

   k. **Child No Longer in Original Home:** Original home means the home the child was living in when/where the CA/N took place. Intake narrative mentions that victim is no

longer in his/her original home, i.e. the child now has a new primary caregiver or is living on his/her own. (This would include child has moved out, is in placement, living with older sibling/friend/relative, ran away/kicked out & living on the streets, etc.).

l. ***Perpetrator Not Currently in Home:*** Intake narrative reveals that the alleged perpetrator is not living in the home.

> Examples would include: 1) Perpetrator is incarcerated, dead, or deported.
> 2) Perpetrator has moved out or been otherwise removed since the alleged CA/N occurred.
> 3) Alleged CA/N was perpetrated on visitation with a non-custodial parent who does not live in the child's primary residence.
> 4) Caregiver and children move out of perpetrator's home.

m. ***Unable to Locate Family/Family Fled, so Unable to Complete Investigation:*** Social worker notes that family could not be located or has fled to an unknown location, and thus the investigation cannot be completed.

n. ***Other***: Any specifically mentioned issues that pertain to the allegation and/or risk issues that are not included in MMCS-R2 or elsewhere on this form.

> Examples: Undefined Sexual Abuse, Emotional Abuse, or Physical Neglect when the report does not contain enough details to apply a MMCS-R2 code to the allegations otherwise. Child exploitation, kidnapping, or other type of CA/N which has no applicable MMCS-R2 equivalent.

> **n1.** Write-in detail of 'Other.' Abbreviation will often be necessary, there are limited spaces of text available in the database to record this data.

12. **EMPLOYMENT STATUS at INTAKE**: What is the employment status is of the caregiver(s) at the time of the referral? Is the family receiving Public Assistance?

> **a. Employed:**   **Yes** = referral says that there is employment/work by caregiver. (This does not include prostitution or drug dealing.)
> **No** = referral specifically states that caregiver is unemployed.
> **UNK** = no mention of job or lack thereof in the referral.

> **b. Public Assistance**: **Yes** =   Referral text and/or ITIS check reveals that Public Assistance was received at the time of the referral.
> **No** = ITIS reveals that family had no open Public Asst. grants at the time of the referral, the text states that family is receiving NO benefits, or the family had no grant history in ITIS.
> **UNK** = the referral does not provide enough information to conduct an ITIS check on the family. (i.e. No names or birth dates for family members.)

13.-14. **REFERRAL HISTORY**
> After coding the sample referral, review the "(L) Referral History" section which follows the 'Basis for Risk Tag' in CAMIS. *Please apply the exclusion criteria from the Appendix pg. 1 to determine which referrals to count.

13. **Date of the prior referral on the victim which was received most immediately before this referral:** Provide the received date of the prior referral on the victim which immediately preceded the sample referral. Leave blank if there is no prior referral for the victim.

14. **Number of referrals on this *family* (which involve the victim or siblings) received prior to the date of this referral.** Count the number of accepted CPS prior referrals, which involved the same family, and meet exclusionary criteria.

15.-19. **RE-REFERRAL**

After coding the sample referral, review the "(L) Referral History" section which follows the 'Basis for Risk Tag' in CAMIS. *Please apply the exclusion criteria from the Appendix pg. 1 to determine which referrals to count.

Since only the first 10 lines of text are available from the 'Referral History' section of the referral screens, it will occasionally be necessary to skim the referral text of the re-referrals to determine who was involved in the referral and what the allegations were, in order to determine if the re-referrals meet the exclusionary criteria.

15. **Number of re-referrals on this *family* (involve the victim or siblings) within 1 year following the sample referral date.**

Determine which re-referrals in the 1 year period involve the same family, count the number of family re-referrals (which meet exclusion criteria), and record this number in #15.

16.-19. **1ˢᵗ RE-REFERRAL ON VICTIM:** Determine which re-referral was the first re-referral on the victim. If there is no re-referral for the victim which meets exclusionary criteria, leave 16-19 blank & skip to #20.

16a. Re-Referral ID #: the ID # of the first re-referral on the victim which was received within 1 year following the sample referral received date.

16b. Re-Referral Date: the received date of the first re-referral on the victim.

17. **Re-referral MMCS-R2 CA/N Alleged:** Read the intake narrative for the first re-referral on the victim (which occurred within 1 year following the sample referral.) Code the CA/N allegations for type, severity, and perpetrator(s) per the MMCS-R2 using the same procedure that you used for #9 Intake Allegations.

18a. Is There an Investigation Module for This Re-Referral? : Yes or No depending on if an investigation module has been completed for this re-referral.

18b. Re-Referral Investigation Screen Findings for Victim: Enter the appropriate finding code for each CA/N code documented for the victim for this re-referral.

Use DK if a CA/N code listed for the victim has no finding code documented.

Use N/A, if there is no investigation module for this re-referral.

If there is no finding code **and** no CA/N code on the Victim screen, code 4=DK in the None Given field.

19a. Is There a Summary Assessment for This Re-Referral? :

Yes or No depending on if there if you could find a summary assessment for the re-referral.

19b. Re-Referral Summary Assessment Finding Code:

If there is a summary assessment with a finding code entered for the 1st re-referral, circle the appropriate finding code.

If there is a summary assessment, but the finding code is missing, code DK.

If there is no summary assessment, code N/A.

CPS FINDINGS for SAMPLE REFERRAL

This section is to be coded for the **sample referral** using only information given in the Summary Assessment narrative and any text entries in the Risk Matrix.

20. **SUMMARY ASSESSMENT?**   Yes or No, depending on if you can locate a summary assessment for the sample referral.   (Note: for this Unsubstantiation Project, all sample referrals will have directly associated summary assessments, so the answer to this question will always be "Yes.")

21. **SUMMARY ASSESSMENT ID#:** the actual ID number assigned to this summary assessment.

22. **SUMMARY ASSESSMENT COMPLETE DATE**: the actual date on which this summary assessment was input into CAMIS.

23. **SUMMARY ASSESSMENT FINDING CODE:** If there is a summary assessment with a finding code entered for the 1st re-referral, circle the appropriate finding code.

If there is a summary assessment, but the finding code is missing, code DK.

If there is no summary assessment, code N/A.

24. **IS THERE AN INVESTIGATION MODULE FOR THIS REFERRAL?**

1 = Yes, with finding : An investigation module is directly linked to the referral and it has at   least one finding code entered for the victim.
> *(Note: if the answer is 1 for this question, then you will use whatever information is in the investigation module to complete the findings in #25 & 27).*

2 = Yes, but no finding: An investigation module is directly linked to the referral, but it has no finding codes entered for the victim.
> *(Note: if the answer is 2 for this question, then you will use whatever information is in the investigation module to complete the findings in #25 & 27.)*

3 = No: No investigation module is directly tied to this referral.
> *(Note: if the answer to this question is 3, but there was a summary assessment noted in #20, you will complete the findings in #25 & 27 following the instruction below for Type 1.   However, if there is no investigation module and no summary assessment for this referral, you will skip to the placement section #33.)*

25. **FINDING for CPS MALTREATMENT TYPE**:

Type 1 (Old Summary) only: Follow these instructions only if the answer to #24 was "NO."

Record the finding which is located in the FINDING field of the summary assessment for each CPS Maltreatment subtype which was identified in #8 of this coding form.   Use the following codes to record the FINDING.

Type 2 (Investigation Module) only: Follow these instructions only if the answer to #24 was "YES."

Record the finding codes for the *victim* for each applicable CA/N type as they are entered on the victim investigation screen for this referral.

>If the CA/N code listed on the investigation screen regarding the victim is "*Mental Injury*" or "*Emotional Abuse*," please record the finding in the "Emotional Maltreatment" field #25f.

>If the CA/N code listed on the investigation screen regarding the victim is "*Death by CA/N*" or "*Sexual Exploitation*," please record the finding in #25j "Other", and write-in the CA/N type in the space provided.

>*Anomaly Rule: When the victim and caregiver/perpetrator are reversed as to their role codes: fill out purple sheet for actual victim denoting 'S' as the role code. Go ahead and look in the subject findings screen for the victim's findings, (hopefully victim & subject will have the same findings in these instances.)

Substantiation Decision Codes:

>**1** = **FOUNDED**/*SUBSTANTIATED*: Based on the CPS investigation, there is reasonable cause for the social worker to believe that either the allegations on the referral are true, or that sufficient evidence exists to reasonably support the conclusion that the child has been, or is at risk of being, abused or neglected by a parent or caregiver.

>**2** = **UNFOUNDED**/*NOT SUBSTANTIATED*: Available evidence indicates that, more likely than not, child abuse or neglect did not occur.

>**3** = **INCONCLUSIVE**: There is not significant evidence for the social worker to reasonably conclude that a child has or has not been abused or neglected or is at risk of abuse or neglect.

>**4** = **DON'T KNOW**
>>*Type 1 only*: the summary finding field on the summary assessment is left blank by the worker.

>>*Type 2 only:* A CA/N code listed for the victim on the victim investigation screen does not have a finding code entered for it.

>**7** = **NOT APPLICABLE**
>>*Type 1 only:* This CA/N Code was not identified on the referral at intake, and was not revealed as an issue in the summary narrative text.

FINDINGS FROM NARRATIVE SUMMARY

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26. FINDINGS AND MMCS-R2 ISSUES PER SUMMARY ASSESSMENT:

>Connect the CPS Finding Code(s) from #25 to each Type, Severity, and Perpetrator information which is mentioned in the Summary narrative. Use the same MMCS-R2 system as you did with the intake allegations.

Example:

Conclusion Code	MMCS-R2 CA/N	CA/N Severity	Perpetrator(s)	
a1. <u>1</u>	a2. <u>403</u>	a3. <u>3</u>	a4. <u>01/M/A</u>	a4a.<u>01/F/A</u>

(1 = Founded/Substantiated)

b1. <u>3</u>	b2. <u>500</u>	b3. <u>14</u>	b4. <u>01/F/A</u>	b4b._____

(3 = Inconclusive)

If the text mentioned the allegations **specifically**, then carry over **only** those allegations that are specifically mentioned. If the text is only **general**, (e.g. "physical neglect is founded"), then carry over all neglect allegations that you coded at intake & assume the worker is talking about the same thing you are. Another example might be "the allegations were shown to be unfounded," even if this is the only mention of CA/N and the remainder of the text addresses risk, services, case outcome, etc., you would carry over all allegations which you coded at intake since you know this summary is intended to address this specific referral's issues.

New categories of CA/N not mentioned at intake: 4 = DK is usually the appropriate conclusion code for allegations of new *categories* of CA/N if they are mentioned in the summary assessment text, but were not mentioned as part of the intake issues. However, if there are findings documented on the victim investigation screen for the new CA/N category (CA/N code) then use the applicable finding code as your conclusion code.

for multiple referrals per summary assessment: Specifically carry over the allegations which relate to the sample referral. Exclude any allegations which clearly relate to a different referral.

If there is text, but **no CA/N** mentioned in summary text: Leave section #27 completely blank and record Risk Issues as applicable.

No Text in Summary: If there is no text written in the summary assessment or risk matrix:
Record the Conclusion Code in 27a1.
> Enter '0' in 27a2.
Enter '0' in 27a3.
Enter '00/D/K' in 27a4.

No Text in Summary, When There are Multiple Finding Codes for Victim:
There is also the potential situation of different finding codes for different CA/N codes on the victim investigation

screen, (e.g. PA = F, PN = I). When this occurs and there is no text in the summary, document each of the different

conclusion codes on a separate line (21a1, b1,…, add the 0 for all maltreatment types and severity codes, and use

00/D/K for all perps (21a4, b4,…)

Example:

Conclusion Code	MMCS-R2 CA/N	CA/N Severity	Perpetrator(s)
a1. 1	a2. 0	a3. 0	a4. 00/D/K a4a. _____
b1. 3	b2. 0	b3. 0	b4. 00/D/K b4b._____

27. RISK ISSUES INCLUDED IN NARRATIVE SUMMARY ASSESSMENT:
Code all 'Caregiver' risk issues for primary caregivers in a caregiving role, as reported in the Narrative Summary and/or narrative entries in the Summary Risk Matrix. Code the 'Child' risk issues for the *victim only*. The text must specifically state these risk issues, i.e. "Mom has a drinking problem," in order to code them. If they are not mentioned, or if there is no text, then code "No."

for multiple referrals per summary assessment: the Risk Issues, Other Issues, Evidentiary Factors, and Additional Documented Information sections should be completed with any information disclosed in the summary narrative text and any text entries within the Risk Assessment Matrix, regardless of the fact that more than one referral may be addressed by the summary.

Since the worker has included the discussion of these issues and information in the same summary, they were most likely discovered during a single case opening or ongoing investigation involving

multiple referrals. It is usually impossible to discern which issues and information were discovered in relation to which referral, when they are included in the same write-up of the outcome of the case.

a. ***Substance Abuse****:* A history of substance abuse or any current substance abuse/addiction that may limit capacity or causes incapacity of the caregiver's ability to effectively parent the child. (This risk issue has the same meaning as the Risk Matrix Factor Substance Abuse by Caretaker.)

a1. ***Substance Abuse Narrative Detail:*** Please write in the details from the summary assessment text that led you to believe that substance abuse might be an issue for the family. This detail information will be analyzed and categorized after data collection.

  Examples might include: 1) family lives in crack house,
                                   2) caregiver is violent when drinking,
                                   3) caregiver incapacitated from intoxication.
                                   4) U/A results for caregiver.
*Please record the type of drug(s) allegedly used if that information is available in the text.

b. ***Caregiver Domestic Violence****:* Assaultive behavior/violence between intimate partners, one of whom must be a caregiver. (This issue does not have the same definition as any particular Risk Matrix Factor.)

(This does not include violence between other persons in the home, i.e. violence between an adolescent and parent, roommates, among sibs, toward a friend, neighbor, other relative residing in the home, etc. Please record other known history of violence, property destruction, animal abuse, criminal assault charges, gang involvement etc. in #29e as appropriate.)

c. ***Mental Illness of Caregiver****:* A mental illness or instability of the caregiver that interferes with their ability to adequately parent the child. (Note: Chemical dependency is not included here as an impairment, but is coded as substance abuse.) (This issue does not have the same definition as any particular Risk Matrix Factor.)

d. ***Child Problems****:* Victim has diagnosed behavior problems or is behaviorally disturbed. This category applies to extremely assaultive children and children with Juvenile Justice involvement. This category also includes behavior problems and difficulty of care related to child's disability (i.e., autism, ADHD, suicidal ideation, chemical dependency, substance abuse by child, severe physical disability, or developmental delay.) (This issue does not have the same definition as any particular Risk Matrix Factor.)

e. ***Child Fear of Caregiver****:* Victim experiences doubt, concern, anxiety or fear of caregiver. (This issue does not have the same definition as any particular Risk Matrix Factor.)

f. ***Child Has <u>No</u> Fear of Caregiver****:* Victim does not evidence doubt, concern, anxiety, or fear of caregiver. Victim expresses a lack of fear of caregiver. (This issue does not have the same definition as any particular Risk Matrix Factor.)

g. ***Caregiver Physical Health/Developmental Delay****:* A mental/intellectual or physical impairment of the caregiver that interferes with their ability to adequately parent the child. Note: Chemical dependency or Mental Illness is not included here, but is coded under Substance Abuse and Mental Illness of Caregiver, respectively. (This issue does not have the same definition as any particular Risk Matrix Factor.)

h. ***Request for Services****:* Use this factor only when a caregiver self-refers to CPS and is requesting concrete services or assistance, (i.e. Day Care, housing, placement, etc.). Without this assistance from the agency, there could be serious risk to the child(ren). This factor also applies if a request for services is made by a *direct advocate for the parent*, who is calling CPS at the request of the parent. (Note: This factor was previously known as "Serious Resource Need" and the original definition has been retained.) (This issue does not have the same definition as any particular Risk Matrix Factor.)

i. ***CA/N Toward Other Children:*** Evidence of CA/N toward other children by caregiver. An example of this factor would be if the summary text mentions that other children have *previously* been removed or abused by the caregiver or that other children in the home are *currently* being victimized by the caregiver. (This issue does not have the same definition as any particular Risk Matrix Factor.)

j. <u>***Lack of CPS/CA/N History***</u>**:** Caregiver does not have history with CPS. Caregiver does not have history of CA/N towards children. This must be stated in the text in order to code. (This issue does not have the same definition as any particular Risk Matrix Factor.)

k. ***Caregiver History of CA/N as a Child:*** Caregiver experienced abuse or neglect as a child. This factor may also be inferred if the report mentions the caregiver's history as a child with CPS. (This factor has the same meaning as the Risk Matrix factor History of Abuse or Neglect as a Child.)

l. ***Protective Caregiver:*** BE VERY LITERAL WITH THIS FACTOR, DO NOT INTERPRET! Caregiver is willing and/or able to provide protection for the child from the perpetrator of CA/N. This must be stated in the text in order to code. (This issue does not have the same definition as any particular Risk Matrix Factor.)

m. <u>***Not*** ***Protective Caregiver:***</u> BE VERY LITERAL WITH THIS FACTOR, DO NOT INTERPRET! Caregiver is unable or unwilling to provide protection for the child from the perpetrator of CA/N. This must be stated in the text in order to code. (This issue does not have the same definition as any particular Risk Matrix Factor.)

28. **OTHER ISSUES IN NARRATIVE SUMMARY**: the summary narrative or Risk Matrix narrative entries must specifically state these issues in order to code them. If these issues are not mentioned, then code "No."

a. ***Custody Battle****:* the text clearly states that a custody battle is present and/or may be a motivating factor for the CPS report.

b. <u>***Unstable Living Situation***</u>*:* Caregiver moves frequently within a limited time frame, caregiver and child live with friends/relatives but have no official residence. Family is going to be or is in the process of being evicted. <u>*Homelessness was collapsed into this factor when mentioned as "Other Risk."*</u>

c. ***Caregiver in Jail/Arrested:*** Caregiver is in Jail or has been arrested. Do not record references to old criminal history here, this is for jail/charges which are ***currently*** affecting the family.

d. ***Child Sexually Acting Out***: Victim is exhibiting behavioral signs of having been sexually abused, or having been exposed to sexually explicit stimuli.

e. ***Other Assaultive/Violent Behavior/Gang Involvement:*** Other violence, which does not meet the strict criteria for the #28b 'Caregiver Domestic Violence' risk issue. Examples include: 1) Family violence
       2) Property destruction
       3) Animal cruelty/abuse
       4) Threats of violence/death
       5) Gang involvement in the home
       6) Violence by caretakers to others
       7) Violence between other persons in the home
       8) Stalking/Terrorizing Behavior

f. ***Caregiver Cooperative with Agency:*** BE VERY LITERAL WITH THIS FACTOR, DO NOT INTERPRET! Caregiver is willing to cooperate with social worker/agency investigation and accept intervention or services. This must be stated in the text in

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order to code. (This item has the same meaning as the Risk Matrix factor Cooperation with Agency, when rated as family strength.)

g. ***Caregiver <u>Not</u> Cooperative with Agency:*** BE VERY LITERAL WITH THIS FACTOR, DO NOT INTERPRET! Caregiver is unwilling to cooperate with social worker/agency investigation, intervention, or services. Caregiver denies the social worker access to the home or child. Caregiver is hostile toward social worker or refuses agency intervention. This must be stated in the text in order to code. (This item has the same meaning as the Risk Matrix factor Cooperation with Agency, when rated as low-high risk.)

h. ***Lack of Credibility of Child***: Narrative text states that victim is not a credible witness or source of information. This would include such expressions as "child is a liar," "child has a history of false accusations," "child changed his/her story," or "child appears to be lying to protect caregiver."

i. ***Victim Recanted***: Narrative text states that the victim recanted his/her disclosure of CA/N.

j. **Lack *of Credibility of Referrer*:** Narrative text states that the referrer lacks credibility due to ulterior motive, mental illness, custodial conflict, neighborhood dispute, etc.

k. ***Child No Longer in Original Home:*** Original home means the home the child was living in when/where the CA/N took place. Summary assessment narrative mentions that victim is no longer in his/her original home, i.e. the child now has a new primary caregiver or is living on his/her own. (This would include child has moved out, is in placement, living with older sibling/friend/relative, ran away/kicked out & living on the streets, etc.).

l. ***Perpetrator Not Currently in Home:*** Summary assessment narrative reveals that the alleged perpetrator is not living in the home.

   Examples would include: 1) Perpetrator is incarcerated, dead, or deported.
   2) Perpetrator has moved out or been otherwise removed since the alleged CA/N occurred.
   3) Alleged CA/N was perpetrated on visitation with a non-custodial parent who does not live in the child's primary residence.
   4) Caregiver and children move out of perpetrator's home.

m. ***Unable to Locate Family/Family Fled, so Unable to Complete Investigation:*** Social worker notes that family could not be located or has fled to an unknown location, and thus the investigation cannot be completed.

n. ***Other*:** Any specifically mentioned issues that pertain to the allegation and/or risk issues which are not included in MMCS-R2 or elsewhere on this form.

Examples: Undefined Sexual Abuse, Emotional Abuse, or Physical Neglect when the report does not contain enough details to code the allegations by otherwise. Child exploitation, kidnapping, or other type of CA/N which has no applicable MMCS-R2 equivalent.

   n1. ***Write-in detail of 'Other.'*** Abbreviation will often be necessary, there are limited spaces of text available in the database to record this data.

29. EVIDENTIARY FACTORS SECTION: the narrative text must specifically state these issues in order to code them. If these issues are not mentioned, then code "No."

a. **Physical Evidence of Injury due to CA/N:** the narrative text indicates that there was physical evidence of injury to the victim, i.e. visible bruise, laceration, burn, etc. Injury may be caused by any type of abuse or neglect, unexplained injury.

b. **No Physical Evidence of Injury due to CA/N:** the narrative text indicates that there was no observable physical evidence of injury to the victim. This includes when the text notes that a worker or physician was unable to verify the presence of a physical injury.

c. **Medical Evidence of CA/N:** the narrative text indicates that there was medical evidence of CA/N.
   Examples include: Positive drug tox screen on infant
        Medical documentation of injury due to CA/N
        Presence of sexually transmitted disease
        Confirmed sexual assault examination
        Medical treatment due to ingestion of toxic substance due to neglect.
        Medical documentation of medical neglect, Munchausen-by-proxy or untreated medical/dental condition
        Victim is diagnosed failure-to-thrive.

   c1: Write-in detail of what type of medical evidence of CA/N.

d. **Victim Disclosure:** Narrative text indicates that the victim disclosed abuse and/or neglect.

   d1: Write-in brief description of victim disclosure, i.e. type of CA/N (per MMCS-R2) and to whom the child disclosed.

e. **Victim Did Not Disclose CA/N:** Narrative text indicates that the victim did not disclose abuse or neglect.

   e1: Write-in brief description regarding to whom the victim did not disclose CA/N.

f. **Perpetrator Confession:** Narrative text indicates that the perpetrator of CA/N admitted committing the abusive or neglectful behavior.

   f1: Write-in brief description of type of CA/N (per MMCS-R2) & which perpetrator.

g. **No Admission of CA/N:** Narrative text documents that the alleged perpetrator of CA/N denies that CA/N occurred or makes no confession of CA/N.

h. **CPS Social Worker Observed Home Environment Factors:**

♦ Circle 'Yes' if the worker makes any comments in the summary text regarding the observed condition of the home environment.
♦ Circle 'No' if no comments are made by the worker regarding the observed condition of the home.

h1. Write what the CPS Social Worker observed.
   You may summarize or abbreviate, but try to capture the worker's wording as possible.

   Examples:
   Home appeared safe, clean, etc...
   No hazards observed in home

No food observed in home.
Toilet facilities or water were noted to be unavailable.
Home was filthy, cluttered, dirty, etc…
Sleeping provisions were observed to be cold, wet, or unsafe.
Broken glass, syringes, feces, rotten food, exposed wiring or anything else which the worker makes specific mention of with regards to the appearance of the home environment.
Basic needs appeared to be met.

i. *CPS Social Worker Observed Condition of Child Factors:*
♦ Circle 'Yes' if the worker makes any comments in the summary text regarding the observed condition of the victim.
♦ Circle 'No' if no comments are made by the worker regarding the appearance/condition of the victim.

i1. Write in what the social worker observed. You may summarize or abbreviate, but try to capture the worker's wording as possible.

Examples:
Child is observed to be chronically or excessively filthy due to neglect of hygiene.
Child **appeared** to be suffering from malnourishment.
Child appeared healthy, happy, well-cared for, etc…
Child was clean and well-groomed.

j. *Other Evidentiary Factor:*

j1. *Write-in detail of 'Other Evidentiary Factor:'*   Please write-in anything else which appears to be evidentiary that is noted in the text that does not fit into one of the above categories.

Examples include: Evidence of caregiver driving with child while intoxicated.
Polygraph results
Results of Psychological/Psychiatric/Sexual deviancy evaluations
Child found unattended/Absence of caregiver
Verified presence of registered sex offender in home
Etc.

30. **ADDITIONAL DOCUMENTED CASE OUTCOME INFORMATION:** the allegation text must specifically state these issues in order to code them. If these issues are not mentioned, then code "No."

a. ***Injury Determined to be Accidental:*** Narrative text states that an injury to the victim was determined to be/believed to be accidental.

b. ***No Resources/Services for Family:*** Narrative text states that there are no appropriate resources or services available for the family.

c. ***Referred to/Aware of Services/Resources:*** Narrative text specifically states that the family has been given referrals for appropriate services or resources, or that the family is aware of available services/resources.

d. ***Family Engaged in Service:*** Narrative text specifically states that the family is currently engaged in one or more services and/or that the family completed a specific service during this case opening. Examples of services would include mental health counseling, FRS, drug/alcohol treatment, parenting classes, anger management, etc.

e. ***Issues Resolved/Family Addressing Problem:*** Narrative text indicates that the original issues alleged in the referral have been resolved, the family has resolved the issue on their own, the family is addressing/correcting the problem, <u>things are improving (regarding CA/N or risk), family is making progress on their issues, they have followed through with services, they have taken action to resolve concerns, protection/restraining orders now in place, risk has been reduced due to family's action.</u>

   f. ***Other Documented Case Outcome Information:*** Write-in other case characteristics which are documented in the narrative that may have contributed to the worker's reasoning and decision-making on this referral.

   f1. ***Write-in detail of 'Other Documented Case Outcome Information.'***

31. EMPLOYMENT STATUS at Time of Summary Assessment: What is the employment status of the caregiver(s) at the time of the summary? Is the family receiving Public Assistance at the time of the Summary Assessment?

   a. Employed: **Yes** = Summary says that there is employment/work by caregiver. (This does not include prostitution or drug dealing.)
   No = Summary specifically states that CG is unemployed.
   UNK = No mention of job or lack thereof in the summary.

   b. Public Assistance: Yes = Summary text and/or ITIS check reveals that Public Assistance was received at the time of the summary.
   No = ITIS reveals that family had no open Public Asst. grants at the time of the summary, the text states that family is receiving NO benefits, or the family had no grant history in ITIS.
   UNK = CAMIS does not provide enough information to conduct an ITIS check on the family. (i.e. No names or birth dates for family members.)

32. ONGOING in DCFS? Case status at time of summary assessment.

"Yes", if the case is still active with either CPS, CWS, FRS, or ARS.
"No", if the case is closed to DCFS services.

Ongoing status can be determined in the following ways:

   (Step 1) "*Yes,*" if Disposition is 1. "*No,*" if Disposition is 2. (disregard the Status field in these cases). If Disposition is 3 or blank, continue searching.

   (Step 2) "*Yes,*" if Status is 'T.' If Status is I, C, or R, keep searching.

   (Step 3) "*Yes,*" if summary narrative reveals that case is ongoing with CPS, CWS, FRS, or ARS. "*No,*" if Summary narrative indicates that case is closed to DCFS services. If text does not provide further clues to case status, keep searching.

   (Step 4) Look up the victim through Person Search and type 'C' for Case information. Find the Case # which you recorded from the referral, and type 'N' in the field next to the case #. Check the Worker Assignment Log to determine open/close dates for DCFS programs. Ignore the INA cases as these look open, but are inactive.

33-39. PLACEMENT INFORMATION:

Look up the victim that you have identified through ***Person Search*** in CAMIS and type 'P' next to the name to review that child's "***official placement***" data.

for this Placement Information section, we are only concerned with official Placements which are found in CAMIS/ Exclude Informal Placements which may be found in case narrative, Please do not record in-home dependencies (BA or BN type) here if that was the only placement event in the episode.** (those may be recorded in #30f in the Other Documented Case Outcome section.)

33. **Does the victim have an official placement prior to the date of the initial referral?**

    Only consider placement episodes which involved more than just protective custody, (placement longer than 5 days.) Circle appropriate response.

34. **Are there prior official placements of other children in the family?:** *to look up sibling placements*: On the line next to the victim in Person Search, type an 'F' to review family relationships. Type 'P' next to the names of all siblings on the list, then press 'Enter.' After reviewing the 1st sibling's placement history, push 'F12' to see the next sibling's history....and so forth.

    Only consider sibling placement episodes which involved more than just protective custody, (placement longer than 5 days.) Circle appropriate response.

Anomaly Rule: If the victim was placed prior to the referral & remains in placement after referral, but the allegations are regarding the child's non-foster parent caregivers (e.g. bioparents in past or during visitation)…. Code "Yes" for prior placement, "Yes" for placement since referral, and enter the original OPD of the child's placement, (despite what the question says.)

35. **Has the victim been in any official placement within 1 year since the date of the initial referral (or that began on the date of the referral)?:** First, you will need to determine what the 1 year window of time following the received date of this referral would be. Then, check the placement record for the victim to see if the victim has spent any time in official placement within the defined 1- year period. *This includes placements which **began on the day of the referral.***

    The answer to this question is "Yes" if **any** official placement (even protective custody only) has occurred for the victim within the defined 1-year period.

    If the answer if "**Yes**," complete all remaining questions on this form.
    If the answer is "**No**," skip questions #35-37, and complete only question #38.

36. **If 'Yes,' what is the Original Placement Date (OPD) of the placement episode most immediately after the date of this referral? (or the episode which started on the day of the referral.) :** Enter the start date from the victim placement information screen of the placement episode directly following the referral received date.

    Leave blank if victim has not been placed within 1 year of the referral.

37. **What is the duration of the placement episode which began on the date noted in #36?**

    Calculate and report the number of days that the placement episode lasted for the episode which started on the OPD listed in #36. When calculating duration, count the day on which the episode began & the day on which it ended. For example, OPD 8/1/98 which ended 8/3/98 should be recorded as a 3-day placement.

Code "**999**" if placement episode was **ongoing at 1 year** past the referral date.

38. Did any placement episode within 1 year since the referral (or that started on the day of the referral) last longer than 5 days?

    Yes=1   (Circle 'Yes' if there was a placement within 1 year after the referral date (or that began

                      on the date of the referral,) which lasted *longer than 5 days* for the victim (i.e. the

                      placement involved more than just protective custody.)

    No=2   (Use 'No' all placements for the victim within the 1 year period

                      were protective custody only.)

Leave blank if victim has not been placed within 1 year of the referral.

39. Have there been official placements of another child (other children) in the family within 1 year following the referral?:   for sibling placements, only count placement episodes which involved more than just protective custody, (placement longer than 5 days.) Circle appropriate response.

<div align="center">Exclusion Rules for Referrals</div>

**When determining which referrals to Code on Data Collection forms or Count as Referral History or Re-referrals, remember the following guidelines:

♦ *Exclude* **Administrative** *(ADMIN)* **files.**
Access to these files is restricted and coders will be unable to review complete case history information
from CAMIS.

♦ *Exclude* **referrals with program codes of "FRS", "CWS", "DAY", "LIC", "HOM", and "ARS". Only "CPS" program referrals are to be coded.**

♦ *Exclude* **referrals with decision codes of I (Info-only), P (Pending), S (Referred to Licensing), and most T's (Third Party).**
Only referrals with decision codes of A (Accepted), R (Accepted & referred to ARS) as these meet intake screening decision criteria**, and L (Accepted Low Risk) should be counted/coded.**
See below for further explanation of when to count "T" referrals.

♦ *Exclude ALL "Sibling as Perpetrator"/Sibling SAY referrals, if they include ANY allegation(s) of sibling abuse.*
     ****If the sibling abuse referral is the sample referral from the sample list, *please make a note of this as the reason for not coding the referral for this project.* This will enable us to count the number of referrals which were excluded for this specific reason.****

♦ *Exclude* **all** *Daycare, Foster Home,* **and other** *Licensing Issues* **referrals/incident reports.**
(Most of these should not appear on sample lists, since referrals with licensing flags have already been removed from the sample, but it is important to exclude licensing referrals from Referral History and Re-Referral counts as well.)

♦ *Multiple Referrals* **are those referrals received within 10 days of another referral, which address the same incident.**
*Exclude Multiple Referrals **from Referral History and Re-referral Counts.**

♦ *Do not count Info-Only* **referrals as Re-referrals or as Referral History,**
     Only **Accepted** CPS (A, L, & R) referrals will be counted.

♦ *Do not count* **referrals on the** *Caregiver as a Child/Youth*

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(i.e. referrals before the parent was a parent.)

♦ *Exclude 3ʳᵈ Party referrals/allegations* unless they are committed by a caretaker, caretaker's paramour, or another person living in the home; this also means to exclude non-sibling SAY referrals, if the only perpetrator is the SAY, not a caregiver.

♦ *When determining Family Re-referrals and Referral History, only count referrals which involve at least one of the identified primary caretakers from the Initial referral and usually at least one of the same children that was in the home at the time of the Initial referral.)*
> (i.e. exclude relatives and some blended family situations which may be tied to the Referral History in CAMIS, but do not actually involve the same subject/caretaker as our identified "Initial" referral, (eg. the children's new stepmother is alleged to be abusive, but she was not a caretaker in the Initial referral.) If an alleged perp/primary caretaker from the Initial referral has joined an entirely new family (whole new set of kids) and is re-referred, do not count that referral as family chronicity. However, if the alleged perp/caretaker in the Initial referral has left the family home, but is re-referred for abusing one of the same victims in the Initial referral, do count this as a re-referral. If two unmarried caregiver's share custody of the child, then allegations of CA/N by either parent toward the child can be counted as re-referrals/referral hx).

Perpetrator Codes

01 Natural Parent
02 Adoptive Parent
03 Step Parent
04 Foster Parent
05 Parent's Paramour (Boyfriend/Girlfriend)
06 Grandparent
07 Sibling
08 Other Household Member
09 Institutional Employee (teacher, day care worker, group leader)
10 Child Care Provider (Non-Institutional)
11 Other Non-Household Member (a known entity)
12 Other Miscellaneous (Stranger/unknown perp)
13 Multiple Perpetrators (make note)

F Female
M Male
X Both (Use for multi-perps only)

A Adult   (18 or over)
C Child   (under 18)

Examples: a 25-year-old Adoptive Father would be coded as (02/M/A)
a 15-year-old Bio-mom would be coded as (01/F/C)
Use 00/D/K for unidentified perps

Referrer Codes

The referrer is the person or agency reporting the incident to CPS.

1 Social Service Professional (Counselors, DSHS personnel, therapeutic foster care providers, etc...)
2 Medical Professional
3 Legal/Justice (Law Enforcement, probation office, etc.)
4 Educator
5 Child Care Providers (Foster parents may be included here.)
6 Victims of CA/N
7 Parent of Victim
8 Other Relatives
9 Friends/Neighbors
11 Others (Landlords, Store employees, & others not meeting other definitions)

12 Anonymous
13 Self-Referral (Use this for Request for Services referrals & Self-
reported abuse.)

Victim Selection Criteria

♦ If the person identified in relation to the referral on the sample list **is shown to have the role "V"** (Victim) in the referral, then this is your victim.

(As long as the person has the role "V" as 1 of their referral role codes, this rule applies regardless of additional roles which the victim may have had.)

♦ When the person identified on the sample list **does not have a "V" as one of their role codes**, it will be necessary to select a new Victim.

Use the selection process below, and if you can locate a victim, then complete a colored demographic sheet for the victim you selected and staple the colored form to the top of your coding form.

1. Is the reference person on the referral a 'V'?

If the answer is *'Yes'*, then this is your victim.
If the answer is *'No'*, then go to Step 2.

2. Is there another 'V' listed on the referral screen other than the reference person?

If the answer is *'Yes'*, then pick the 1st 'V' listed from the top of the screen, and this is your victim.
If the answer is *'No'*, then try Step 3 for a last attempt.

3. See if you can tell from the referral text who a victim might be. If it appears from the text that there is more than one victim, pick the youngest. If that person has a name, please look him/her up in person search and provide demographics on the colored sheet.

***Findings will be missing for this type of unidentified victim. So just use 4(DK) in the #25 conclusion codes for any CA/N codes you identified at intake in relation to the Victim.   and carry the 4(DK) over to #26 as you code the MMCS-R2 CA/N issues from the narrative text.

APPENDIX E
Summary Tables of Significant Associations of Family And Case Demographic Variables With The Finding Decision

Table E.1
Significant Associations Between Demographic Variables and the Substantiation Decision
(N=1851, unless otherwise noted)

Family Demographic Variables	% Founded	% Unfounded	% Inconclusive	N
Victim Age at Referral *(collapse 2)*				*(N=1842)*
0-2 years	39%	32%	29%	507
3-5 years	31%	35%	34%	442
6-12 years	38%	34%	29%	641
13+	36%	25%	39%	252
Referral Demographic Variables	**% Founded**	**% Unfounded**	**% Inconclusive**	**N**
Region [1]				*(N=1837)*
Region 1	44%	29%	27%	190
Region 2	38%	34%	28%	284
Region 3	35%	27%	38%	570
Region 4	28%	38%	34%	219
Region 6	36%	36%	28%	574
Referrer Type *(MMCS collapse 1)* [2]				
Social Service	38%	27%	35%	310
Medical	46%	30%	24%	166
Legal/Justice	64%	19%	17%	191
Education	40%	31%	29%	372
Child Care *(includes foster parent)*	21%	40%	40%	38
Parent	20%	39%	41%	132
Friend/Neighbor/Other Relative	25%	39%	36%	347
Other	35%	31%	35%	95
Anonymous	24%	43%	34%	200
Referrer Type *(MMCS collapse 2)* [3]				
Professional	44%	28%	28%	1077
Community	25%	39%	36%	774
Referrer Source of Information				*(N=1698)*
1st Hand Knowledge	39%	31%	30%	927
2nd Hand Information	34%	37%	29%	335
Judgement Based on Circumstantial Evidence	34%	33%	34%	92
Victim Disclosure	33%	27%	39%	344
Referral Response Time				
Emergent	55%	20%	25%	362
Non-emergent	31%	36%	33%	1489
Intake Risk Tag [4]				*(N=1837)*
Moderate	29%	38%	33%	786
Moderately-High	35%	31%	35%	523
High	48%	26%	27%	528
Child in Danger of Imminent Harm?				*(N=1843)*
Yes	58%	18%	24%	209
No	33%	34%	33%	1574
Unknown	40%	35%	25%	60

[1] In order to conduct a successful chi-test of the region variable, Region 5 was omitted (N=14 with victim finding).

[2] Referrer type as categorized by MMCS-R2 narrative coding scheme; "Other" was collapsed to include other person, victim, self, & perpetrator.

[3] Professional includes: Legal/Justice, Social Services, Medical, Child Care Provider, and Education. Community includes: Anonymous, Victims, Parents, Other Relatives, Friend/Neighbor, Perpetrators, Other, and Self.

[4] Since sample criteria included only referrals with investigation summaries, nearly all referrals were risk tagged 3-5. Insufficient expected cell frequency to run as a continuous variable. Even after collapsing 2 missing tags, 4 low risk, and 8 mod-low risk, still insufficient cell size, thus this test compares only those referrals tagged 3, 4, & 5.

Significant Associations Between Demographic Variables and the Substantiation Decision,
(N=1851, unless otherwise noted)

CPS Type of CA/N Variables	% Founded	% Unfounded	% Inconclusive	N
CPS Single Major Type of CA/N *(subset)* [5]				*(N=1369)*
Physical Abuse only	38%	32%	30%	569
Sexual Abuse only	22%	38%	40%	122
Physical Neglect only	35%	35%	30%	678
Single vs. Multiple CPS CA/N Codes at Intake [6]				
Single CPS CA/N Code	36%	34%	30%	1520
Multiple CPS CA/N Codes	34%	28%	38%	331
CPS CA/N Code at Intake *(collapse)*				
PA only	38%	32%	30%	569
SA only	22%	38%	40%	122
PN only	35%	35%	30%	678
MN only	44%	28%	29%	80
EA only	45%	27%	29%	49
Other Type only/None Given	59%	32%	9%	22
Multiple CA/N	34%	28%	38%	331
CPS History Demographic Variables	**% Founded**	**% Unfounded**	**% Inconclusive**	**N**
CPS Prior Family History [7]				
Yes	38%	31%	31%	1171
No	32%	35%	32%	680
Number of Prior Accepted CPS Referrals *(collapse)*				
0	32%	35%	32%	680
1-2	35%	31%	34%	542
3-5	41%	28%	32%	374
6+	39%	36%	26%	255
Days Since Last Accepted Referral for Victim [8]				*(N=1051)*
(collapse) 0-30 days prior (w/in 1 month)	44%	28%	28%	166
31-90 days prior (>1 mo.- 3 mos.)	48%	25%	28%	145
91-180 days prior (>3 mos.- 6 mos.)	36%	34%	30%	161
181-365 days prior (>6 mos.- 1 yr.)	27%	37%	36%	179
366-730 days prior (>1 yr.- 2 yrs.)	36%	33%	31%	167
731-1825 days prior (>2 yrs.- 5 yrs.)	35%	30%	36%	190
1826-3878 days prior (over 5 yrs.)	35%	30%	35%	43

[5] Out of curiosity, I ran a second test of this variable comparing just PA-only to PN-only, and no significant differences were revealed between these two types after SA-only was removed from the test.

[6] The following collapses were applied prior to determination of whether referral had single or multiple CA/N codes: EA and MI; SA and SE; MN and PI; and Other = AB and/or EX.

[7] Only Accepted (A,L,R) CPS program referrals are counted. Referrals involving any allegations of CA/N by a sibling, licensing issues, ADMIN files, referrals on caregiver as a child, and those with only third party allegations are excluded. Referrals received within 10 days of another referral that addressed the same incident were excluded.

[8] Days from received date of last accepted CPS prior referral that involved the victim to the received date of the sample referral.

Significant Associations Between Demographic Variables and the Substantiation Decision,
(N=1851, unless otherwise noted)

Summary Assessment Demographics	% Founded	% Unfounded	% Inconclusive	N
Days from Referral to Summary Completion [9]				
(collapse) within 1 month (<30 days)	31%	38%	32%	464
>1 mo. – 2 mo. (31-60 days)	31%	35%	34%	334
>2 mo. – 3 mo. (61-90 days)	38%	30%	32%	217
>3 mo. – 4 mo. (91-120 days)	35%	34%	31%	198
>4 mo. – 6 mo. (121-180 days)	43%	26%	31%	269
>6 mo. – 9 mo. (181-270 days)	40%	29%	31%	226
>9 mo. – 1 yr. (271-365 days)	44%	29%	28%	80
>1 year	38%	32%	30%	63
Overall Risk Rating at Summary				*(N=1816)*
No Risk	18%	66%	16%	171
Low Risk	25%	46%	29%	677
Mod-Low Risk	36%	23%	41%	538
Moderate Risk	48%	13%	39%	229
Mod-High Risk	75%	8%	17%	108
High Risk	80%	1%	19%	93
Overall Risk Rating at Summary *(collapse)*				*(N=1816)*
No Risk, Low, Mod-Low	28%	40%	32%	1386
Moderate Risk	48%	13%	39%	229
Mod-High, High Risk	77%	5%	18%	201
Summary Disposition Code				
Risk/Open	72%	12%	17%	297
Risk Closed	37%	13%	50%	224
No Risk/Closed	28%	42%	31%	1202
Missing Disposition Code	30%	29%	41%	128
Case Ongoing in DCFS				
Yes	45%	27%	28%	871
No	28%	37%	35%	980

[9] Days from received date of sample referral to summary assessment input date.

Table E.2
Summary of Significant Associations*
(N=1851, unless otherwise noted)

Family Demographic Variables	Founded vs. U/I — more likely	Founded vs. U/I — less likely	Unfounded vs. F/I — more likely	Unfounded vs. F/I — less likely	Inconclusive vs. F/U — more likely	Inconclusive vs. F/U — less likely
Victim Age at Referral *(collapse 2, N=1842)* 0-2 years	X			X		X
3-5 years		X	X		X	
6-12 years	X		X			X
13+ years	X			X	X	
Referral Demographic Variables	**Founded vs. U/I — more likely**	**less likely**	**Unfounded vs. F/I — more likely**	**less likely**	**Inconclusive vs. F/U — more likely**	**less likely**
Region *(N=1837)* Region 1	X			X		X
Region 2	X		X			X
Region 3		X		X	X	
Region 4		X	X		X	
Region 6	X		X			X
Referrer Type *(MMCS collapse 1)* Social Service	X			X	X	
Medical	X			X		X
Legal/Justice	X			X		X
Education	X			X		X
Child Care		X	X		X	
Parent		X	X		X	
Friend/Neigh./Rel.		X	X		X	
Other		X		X	X	
Anonymous		X	X		X	
Referrer Type *(MMCS collapse 2)* Professional	X			X		X
Community		X	X		X	
Referrer Source of Information *(N=1698)* 1st Hand Knowledge						X
2nd Hand Information						X
Circumstantial Evidence					X	
Victim Disclosure					X	
Response Time Emergent	X			X		X
Non-emergent		X	X		X	
Intake Risk Tag *(N=1837)* Moderate		X	X		X	
Moderately-High		X		X	X	
High	X			X		X
Child in Danger of Imminent Harm? *(N=1843)* Yes	X			X		X
No		X	X		X	
Unknown	X		X			X
CPS CA/N Type Variables	**Founded vs. U/I — more likely**	**less likely**	**Unfounded vs. F/I — more likely**	**less likely**	**Inconclusive vs. F/U — more likely**	**less likely**
CPS Single Major Type of CA/N *(subset, N=1369)* Physical Abuse only	X					
Sexual Abuse only		X				
Physical Neglect only	X					
Single vs. Multiple CPS CA/N Single CPS CA/N Code						X
Multiple CPS CA/N Codes					X	

* This table provides a summary of the family and case demographics discovered to be significantly associated (.05 or less) with each substantiation decision and provides the direction of the association.

CPS CA/N Type Variables, cont…	Founded vs. U/I		Unfounded vs. F/I		Inconclusive vs. F/U	
CPS CA/N Code at Intake (*collapse*)						
PA only	X					X
SA only		X			X	
PN only		X				X
MN only	X					X
EA only	X					X
Other Type only/None Given	X					X
Multiple CA/N		X			X	

CPS History Demographic Variables	Founded vs. U/I		Unfounded vs. F/I		Inconclusive vs. F/U	
	more likely	less likely	more likely	less likely	more likely	less likely
CPS Prior Family History Yes	X			X		
No		X	X			
Number of Prior Accepted CPS Referrals (*collapse*) 0		X	X			
1-2		X				X
3-5	X					X
6+	X			X		
Days Since Last Accepted Referral for Victim (*collapse, N=1051*)						
0-30 days prior (w/in 1 month)	X					
31-90 days prior (>1 mo.- 3 mo.)	X					
91-180 days prior (>3 mo.- 6 mo.)		X				
81-365 days prior (>6 mo.- 1 yr.)		X				
366-730 days prior (>1 yr.- 2 yr.)		X				
731-1825 days prior (>2 yr.- 5 yr.)		X				
1826-3878 days prior (over 5 yr.)		X				

Summary Assessment Demographics	Founded vs. U/I		Unfounded vs. F/I		Inconclusive vs. F/U	
	more likely	less likely	more likely	less likely	more likely	less likely
Days to Summary Completion						
within 1 month (<30 days)		X	X			
>1 mo. – 2 mo. (31-60 days)		X	X			
>2 mo. – 3 mo. (61-90 days)	X			X		
>3 mo. – 4 mo. (91-120 days)		X	X			
>4 mo. – 6 mo. (121-180 days)	X			X		
>6 mo. – 9 mo. (181-270 days)	X			X		
>9 mo. – 1 yr. (271-365 days)	X			X		
>1 year	X			X		
Overall Risk No Risk		X	X			X
(*N=1816*) Low Risk		X	X			X
Mod-Low Risk		X		X	X	
Moderate Risk	X			X	X	
Mod-High Risk	X			X		X
High Risk	X			X		X
Overall Risk (*collapse, N=1816*)						
No risk, Low, Mod-Low		X	X		X	
Moderate Risk	X			X	X	
Mod-High, High Risk	X			X		X
Summary Disposition Code						
Risk/Open	X			X		X
Risk Closed	X			X	X	
No Risk/Closed		X	X			X
Missing Disposition Code		X		X	X	
Case Ongoing in DCFS Yes	X			X		X
No		X	X		X	

* This table provides a summary of the family and case demographics discovered to be significantly associated (.05 or less) with each substantiation decision and provides the direction of the association.

Summary Table of Bivariate Associations of Finding with Individual Risk Factor Ratings

Table F.1
Bivariate Associations of Finding with Individual Risk Factor Ratings

Risk Matrix Factor: Child Characteristics	Founded vs. U/I		Unfounded vs. F/I		Inconclusive vs. F/U	
	more likely	less likely	more likely	Less likely	more likely	less likely
Child Physical/Mental/Social Development *(N=1708)*						
0/NA		X				
1		X				
2	X					
3	X					
4	X					
5	X					
Child Behavioral Issues *(N=1724)*						
0/NA		X	X			
1	X			X		
2	X			X		
3	X			X		
4	X			X		
5		X	X			
Child Self Protection *(N=1802)*						
0/NA		X	X			
1		X	X			
2	X			X		
3	X			X		
4	X			X		
5	X			X		
Child Fear of Caregiver/Home Environment *(N=1671)*						
0/NA		X	X			
1	X			X		
2	X			X		
3	X			X		
4	X			X		
5	X			X		

* This table provides a summary of the risk matrix factor ratings discovered to be significantly associated (.05 or less) with each substantiation decision and provides the direction of the association.

Collapse 1 for the risk matrix ratings was as follows: no risk (family strength rating) was combined with not applicable, insufficient information to assess was recoded to missing, and all other ratings (1-5) were treated as continuous variables. Using collapse 1, several risk matrix factors did not have an adequate N and distribution of ratings for reliable chi-tests due to insufficient expected cell counts . They are as follows: Sexual Abuse/Exploitation, Non-sexual Exploitation, Deviant Arousal (CG1), Deviant Arousal (CG2), Nurturance (CG2), Protection of Child by Non-Abusive Caretaker (CG2), Response to Child's Behavior/Misconduct (CG2), Attachment and Bonding (CG2), Child's Role in Family (CG2), Child is Pressured to Recant/Deny (CG1), Child is Pressured to Recant/Deny (CG2), Personal Boundary Issues (CG1), Personal Boundary Issues (CG2), and Economic Resources (CG2).

Table F.1 (continued)
Bivariate Associations of Finding with Individual Risk Factor Ratings

Risk Matrix Factor: Severity of CA/N	Founded vs. U/I		Unfounded vs. F/I		Inconclusive vs. F/U	
	more likely	less likely	more likely	Less likely	more likely	less likely
Dangerous Acts *(N=1705)*						
0/NA		X	X			X
1		X		X	X	
2	X			X	X	
3	X			X	X	
4	X			X		X
5	X			X		X
Extent of Physical Injury/Harm *(N=1713)*						
0/NA		X	X			X
1	X			X	X	
2	X			X	X	
3	X			X		X
4	X			X		X
5	X			X		X
Emotional Harm/Damage Exhibited by Child *(N=1533)*						
0/NA		X	X		X	
1	X			X	X	
2	X			X	X	
3	X			X		X
4	X			X		X
5	X			X		X
Adequacy of Medical/Dental *(N=1646)*						
0/NA		X	X		X	
1	X			X		X
2	X			X		X
3	X			X		X
4	X			X		X
5	X			X		X
Provision for Basic Needs *(N=1734)*						
0/NA		X	X		X	
1	X			X		X
2	X			X		X
3	X			X		X
4	X			X		X
5	X			X		X
Adequacy of Supervision *(N=1677)*						
0/NA		X	X			X
1		X		X	X	
2	X			X	X	
3	X			X		X
4	X			X		X
5	X			X		X
Physical Hazards in Home/Living Environment *(N=1534)*						
0/NA		X	X			
1		X		X		
2	X			X		
3	X			X		
4	X			X		
5	X			X		
Risk Matrix Factor: Chronicity	**Founded vs. U/I**		**Unfounded vs. F/I**		**Inconclusive vs. F/U**	
Frequency of CA/N *(N=1697)*						
0/NA		X	X			X
1		X		X	X	
2	X			X	X	
3	X			X	X	
4	X			X		X
5	X			X		X

* This table provides a summary of the risk matrix factor ratings discovered to be significantly associated (.05 or less) with each substantiation decision and provides the direction of the association.

Bivariate Associations of Finding with Individual Risk Factor Ratings

Risk Matrix Factor: Caregiver Characteristics	Founded vs. U/I		Unfounded vs. F/I		Inconclusive vs. F/U	
Victimization of Other Children – *Caregiver 1* (*N=1586*) 0/NA		X	X		X	
1		X		X	X	
2	X			X	X	
3	X			X		X
4	X			X		X
5	X			X		X
Victimization of Other Children – *Caregiver 2* (*N=993*) 0/NA		X	X			
1		X		X		
2	X			X		
3	X			X		
4	X			X		
5	X			X		
Mental/Physical/Emotional Impairment – *Caregiver 1* (*N=1553*) 0/NA		X	X		*expected*	*expected*
1		X		X	X	
2		X		X	X	
3	X			X		X
4	X			X		X
5	X			X		X
Mental/Physical/Emotional Impairment – *Caregiver 2* (*N=986*) 0/NA		X	X			
1	*expected*	*Expected*		X		
2	X			X		
3	X			X		
4	X			X		
5	X			X		
Substance Abuse – *Caregiver 1* (*N=1256*) 0/NA		X	X			
1		X	X			
2		X	X			
3	X			X		
4	X			X		
5	X			X		
Substance Abuse – *Caregiver 2* (*N=869*) 0/NA		X	X		X	
1		X		X	X	
2		X	X		*expected*	*expected*
3	X			X	X	
4	X			X		X
5	X			X		X
Hx Domestic Violence/Assaultive Behavior – *Caregiver 1* (*N=1227*) 0/NA		X	X			
1		X	X			
2	*expected*	*Expected*		X		
3	X			X		
4	X			X		
5	X			X		
Hx Domestic Violence/Assaultive Behavior – *Caregiver 2* (*N=892*) 0/NA		X	X			X
1		X	X		X	
2		X		X	X	
3	X			X	X	
4	X			X		X
5	X			X		X

Table F.1 (continued)
Bivariate Associations of Finding with Individual Risk Factor Ratings

Risk Matrix Factor: Caregiver Characteristics	Founded vs. U/I		Unfounded vs. F/I		Inconclusive vs. F/U	
History of CA/N as a Child – *Caregiver 1* *(N=824)*						
0/NA		X	X		X	
1		X		X	X	
2	X			X	X	
3	X			X		X
4	X			X		X
5	X			X		X
History of CA/N as a Child – *Caregiver 2* *(N=576)*						
0/NA		X	X			
1		X	X			
2		X	*expected*	*expected*		
3	X			X		
4	X			X		
5	X			X		
Parenting Skills and Knowledge – *Caregiver 1* *(N=1676)*						
0/NA		X	X			X
1		X	X		X	
2	X			X	*expected*	*expected*
3	X			X		X
4	X			X		X
5	X			X		X
Parenting Skills and Knowledge – *Caregiver 2* *(N=1012)*						
0/NA		X	X			X
1		X	X		X	
2		X		X	X	
3	X			X		X
4	X			X		X
5	X			X		X
Nurturance – *Caregiver 1* *(N=1598)*						
0/NA		X	X			
1	X			X		
2	X			X		
3	X			X		
4	X			X		
5	X			X		
Recognition of Problem – *Caregiver 1* *(N=1707)*						
0/NA		X	X			X
1		X		X	X	
2		X		X	X	
3	X			X		X
4	X			X		X
5	X			X		X
Recognition of Problem – *Caregiver 2* *(N=1051)*						
0/NA		X	X		X	
1		X	X		X	
2		X		X	X	
3	X			X		X
4	X			X		X
5	X			X		X
Protection of Child by Non-Abusive Caretaker – *Caregiver 1* *(N=1655)*						
0/NA		X	X			X
1		X		X	X	
2	*Expected*	*Expected*		X	X	
3	X			X		X
4	X			X		X
5	X			X		X

* This table provides a summary of the risk matrix factor ratings discovered to be significantly associated (.05 or less) with each substantiation decision and provides the direction of the association.

Bivariate Associations of Finding with Individual Risk Factor Ratings

Risk Matrix Factor: Caregiver Characteristics	Founded vs. U/I		Unfounded vs. F/I		Inconclusive vs. F/U	
Cooperation with Agency – *Caregiver 1* (N=1748) 0/NA		X	X			
1	X			X		
2	X			X		
3	X			X		
4	X			X		
5	X			X		
Cooperation with Agency – *Caregiver 2* (N=1084) 0/NA		X	X			
1		X		X		
2	X			X		
3	X			X		
4	X			X		
5	X			X		
Risk Matrix Factor: Caregiver-Child Relationship	**Founded vs. U/I**		**Unfounded vs. F/I**		**Inconclusive vs. F/U**	
Response to Child's Behavior/Misconduct – *Caregiver 1 (N=1596)* 0/NA		X	X			
1	*expected*	*Expected*		X		
2	X			X		
3	X			X		
4	X			X		
5	X			X		
Attachment and Bonding – *Caregiver 1 (N=1589)* 0/NA		X	X			
1	X			X		
2	X			X		
3	X			X		
4	X			X		
5	X			X		
Child's Role in Family – *Caregiver 1 (N=1528)* 0/NA		X	X			
1	X			X		
2	X			X		
3	X			X		
4	X			X		
5	X			X		
Parental Response to Abuse/Disclosure – *Caregiver 1 (N=1669)* 0/NA		X	X			X
1	X			X	X	
2	X			X	X	
3	X			X	X	
4	X			X		X
5	X			X		X
Parental Response to Abuse/Disclosure – *Caregiver 2 (N=1064)* 0/NA		X	X			
1		X	X			
2	X			X		
3	X			X		
4	X			X		
5	X			X		
Risk Matrix Factor: Social and Economic	**Founded vs. U/I**		**Unfounded vs. F/I**		**Inconclusive vs. F/U**	
Stress on Caretaker – *Caregiver 1 (N=1594)* 0/NA		X	X			
1		X	X			
2		X	X			
3	X			X		
4	X			X		
5	X			X		

- This table provides a summary of the risk matrix factor ratings discovered to be significantly associated (.05 or less) with each substantiation decision and provides the direction of the association.

Bivariate Associations of Finding with Individual Risk Factor Ratings

Risk Matrix Factor: Social and Economic	Founded vs. U/I		Unfounded vs. F/I		Inconclusive vs. F/U	
Stress on Caretaker – *Caregiver 2 (N=999)*						
0/NA		X	X			X
1		X	X			X
2		X		X	X	
3	X			X	X	
4	X			X		X
5	X			X		X
Employment Status of Caretaker – *Caregiver 1 (N=1625)*						
0/NA		X	X			
1		X		X		
2		X	X			
3	X			X		
4	X			X		
5	X			X		
Employment Status of Caretaker – *Caregiver 2 (N=1073)*						
0/NA		X	X			
1		X	X			
2	X		*expected*	*expected*		
3	X			X		
4	X			X		
5	X			X		
Social Support for Caretaker – *Caregiver 1 (N=1545)*						
0/NA		X	X			
1		X		X		
2	X			X		
3	X			X		
4	X			X		
5	X			X		
Social Support for Caretaker – *Caregiver 2 (N=976)*						
0/NA		X	X			
1	X			X		
2	X			X		
3	X			X		
4	X			X		
5	X			X		
Economic Resources – *Caregiver 1 (N=1593)*						
0/NA		X	X			X
1		X	X		X	
2	X			X	X	
3	X			X		X
4	X			X		X
5	X			X		X
Risk Matrix Factor: Perpetrator Access	**Founded vs. U/I**		**Unfounded vs. F/I**		**Inconclusive vs. F/U**	
Perpetrator Access/Responsibility for Child – *Caregiver 1 (N=1740)*						
0/NA		X	X			X
1		X		X	X	
2		X		X	X	
3	X			X	X	
4	X			X	X	
5	X			X		X
Perpetrator Access/Responsibility for Child – *Caregiver 2 (N=1162)*						
0/NA			X			X
1			X		X	
2				X	X	
3				X	X	
4				X	X	
5				X		X

* This table provides a summary of the risk matrix factor ratings discovered to be significantly associated (.05 or less) with each substantiation decision and provides the direction of the association.

Summary Table 2 of Significant Associations
with Victim Composite Finding and Re-Referral*

Table G.1
Significant Associations with Victim Composite Finding and Re-referral*
(N=1851, unless otherwise noted for collapsed variables)

Re-referral Variable	Composite Finding on Sample Referral		
	Founded	Unfounded	Inconclusive
Family Re-referral within 1 year of sample referral	X	X	
Victim Re-referral within 1 yr. of sample referral		X	
Victim Composite Finding on 1st Victim Re-referral *(N=353)*	X	X	X
Days from Sample Referral to 1st Victim Re-referral *(N=645)*	X	X	
Highest MMCS Severity Rating on 1st Victim Re-referral *(N=627)*	X	X	X

* This table provides a summary of the re-referral variables that were discovered to be significantly associated (.05 or less) with each substantiation decision.

APPENDIX H
Data Extraction Details

A. Extraction of Administrative Data Set

The data set is electronically extracted from a computerized statewide data management system known as CAMIS (Case and Management Information System).

The demographic, case, summary assessment, and investigation information from CAMIS is electronically retrieved from the Washington State mainframe computer using a computer program written in a programming language code called Natural. The data download from the mainframe includes all Child Protective Services (CPS) referrals which met screen-in criteria as either "accepted" or "accepted low risk" between 7/1/1994 and 12/31/1997. This computer program isolates requested data elements from the mainframe computer such as gender and ethnicity, extracts them, and places or saves them in a new computerized file called a fixed file or fixed record format. The data elements in this format are "fixed" in position and locatable by width and column designation.

Two separate files are created using this system. One contains Intake and Summary Assessment information measured by referral, the other contains Investigation Findings data measured by victim and subject. These files are then transferred or "downloaded" to a personal computer (PC). As the files are "downloaded," they are converted to a standard file format, or "text file", which can be easily read and loaded by computer software. These converted text files are then read into the statistical software package SPSS for Windows 6.1.3 (Statistical Package for the Social Sciences).

In this program, the data elements are isolated by using the fixed file format, locatable by fixed column positions. They are defined by width and type (i.e. numeric, date), and properly labeled for ease of identification. Alphabetical data are transformed, or "recoded" to numeric values for computational purposes, and newly created and collapsed data elements, such as, age and region are computed. The files are saved as SPSS .SAV system files, which uses SPSS's own system language format for efficiency and speed of computational use.

In a final database construction phase, the separate SPSS .SAV files are reorganized and combined for ease of statistical modeling. This entails merging each victim and subject's data from the Investigation file back to the main data set containing the Intake and Summary Assessment data. In this way, each record or line of data represents a single referral with each Victim and Subject's Investigation data attached to the end of the record.

The investigation findings screens have been implemented in CAMIS since 9/1/1996, however they were not mandated. Workers had the option of completing a summary assessment without corresponding investigation findings screens. Since this project's goal is to study the substantiation decision, we are primarily interested in only those referrals which have the level of detail available in the investigation finding screens. Whereas the old summary assessment on its own only has a single finding code (substantiation decision) which is not necessarily tied to any particular referral, subject, victim, or type of abuse or neglect, the newer summary assessment which has the corresponding investigation findings screens includes detailed substantiation information that is directly linked to a specific referral, for each type of abuse or neglect, and by each alleged victim and subject in the referral.

B Unduplication Procedure

A number of cases had more than one intake referral associated with the same summary assessment and investigations module. These result from families with multiple referrals that occur within a given CPS investigative process. The caseworker(s) thus electronically link all relevant referrals to the summary assessment and record of substantiation and other case decisions. Much of the information in the multiple intake referrals is duplicative, e.g., gender and ethnicity of the child. Different referrals do refer to different allegations of abuse and/or neglect, with (often) different referents and intake risk levels. The investigations module linked to these referrals should, however, contain separate substantiation decisions for each of the multiple allegations contained in the separate intake referrals (multiple allegations can also be made in any single intake referral). To provide a single set of intake referral information for these multiple referral cases, for multiple referrals received on the same family with the same summary assessment completion date, the referral with the maximum risktag was selected; if more than one referral with maximum (equal) risktags, the one received *closest* to the summary assessment completion date was selected. This was done to give the intake referral that might be reasonably expected to be the most severe one, the one that "drives" the CPS investigation decisions and findings. All other referrals were deleted. The N resulting from this and the above selection procedures was 9,079 (Prior to unduplication, N = 10,394).

C. Imputation and Variable Construction

Risk factors were calculated via a different procedure than the one used in the previous project. In the CPS decision making project, the linkage between intake and summary assessment information was not as reliable, and a larger proportion of referrals had a large number of missing risk factors, particularly for the secondary caregiver. For that reason, it was decided in that project to disregard secondary caregiver risk factor information and perform the substantiation (and other) decision modeling on the basis of the primary caregiver risk factor information alone. In this investigations module download, the proportion of referrals with secondary caregiver risk factor information was higher and the linkage more reliable. Therefore, risk factors for all referrals were constructed by taking the maximum of the primary or secondary risk factor if both existed. If one of the two was missing or "insufficient," but the other was given an actual risk rating (0-5), the actual risk rating was used. If both were missing or insufficient, imputation was performed for the missing value(s).

Referrals with more than 10 risk factors missing or labeled "insufficient information to assess" were removed from the above data set. For the remaining referrals, missing and risk factors and risk factors labeled "insufficient information to assess" were imputed randomly. From the investigation module information, an aggregate type of abuse variable was constructed. The frequencies of the various types of abuse dictated the following categories: sexual abuse only, physical abuse only, physical neglect only, sexual abuse plus other type(s) of abuse or neglect, and physical neglect with other type(s) except sexual abuse. (Other minor categories also exist such as medical neglect or abandonment only, multiples such as emotional abuse plus medical neglect, but these did not occur in sufficient numbers for meaningful multivariate analysis.) the final N for the imputed, multivariate analysis data set was 7,701. This file used for the logistic regression, nonlinear discriminant, neural network and generalized additive model analyses described below.

D. Test of Investigation Module Referrals

A comparison group of referrals from the same period but without investigations modules were also selected. Like the investigations module data set described above, these referrals were received 9/1/96 through 8/31/97; all were high standard of investigation, none were licensed facility referrals, all had summary assessments (all investigation module referrals had summary

assessments), and no Alternative Response referrals were included. The N of this comparison data set was 16,280 referrals.

The CHAID software package was used to test bivariate associations with a dichotomous grouping variable (investigation module referral vs. non-investigation module referral). Results of this comparison test were that there are significant differences between investigation module referrals (IMR) and non-investigation module referrals (NIMR) in a number of key variables. A substantial portion of these differences are due to regional differences; there is a wide variation in the proportion of all referrals having an investigation module by region (30% in regions 3 and 6, 11-15% in regions 1, 2, and 4, 1% in region 5), indicating a wide regional variation in the rate of implementation of the investigations module by caseworkers. Thus, differences in regional risk assessment practices account for much of the (apparent) differences between IMR and NIMR, with most of these due to different practices in region 5. Differences that remain after controlling for region also vary from region to region; e.g., there is a higher investigation module completion rate for Native Americans in region 6 compared to Caucasians, but a lower one in region 3.

Some of the principal differences that are present for all regions also remain after region 5 is removed from the comparison test set: IMR have a lower % of emergent response times (19% vs. 24% for NIMR), a higher percentage of initial status referrals (15% vs. 11%), and are more likely to be done on Caucasians and less likely on African Americans (ethnic composition of IMR 77% Caucasian, 6% African American, vs. 71% Caucasian and 11% African American for NIMR). IMR have a lower % of Social Service referents (17% vs. 21% for NIMR), but lower total Professional and higher total Community referents (57% Professional and 43% Community vs. 61% Professional and 39% Community for NIMR. Finally, IMR have a somewhat lower overall risk rating (Tukey M-estimator 1.7 vs. 1.8 for NIMR), a longer length of service (Tukey M-estimator 76 days vs. 66 days for NIMR), and a slightly younger age of victim (Tukey M-estimator 6.6 years vs. 7.7 years for NIMR).

None of these differences are of sufficient magnitude to raise serious concerns about how representative IMR are of all referrals, but should be kept in mind when interpreting the multivariate modeling results.

E. Replication and Data Set Differences with the Previous Study
The data set used here is different from the one used in the previous substantiation study in several important ways. Most critically, the error rate for linkage of the intake information and summary assessment information is much lower, an estimated few percent compared to the 25% error rate of the previous study. The most important ramification of this difference is that there is a much cleaner division of referrals by type(s) of abuse: there is a much lower cross-contamination by different type(s) of abuse, and referrals identified as concerning a single type of abuse are much less likely to actually concern multiple types of abuse. Related to this, the actual findings on the referral (from the investigation module) are more reliably connected to the type of abuse indicated in the intake information. In addition, the use of secondary caregiver risk factor information to supplement the primary caregiver information also results in cleaner, more consistent models.

When the referrals in the investigation module data set are processed via the same procedures as those used in the previous study (see CPS decision making report), that is, when the same referral selection criteria are used, when the summary assessment finding is used as the dependent (outcome) variable, when only the primary caregiver risk factors are used, and when the missing and insufficient risk factors are imputed as before, then the previous neural network

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models of the substantiation decision are replicated: running them on this new set of referrals results in the same classification accuracies as previously achieved, with essentially the same network coefficients and sensitivity values. This indicates that the previous determinations of relative importance of risk factors are accurate for the new set of referrals, provided the risk factors are selected in the same way. Some differences *are* seen, however, between these older substantiation models and the new ones described below. These differences are attributable to the differences in data set and variable construction noted above. In addition, a substantially lower data set variance ("noise level") due to the improved information linking procedures allowed the use of statistical methods that revealed a new level of detail regarding the association of risk factors with the substantiation decision.

APPENDIX I

Technical Description of the OVERALS Procedure Used to Conduct NCCA

Note 1: OVERALS is a technique that minimizes the squared distance between unknown *object scores* (latent variables) and linear combinations of variables, organized in sets. The variables can be transformed nonlinearly according to measurement restrictions (linear, ordinal, or nominal), and the object scores must be standardized and uncorrelated... Geometrically, the definition of OVERALS means that linear subspaces are searched for in the space spanned by each set of variables that are as similar as possible to the (unknown) object space. At the same time the variables are transformed nonlinearly, which implies that the linear spaces are large enough to include all nonlinear transformations. Thus a variable is no longer represented as a single vector, but as a cone of vectors, from which the best vector is chosen (Gifi, 1981, page 435). The object scores are comparable with principal components in principal component analysis (PCA), where they represent the space that optimally fits all variables at the same time. For OVERALS the object scores fit all the canonical variates in an optimal way. As a canonical variate may account for only a small proportion of the total variance of a set of variables, PCA and CCA may differ in their results.

APPENDIX J
Model Summaries for Chapter V[88] Type-Specific Linear Discriminant Analyses

1. General
General Model (N=1,851)
Model D88: GCA is 58.5% (CV is 57.3%). U= 67.8%; I=42.6%; F=64.2%.
13 variables. 0 cases excluded
VARIABLES=V8c2 cntalleg ftp_msev neglaw MMCSem lesstang regincut
PA newinsff nsuffq5 overallx domnum emab V210 V214 V219 V216C7
V216C21

Table J.1
General

**Standardized Canonical Discriminant Function
Coefficients**

	Function	
	1	2
referrer type collapse2	-.200	.180
cntalleg: count of allegations (0-6)	.037	.423
ftp_msev: max. severity of failure to provide	.004	-.308
NEGLAW	.217	-.128
Did ref allege mcs-emot maltx?	.093	.211
LESSTANG	.388	.035
REGINCUT	-.063	-.223
vic recd or assoc w/pub asst 9/96-8-97	-.109	-.014
NEWINSFF	-.008	.507
nsuffq5: Are factors which place child in imminent harm present?	.127	-.154
OVERALLX	.538	.221
domnum: number of domains with risk	.362	-.092
emab: emotional maltreatment (only)	.211	.027
injury accidental	.159	.086
issues resolved family addressing	-.129	-.054
ongoing in dcfs	-.089	.223
SOCIAL WORKER FRAMING OF INCIDENT	.267	-.016
INCONCLUSIVE EVIDENCE: UNABLE TO TELL WHO DID ACT, CONFLICTING INFO, ETC	.048	-.549

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[88] That is, results associated with screening of variables in the course of development of the Part III General Model, with summary risk information. Descriptive content of the variables, their names abbreviated in this Appendix, can be seen above, in Table J.1.

Table J.2
General

Structure Matrix

	Function	
	1	2
OVERALLX	.669*	.168
domnum: number of domains with risk	.556*	.005
LESSTANG	.369*	.103
referrer type collapse2	-.285*	.259
SOCIAL WORKER FRAMING OF INCIDENT	.256*	.000
ongoing in dcfs	-.255*	.192
nsuffq5: Are factors which place child in imminent harm present?	.248*	-.168
NEGLAW	.197*	-.194
injury accidental	.161*	.094
emab: emotional maltreatment (only)	.145*	-.065
issues resolved family addressing	-.076*	-.027
Did ref allege mcs-emot maltx?	.017*	.002
INCONCLUSIVE EVIDENCE: UNABLE TO TELL WHO DID ACT, CONFLICTING INFO, ETC	-.002	-.595*
NEWINSFF	.079	.545*
cntalleg: count of allegations (0-6)	-.053	.269*
ftp_msev: max. severity of failure to provide	-.003	-.180*
REGINCUT	-.093	-.170*
mle_msev: max. severity of moral/legal/educ. neglect[a]	-.043	.149*
vic recd or assoc w/pub asst 9/96-8-97	-.019	-.077*
FAMILY CONFLICT[a]	-.015	.048*
OTHER FAMILY STRENGTH[a]	.001	.024*

Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions
Variables ordered by absolute size of correlation within function.

[*]. Largest absolute correlation between each variable and any discriminant function

a. This variable not used in the analysis.

Table J.3
General

Classification Results[b,c]

		finding decision (-1,0,1)	Unsubst.	Inconcl.	Founded	Total
Original	Count	Unsubst.	408	102	92	602
		Inconcl.	166	249	170	585
		Founded	104	134	426	664
	%	Unsubst.	67.8	16.9	15.3	100.0
		Inconcl.	28.4	42.6	29.1	100.0
		Founded	15.7	20.2	64.2	100.0
Cross-validated[a]	Count	Unsubst.	404	103	95	602
		Inconcl.	173	237	175	585
		Founded	108	137	419	664
	%	Unsubst.	67.1	17.1	15.8	100.0
		Inconcl.	29.6	40.5	29.9	100.0
		Founded	16.3	20.6	63.1	100.0

The top header "Predicted Group Membership" spans Unsubst., Inconcl., and Founded columns.

a. Cross validation is done only for those cases in the analysis. In cross validation, each case is classified by the functions derived from all cases other than that case.

b. 58.5% of original grouped cases correctly classified.

c. 57.3% of cross-validated grouped cases correctly classified.

2. Sexual Abuse Only

Sexual Abuse Only (N=60)
Model SA9: 64.4% GCA (CV= 59.3). U= 66.7%; I= 5.2%; F=80%. 4 variables; 1 case excluded.
VARIABLES= tang newagec2 riskmax cntalleg

Table J.4
Sexual Abuse Only

Standardized Canonical Discriminant
Function Coefficients

	Function 1	Function 2
TANG	.630	-.201
vic-of-int age at referral collapse 2	-.005	.918
riskmax: new risk max across all risk items	.802	-.037
cntalleg: count of allegations (0-6)	.449	.537

Table J.5
Sexual Abuse Only

Structure Matrix

	Function	
	1	2
riskmax: new risk max across all risk items	.701*	-.059
TANG	.564*	-.209
vic-of-int age at referral collapse 2	.044	.802*
cntalleg: count of allegations (0-6)	.184	.408*

Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions
Variables ordered by absolute size of correlation within function.

   *. Largest absolute correlation between each variable and any discriminant function

Table J.6
Sexual Abuse Only

Classification Results[b,c]

			Predicted Group Membership			
		finding decision (-1,0,1)	Unsubst.	Inconcl.	Founded	Total
Original	Count	Unsubst.	14	6	1	21
		Inconcl.	6	12	5	23
		Founded	1	2	12	15
	%	Unsubst.	66.7	28.6	4.8	100.0
		Inconcl.	26.1	52.2	21.7	100.0
		Founded	6.7	13.3	80.0	100.0
Cross-validated[a]	Count	Unsubst.	14	6	1	21
		Inconcl.	7	10	6	23
		Founded	2	2	11	15
	%	Unsubst.	66.7	28.6	4.8	100.0
		Inconcl.	30.4	43.5	26.1	100.0
		Founded	13.3	13.3	73.3	100.0

a. Cross validation is done only for those cases in the analysis. In cross validation, each case is classified by the functions derived from all cases other than that case.

b. 64.4% of original grouped cases correctly classified.

c. 59.3% of cross-validated grouped cases correctly classified.

3. Physical Abuse Only

Physical Abuse Only (N=522)

Model PA5: GCA=58.2% (CV=53.8%). U=65.3%; I=37.9%; F=69.1%. 11 variables. 3 cases excluded.

VARIABLES=overallx tang V216C21 v8c2 v216c7 v214 pa newagec2 rst_msev riskmax sever

Table J.7
Physical Abuse Only

Standardized Canonical Discriminant Function Coefficients

	Function	
	1	2
OVERALLX	.378	-.698
TANG	.499	.093
INCONCLUSIVE EVIDENCE: UNABLE TO TELL WHO DID ACT, CONFLICTING INFO, ETC	.094	.688
referrer type collapse2	-.291	-.108
SOCIAL WORKER FRAMING OF INCIDENT	.353	-.002
issues resolved family addressing	-.247	.035
vic recd or assoc w/pub asst 9/96-8-97	-.249	.017
vic-of-int age at referral collapse 2	.268	-.234
rst_msev: Restricted overall severity of allegations (EMAB sev. used only if others are 0)	-.124	.394
riskmax: new risk max across all risk items	.249	.783
sever: severity domain	.346	-.008

Table J.8
Physical Abuse Only

Structure Matrix

	Function	
	1	2
OVERALLX	.497*	-.205
sever: severity domain	.495*	.149
riskmax: new risk max across all risk items	.466*	.283
TANG	.404*	-.039
SOCIAL WORKER FRAMING OF INCIDENT	.283*	.072
referrer type collapse2	-.263*	-.123
vic-of-int age at referral collapse 2	.257*	-.239
issues resolved family addressing	-.183*	.034
vic recd or assoc w/pub asst 9/96-8-97	-.161*	.140
INCONCLUSIVE EVIDENCE: UNABLE TO TELL WHO DID ACT, CONFLICTING INFO, ETC	-.037	.644*
rst_msev: Restricted overall severity of allegations (EMAB sev. used only if others are 0)	.036	.315*

Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions Variables ordered by absolute size of correlation within function.

*. Largest absolute correlation between each variable and any discriminant function

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Table J.9
Physical Abuse Only

Classification Results[b,c]

			Predicted Group Membership			
		finding decision (-1,0,1)	Unsubst.	Inconcl.	Founded	Total
Original	Count	Unsubst.	111	28	31	170
		Inconcl.	47	61	53	161
		Founded	21	37	130	188
	%	Unsubst.	65.3	16.5	18.2	100.0
		Inconcl.	29.2	37.9	32.9	100.0
		Founded	11.2	19.7	69.1	100.0
Cross-validated[a]	Count	Unsubst.	106	32	32	170
		Inconcl.	53	50	58	161
		Founded	21	44	123	188
	%	Unsubst.	62.4	18.8	18.8	100.0
		Inconcl.	32.9	31.1	36.0	100.0
		Founded	11.2	23.4	65.4	100.0

a. Cross validation is done only for those cases in the analysis. In cross validation, each case is classified by the functions derived from all cases other than that case.

b. 58.2% of original grouped cases correctly classified.

c. 53.8% of cross-validated grouped cases correctly classified.

4. Physical Neglect Only

Neglect Only (N=828)
Model NG2: GCA=60.6% (CV=59.8%). U=67.1%;I=42.3%;F=69.1%. 8 variables. 0 cases excluded.
VARIABLES=V8c2 tang newinsff nsuffq5 overallx domnum V216C7 V216C21

Table J.10
Physical Neglect Only

Standardized Canonical Discriminant Function Coefficients

	Function	
	1	2
referrer type collapse2	-.262	.317
TANG	.331	-.136
NEWINSFF	-.014	.597
nsuffq5: Are factors which place child in imminent harm present?	.200	-.208
OVERALLX	.541	.348
domnum: number of domains with risk	.377	-.098
SOCIAL WORKER FRAMING OF INCIDENT	.319	.067
INCONCLUSIVE EVIDENCE: UNABLE TO TELL WHO DID ACT, CONFLICTING INFO, ETC	.048	-.561

Table J.11
Physical Neglect Only

Structure Matrix

	Function	
	1	2
OVERALLX	.753*	.346
domnum: number of domains with risk	.564*	.029
TANG	.415*	-.144
nsuffq5: Are factors which place child in imminent harm present?	.309*	-.206
SOCIAL WORKER FRAMING OF INCIDENT	.281*	.086
NEWINSFF	.076	.635*
INCONCLUSIVE EVIDENCE: UNABLE TO TELL WHO DID ACT, CONFLICTING INFO, ETC	.078	-.558*
referrer type collapse2	-.335	.385*

Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions
Variables ordered by absolute size of correlation within function.

*. Largest absolute correlation between each variable and any discriminant function

Table J.12
Physical Neglect Only

Classification Results[b,c]

			Predicted Group Membership			
		finding decision (-1,0,1)	Unsubst.	Inconcl.	Founded	Total
Original	Count	Unsubst.	192	52	42	286
		Inconcl.	81	102	58	241
		Founded	53	40	208	301
	%	Unsubst.	67.1	18.2	14.7	100.0
		Inconcl.	33.6	42.3	24.1	100.0
		Founded	17.6	13.3	69.1	100.0
Cross-validated [a]	Count	Unsubst.	192	52	42	286
		Inconcl.	83	98	60	241
		Founded	55	41	205	301
	%	Unsubst.	67.1	18.2	14.7	100.0
		Inconcl.	34.4	40.7	24.9	100.0
		Founded	18.3	13.6	68.1	100.0

a. Cross validation is done only for those cases in the analysis. In cross validation, each case is classified by the functions derived from all cases other than that case.

b. 60.6% of original grouped cases correctly classified.

c. 59.8% of cross-validated grouped cases correctly classified.

5. Emotional Abuse Only

Emotional Abuse Only (N=77)
Model EM3: GCA=62.5% (CV=59.7%). 4 variables. 5 of the 77 cases are excluded.
VARIABLES=genderal sever pricnt nsourcec

Table J.13
Emotional Abuse Only

**Standardized Canonical Discriminant
Function Coefficients**

	Function	
	1	2
genderal: Female vs. Male or Unknown	.568	.231
sever: severity domain	-.567	.785
NUMBER OF PRIORS	.791	.403
source of information collapsed	.801	-.322

Table J.14
Emotional Abuse Only

Structure Matrix

	Function	
	1	2
genderal: Female vs. Male or Unknown	.423*	.292
source of information collapsed	.375*	-.251
sever: severity domain	-.196	.776*
NUMBER OF PRIORS	.439	.601*

Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions
Variables ordered by absolute size of correlation within function.

 *. Largest absolute correlation between each variable and any discriminant function

Table J.15
Emotional Abuse Only

Classification Results[b,c]

			Predicted Group Membership			
		finding decision (-1,0,1)	Unsubst.	Inconcl.	Founded	Total
Original	Count	Unsubst.	8	2	0	10
		Inconcl.	3	7	8	18
		Founded	5	9	30	44
	%	Unsubst.	80.0	20.0	.0	100.0
		Inconcl.	16.7	38.9	44.4	100.0
		Founded	11.4	20.5	68.2	100.0
Cross-validated[a]	Count	Unsubst.	7	3	0	10
		Inconcl.	3	7	8	18
		Founded	6	9	29	44
	%	Unsubst.	70.0	30.0	.0	100.0
		Inconcl.	16.7	38.9	44.4	100.0
		Founded	13.6	20.5	65.9	100.0

a. Cross validation is done only for those cases in the analysis. In cross validation, each case is classified by the functions derived from all cases other than that case.

b. 62.5% of original grouped cases correctly classified.

c. 59.7% of cross-validated grouped cases correctly classified.

6. Sexual Abuse and Other Type(s)

Sexual Abuse and Other (N=114)
Model SO3: GCA=51.8% (CV=51.8%). All 114 cases included. 3 vars.
VARIABLES= v8c2 v219 nnoncoop

Table J.16
Sexual Abuse and Other Type(s)

Standardized Canonical Discriminant Function Coefficients

	Function	
	1	2
referrer type collapse2	.454	.886
ongoing in dcfs	.743	-.143
nnoncoop: numeric recode of noncoop (Nonprotective or Uncooperative CG; V57+V64 collapsed)	-.604	.351

Table J.17
Sexual Abuse and Other Type(s)

Structure Matrix

	Function	
	1	2
ongoing in dcfs	.688*	-.229
nnoncoop: numeric recode of noncoop (Nonprotective or Uncooperative CG; V57+V64 collapsed)	-.559*	.415
ca/n toward other child[a]	-.142*	-.011
referrer type collapse2	.332	.927*

Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions Variables ordered by absolute size of correlation within function.

*. Largest absolute correlation between each variable and any discriminant function

a. This variable not used in the analysis.

Table J.18
Sexual Abuse and Other Type(s)

Classification Results[b,c]

		finding decision (-1,0,1)	Predicted Group Membership			Total
			Unsubst.	Inconcl.	Founded	
Original	Count	Unsubst.	20	3	6	29
		Inconcl.	18	11	20	49
		Founded	5	3	28	36
	%	Unsubst.	69.0	10.3	20.7	100.0
		Inconcl.	36.7	22.4	40.8	100.0
		Founded	13.9	8.3	77.8	100.0
Cross-validated [a]	Count	Unsubst.	20	3	6	29
		Inconcl.	18	11	20	49
		Founded	5	3	28	36
	%	Unsubst.	69.0	10.3	20.7	100.0
		Inconcl.	36.7	22.4	40.8	100.0
		Founded	13.9	8.3	77.8	100.0

a. Cross validation is done only for those cases in the analysis. In cross validation, each case is classified by the functions derived from all cases other than that case.

b. 51.8% of original grouped cases correctly classified.

c. 51.8% of cross-validated grouped cases correctly classified.

7. Physical Neglect plus Other type(s) *Except* Sexual Abuse

Physical Abuse and Neglect (N=203)
Model PN4: GCA=68.5% (CV=62.4%). 6 cases excluded 8 variables. U= 70.6% I=70.4% F=63.8%
VARIABLES= tang overallx abusemax riskmax sever perpacc v53 alcref

Table J.19
Physical Neglect plus Other type(s) *Except* Sexual Abuse

**Standardized Canonical Discriminant
Function Coefficients**

	Function	
	1	2
TANG	.441	.388
OVERALLX	.518	.166
abuse potential max - phase I	.398	.551
riskmax: new risk max across all risk items	-.131	-1.358
sever: severity domain	.508	.460
perpacc: perp access domain	.163	.434
ca/n toward other child	.226	-.460
alcohol an issue at ref?	.259	.052

Table J.20
Physical Neglect plus Other type(s) *Except* Sexual Abuse

Structure Matrix

	Function	
	1	2
OVERALLX	.654*	-.318
riskmax: new risk max across all risk items	.644*	-.517
sever: severity domain	.570*	.262
abuse potential max - phase I	.566*	-.266
TANG	.404*	.219
ca/n toward other child	.087	-.400*
perpacc: perp access domain	.170	.237*
alcohol an issue at ref?	.022	.097*

Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions Variables ordered by absolute size of correlation within function.

*. Largest absolute correlation between each variable and any discriminant function

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Table J.21
Physical Neglect plus Other type(s) *Except* Sexual Abuse

Classification Results[b,c]

			Predicted Group Membership			
		finding decision (-1,0,1)	Unsubst.	Inconcl.	Founded	Total
Original	Count	Unsubst.	48	14	6	68
		Inconcl.	13	50	8	71
		Founded	3	18	37	58
	%	Unsubst.	70.6	20.6	8.8	100.0
		Inconcl.	18.3	70.4	11.3	100.0
		Founded	5.2	31.0	63.8	100.0
Cross-validated[a]	Count	Unsubst.	46	16	6	68
		Inconcl.	14	46	11	71
		Founded	4	23	31	58
	%	Unsubst.	67.6	23.5	8.8	100.0
		Inconcl.	19.7	64.8	15.5	100.0
		Founded	6.9	39.7	53.4	100.0

a. Cross validation is done only for those cases in the analysis. In cross validation, each case is classified by the functions derived from all cases other than that case.

b. 68.5% of original grouped cases correctly classified.

c. 62.4% of cross-validated grouped cases correctly classified.

8.   No Type-Classification (N=47)

Model XX3: GCA is 82.2% (CV=75.6%).   U=84.6%, I=85.7%, F=77.8%. 2 cases excluded. 6 vars.
VARIABLES= domnum genderal offsize riskmax v49 nsourcec

Table J.22
No Type-Classification

Standardized Canonical Discriminant
Function Coefficients

	Function	
	1	2
domnum: number of domains with risk	-.192	1.024
genderal: Female vs. Male or Unknown	.672	.586
OFFSIZE	.722	-.593
riskmax: new risk max across all risk items	-.703	-.969
chld fear of care	-.365	.611
source of information collapsed	.766	.134

Table J.23
No Type-Classification

Structure Matrix

	Function	
	1	2
riskmax: new risk max across all risk items	-.428*	-.174
domnum: number of domains with risk	-.405*	.310
source of information collapsed	.391*	.053
OFFSIZE	.113	-.315*
genderal: Female vs. Male or Unknown	.243	.308*
chld fear of care	-.209	.228*

Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions
Variables ordered by absolute size of correlation within function.

*. Largest absolute correlation between each variable and any discriminant function

Table J.24
No Type-Classification

Classification Results[b,c]

			Predicted Group Membership			
		finding decision (-1,0,1)	Unsubst.	Inconcl.	Founded	Total
Original	Count	Unsubst.	11	0	2	13
		Inconcl.	0	12	2	14
		Founded	2	2	14	18
	%	Unsubst.	84.6	.0	15.4	100.0
		Inconcl.	.0	85.7	14.3	100.0
		Founded	11.1	11.1	77.8	100.0
Cross-validated[a]	Count	Unsubst.	10	1	2	13
		Inconcl.	0	11	3	14
		Founded	2	3	13	18
	%	Unsubst.	76.9	7.7	15.4	100.0
		Inconcl.	.0	78.6	21.4	100.0
		Founded	11.1	16.7	72.2	100.0

a. Cross validation is done only for those cases in the analysis. In cross validation, each case is classified by the functions derived from all cases other than that case.

b. 82.2% of original grouped cases correctly classified.

c. 75.6% of cross-validated grouped cases correctly classified.

List of Variables Included in One or More of the Models in Section V.D.1

abusemax Sum of maximum risk rating over 7 risk variables
     the seven risk variables that this variable were based upon are: History of CA/N as child, History of domestic violence, Substance abuse, Victimization of other children, Mental/Physical/Emotional impairment, Chronicity of CA/N / Frequency, Hazards in the home.

alcref Alcohol an issue at the referral

cntalleg Count of allegations

domnum Number of domains with risk indicated
     the risk domains are these: child characteristics, severity, chronicity, caretaker characteristics, caretaker relationship, social/economic, and perpetrator access.

emab Emotional maltreatment only

ftp_msev Maximum severity of failure to provide

genderal Victim's gender (male or unknown=1; female=2)

MMCSem Referrer alleged MMCS-coded emotional maltreatment

neglaw Neglect referred by law enforcement.

newagec2 Victim's age (collapsed: 0-3,4-5,6-10,11+)

newinsff Num. of risk factors "insufficient info. to assess"

nnoncoop Nonprotective or Uncooperative CG

nsourcec Referrer's source of information
     Referrer's source of information was collapsed as follows: first-hand, victim disclosure, second-hand or circumstantial.

nsuffq5 Factors placing child in imminent harm present?

offsize office size (small, medium, large, extra-large)

overallx Rating of overall risk (missing recoded to 0)

PA Family receiving public assistance

perpacc Perpetrator has access to victim

pricnt Number of prior referrals

regincut Region (1,2,3,5 vs. 4,6).

riskmax Sum of maximum risk rating over 37 risk variables

rst_msev Maximum severity of allegations
     This formulation of maximum severity used the severity of emotional maltreatment only if other three main types [PA, SA, NEG] were all 0.

sever Risk in severity domain
     the severity domain consists of risk indicated in the following areas: DANGEROUS ACTS, PHYSICAL INJURY/HARM, EMOTIONAL HARM/ABUSE,

tang Direct evidence
     Specifically, this variable is coded as 1 if there is victim disclosure w/o recantation, or there is medical evidence of CA/N, or the perpetrator confesses

V210 Injury accidental

v214 Issues were resolved/family was addressing issues

v216C7 Social worker framing of incident

V216C21 Inconclusive evidence
     Inconclusive evidence was a coded "other" category. It includes "Unable to tell who did act, conflicting information, etc.)

v219 Case was ongoing in DCFS

v49 Child fear of caregiver

v53 CA/N toward another child

V8c2 Referrer type (1=professional; 2=community)

APPENDIX L
List of Variables NOT Included in One or More of the Models in Section V.D.1

abusecnt   CA/N potential count of significant variables with risk
abussumc   Categorized abusemax
alcsub   Alcohol or substance abuse indicated
all_msev   Overall max. severity of all allegations not 600-800.
anyprior   Any prior CPS referral for family (that meets Appndx. exclusionary criteria)
attchbnd   Lack of attachment/bonding (missing or zero) with both caregivers
basicnds   Basicnds: dichotomized failure to provide basic needs.
carechar   Caretaker characteristic domain
carerel   Caretaker relationship domain caucyes
cgriskr   Both External & Internal risks, at intake cgrisks
chldchar   Child characteristics domain
chldinvl   Child involvment in substance abuse known
chron   Chronicity domain
cntypop   County population size
daypric2   Days since last victim prior
emabneg   Neglect with EMAB
emotsev   Total emotional abuse severity (allegations)
employed   CG known to be employed
extriskr   External risks only, at intake
extrisks   Only external risks at summary
ftpmxsev   Dichotomized max. severity of failure to provide (le 2 vs. gt 2)
incltype   Allegations include sexual abuse or both physical abuse and neglect
insufsum   Total Insufficient information to assess
intriskr   Internal risks only, at intake
intrisks   Only internal risks at summary
lmsevtot   Total severity across all six allegations
                (including 600, excluding 500 & 700-800).
lwphbmlt   PHAB (absent evidence) & other types of CA/N allegations.
MMCSdmns Number of MMCS domains (collapsed)
mlemxsev   Dichotomized max. severity of moral/legal/educ. neglect (le 2 vs. gt 2)
mthronly   Mother-figure only perp. known to be the case
multicps   Multiple CPS/CAN codes at intake
multiMMCS Multiple MMCS codes at intake
multneg   Multiple Neglect types alleged
negalone   Neglect allegations only
negnopev   Neglect (absent physical evidence of serious harm)
nemaxsev   Maximum excluding 500, emotional mxtmt
                (as well as 700, educ. neglect, & 800)
nesevtot   Total non-EMAB severity across all six allegations
ninvstan   Standard of investigation
nsuffq4   Risk factor that places child in danger
ntvam   Native American race/ethnicity
oamaxsev   Overall maximum severity
                (excluding 700, educational neglect, & 800)
overallr   Overall risk rating.
paalone   Physical abuse allegations only
paandng   Physical Abuse and Neglect allegations
phabharm   Physical abuse allegation with greater severity than 1
phys_dd   CG physical health/developmental disability
polyref   Drug of Choice per Referral (Single/Poly)
protect   CG Self-referred, Protective, or Cooperative
riskcnt   Risk count across all risk items
risktagc   Risk tag at intake
risktagm   Risk tag at intake (missing recoded to 0)
socecon   Social economic domain
stepdad   Stepfather perpetrator alleged
sumactc2   Severe drug culture/less severe?
sxab   NEWTYPE sexual abuse

List of Variables NOT Included in One or More of the Models in Section V.D.1 (continued)

sxalone	Sexual abuse allegations only
sxothr	ANY sexual abuse allegations
tangible	"tangible" evidence (Child Disclosure, Eyewitness Testimony, Medical Evidence, Perpetrator Confession, or Physical Evidence)
thr_msev	Overall max. severity of 3 main mxtmt type allegations (i.e., excluding 500-800)
totalleg	Dichotomized count of allegations
tsevtot	Total severity across all six allegations (including 500-800)
tyc2	Referrer type (CAMIS/CPS)
V15	CPS maltreatment - PRENATAL
V16	CPS maltreatment - ABANDON
V211	No Resources/Services for Family
V212	Referred to/Aware of Services/Resources
V213	Family Engaged in Service
V216C11	Family Moved from Area/Lost Contact
V216C12	Caregiver Recognition of Prob./Desire to Change
V216C13	CG Lack of Recog. of Prob./Unwilling to Change
V216C14	Family Conflict
V216C16	Other Family Problem/Issue
V216C17	Other Family Strength
V216C2	Case Low Risk/No Further Intervention
V216C20	Technical Obstacles
V216C3	Risk of CA/N Remains
V216C4	Positive Social Support
V216C8	Caregiver Statement/Justification/Explanation
V44	Substance Abuse
V46	Domestic Violence
V47	Mental Illness of CG
V51	CG Physical Health/DD
V55	CG Physical Health/DD
V64	CG not cooperative with agency
V7c2	Risk tag at intake (1,2 set to missing)

Component Loadings of the Variables included in the Nonlinear Discriminant Analysis of Chapter V

Table M.1

Component Loadings

Set				Dimension 1	Dimension 2
1	FNDNG[a,b]	Dimension	1	.880	.000
			2	.000	.809
2	referrer type collapse2[a,b]	Dimension	1	.285	.218
			2	.285	.218
	Count of allegations (0-1,2,3,4,5,6)[c,d]			-.049	-.213
	Max severity of ftp (0,1,2-3,4,5)[c,d]			-.024	.130
	Neglect referred by law enforcement[a,b]	Dimension	1	.199	.163
			2	.199	.163
	Did ref allege mcs-emot maltx?[a,b]	Dimension	1	.018	.000
			2	-.018	.000
	RCTANG (Direct evid.)[a,b]	Dimension	1	.377	-.038
			2	-.377	.038
	REGINCUT[a,b]	Dimension	1	.102	-.118
			2	-.102	.118
	vic recd or assoc w/pub asst 9/96-8-97[a,b]	Dimension	1	.022	-.056
			2	-.022	.056
	Insufficient Information (0-11,12-32,33-43,44-49,50-58,59)[c,d]			.027	-.511
	nsuffq5: Factors placing child in imminent harm?[a,b]	Dimension	1	.250	.149
			2	.250	.149
	overall level of risk (0,1,2,3-4,5)[c,d]			.624	-.190
	number of risk domains (0-3,4,5,6-7)[c,d]			.582	.057
	emab: emotional maltreatment (only)[a,b]	Dimension	1	.148	.063
			2	-.148	-.063
	injury accidental[a,b]	Dimension	1	.170	-.054
			2	-.170	.054
	issues resolved family addressing[a,b]	Dimension	1	.080	-.012
			2	-.080	.012
	ongoing in dcfs[a,b]	Dimension	1	.256	.167
			2	.256	.167
	SOCIAL WORKER FRAMING OF INCIDENT[a,b]	Dimension	1	.263	.025
			2	.263	.025
	INCONCLUSIVE EVIDENCE: UNABLE TO TELL WHO DID ACT	Dimension	1	-.018	.439
			2	-.018	.439

a. Optimal Scaling Level: Multiple Nominal

b. Projections of the Multiple Quantified Variables in the Object Space

c. Optimal Scaling Level: Ordinal

d. Projections of the Single Quantified Variables in the Object Space