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Tonya Lippert, Theodore P. Cross, Lisa Jones and Wendy Walsh

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Telling Interviewers About Sexual Abuse

Predictors of Child Disclosure at Forensic Interviews

Tonya Lippert
Dallas Children's Advocacy Center
Theodore P. Cross
RTI International
Lisa Jones
Wendy Walsh
University of New Hampshire

This study aims to identify characteristics that predict full disclosure by victims of sexual abuse during a forensic interview. Data came from agency files for 987 cases of sexual abuse between December 2001 and December 2003 from Children's Advocacy Centers (CACs) and comparison communities within four U.S. states. Cases of children fully disclosing abuse when interviewed were compared to cases of children believed to be victims who gave no or partial disclosures. The likelihood of disclosure increased when victims were girls, a primary caregiver was supportive, and a child's disclosure instigated the investigation. The likelihood of disclosure was higher for children who were older at abuse onset and at forensic interview (each age variable having an independent effect). Communities differed on disclosure rate, with no difference associated with having a CAC. Findings suggest factors deserving consideration prior to a forensic interview, including organizational and community factors affecting disclosure rates.

Keywords: *sexual abuse; child disclosure; forensic interview; Children's Advocacy Center*

> "Besides, no one ever keeps a secret so well as a child."
>
> Victor Hugo, *Les Miserables*

Victor Hugo's insight succinctly captures the challenge of identifying child sexual abuse: victims will often keep it a secret for a long time or forever. Research on children and adults indicates that children often significantly delay disclosure of sexual abuse or keep the abuse a secret into adulthood (Finkelhor, Hotaling, Lewis, & Smith, 1990; Smith et al., 2000; Sorenson & Snow, 1991). Yet child disclosure is the single most significant means by which sexual abuse is discovered (see Goodman-Brown, Edelstein, Goodman, Jones, & Gordon, 2003), and disclosure at a forensic interview is often critical to police and child protective services' (CPS) investigation of the abuse (see, e.g., Lawson & Chaffin, 1992; Pence & Wilson, 1994).

This article focuses on understanding what might facilitate children's disclosure at a forensic interview. It examines several child, abuse, family, and suspect characteristics, replicating previous studies. Adding to previous research, it also explores the unique effects of children's age both at the forensic interview and at the onset of the abuse. These unique effects are helpful to

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understand, as they suggest that a child's disclosure of abuse can reflect both a child's present developmental level and the child's developmental level at the time his or her abuse started. This article also analyzes how a pre-investigation disclosure is related to disclosure at a forensic interview and explores how the use of one particular practice innovation, Children's Advocacy Centers (CACs), may affect disclosure. Finally, it examines how disclosure rates can vary across different communities. Understanding which child victims are more prone to disclose during a forensic interview could help shed light on the nature of disclosure, inform investigators' decision making, and suggest new practice methods to facilitate disclosure.

Children's disclosure of sexual abuse can occur various ways. Children may first make a full or partial disclosure to a family member or another individual (e.g., teacher, counselor) (Sgroi, Blick, & Porter, 1982). Alternatively, physical signs, child or suspect behavior, or other factors may lead to concerns that a child may have been sexually assaulted (see, e.g., Brilleslijper-Kater, Friedrich, & Corwin, 2004; Pipe et al., 2007; Sorenson & Snow, 1991). The initial disclosure or other evidence of abuse usually leads to someone's reporting their concerns, which can then lead to a formal investigation (see, e.g., Finkelhor, Cross, & Cantor, 2005, 2006). When child sexual abuse is investigated, children who are old enough to disclose are most often interviewed by a police officer, a CPS investigator, a child interview specialist at a CAC, or a member of a multidisciplinary team at a hospital clinic (see, e.g., Pence & Wilson, 1994). Children respond various ways to the interview—fully or partially disclosing abuse, giving no disclosure of abuse (e.g., declining to answer questions on the subject), or denying any abuse or recanting a previous disclosure (Sorenson & Snow, 1991).

Whether verbally expressive children will disclose sexual abuse at a forensic interview could depend on many factors, including their understanding and memory of the abuse, their emotional reactions to it, their concerns about the consequences of both disclosure and nondisclosure, and the extent to which supportive family members and effective child abuse investigators and evaluators are involved (see, e.g., Hershkowitz, Horowitz, & Lamb, 2005, 2007; London, Bruck, Ceci, & Shuman, 2005, 2007: Pipe et al., 2007; Saywitz, Esplin, & Romanoff, 2007). Children could be more apt to disclose at the forensic interview if they had disclosed to someone else beforehand (see, e.g., London et al., 2007). The disclosure rate may also be influenced by a range of different community or agency variables, including the characteristics of cases reported to officials within the community, the type of case typically referred for a forensic interview, the criteria the community uses to determine whether abuse occurred, and the skill of the forensic interviewers. One question concerns whether the use of CACs, a major paradigm change designed to facilitate child abuse investigation, may influence child disclosure.

Previous Research on Predictors of Child Disclosure

Previous research has explored how child, family, and investigation variables are related to disclosure, but many questions about what explains disclosure remain. Studies have examined how child age, child gender, suspect relationship to child, abuse severity, caregiver support, and initial disclosure relate to child disclosure at a forensic interview. Other studies have examined predictors of pre-investigation disclosures, which is meaningful but less relevant to the current study. Pipe et al. (2007) and Sorenson and Snow (1991) studied cases at CACs but made no comparison between CACs and other agencies on disclosure rates. We are aware of no studies that examined suspect age as a predictor of child disclosure, nor any study that compares disclosure rates across different agencies and communities. Note that comparing results across studies of different communities would be difficult because of variation with respect to sampling, disclosure context, and study methodology.

Child sex. Boys may be less likely than girls to disclose because of a general reluctance to disclose intimate information, fears related to homosexuality (if the perpetrator is a man; Hunter, 1990; Pescosolido, 1989; Valente, 2005), or psychological, social, and cultural factors that would lead to overlooking sexual contact as abuse (if the perpetrator is a woman; Peluso & Putnam, 1996). Some studies have found that boys are less willing to disclose sexual abuse than girls at a forensic interview (e.g., DeVoe & Faller, 1999; Gries, Goh, & Cavanaugh, 1996; Hershkowitz, Horowitz et al., 2005, 2007), but others find no difference (see DiPietro, Runyan, & Fredrickson, 1997; Goodman-Brown et al., 2003; Keary & Fitzpatrick, 1994). Finkelhor et al.'s (1990) national survey of adults showed that a higher percentage of adult men, versus women, reported sexual abuse experiences that they had never disclosed.

Child age at forensic interview. A child's age affects his or her ability to understand the abuse, to keep secrets, and to describe events verbally, all of which can influence the likelihood of disclosure at forensic interviews

(Brilleslijper-Kater et al., 2004; Pipe et al., 2007). Research suggests that older, versus younger, children are more likely to disclose during a forensic interview (Cantlon, Payne, & Erbaugh, 1996: DiPietro et al., 1997; Gries et al., 1996: Hershkowitz, Horowitz et al., 2005, 2007; Keary & Fitzpatrick, 1994; Pipe et al., 2007; Sas & Cunningham, 1995; see London et al., 2005, 2007; Paine & Hansen, 2002, for reviews). Bradley and Wood (1996) found no relationship between age and disclosure at a forensic interview, whereas Wood, Orsak, Murphy, and Cross (1996) reported that older children made more credible disclosures. Goodman-Brown et al. (2003), however, found that older children who disclosed to the police or social services (which may have occurred outside the context of a forensic interview and at various locations, including school or home) waited longer to do so than younger children, with this delay partly explained by their feeling more responsibility for the abuse and being more fearful of negative consequences to others as a result of disclosure. Additionally, the pre-investigation disclosures of preschool age, versus older, children appear more often to be unplanned and associated with an immediate precipitating event rather than purposeful (e.g., Campis, Hebden-Curtis, & Demaso, 1993). This may help explain the longer delay until disclosure for older children.

Child age at onset of abuse. Age at onset of abuse may have an additional relationship to disclosure above and beyond the age at which the abuse comes to light or children are interviewed. Child age at onset of abuse may establish the upper limit of what a child can disclose, given the child's developmental abilities at the time of abuse onset and end (see Brilleslijper-Kater et al., 2004) as well as given memory limitations associated with the passing of time (La Rooy, Pipe, & Murray, 2007). Earlier age of onset might be associated with greater delay between abuse and forensic interviewing, which can affect children's memory retrieval (Salmon & Pipe, 2000).

Many studies make no clear distinction between age of onset of abuse and age at report of abuse (see, e.g., Goodman-Brown et al., 2003; Smith et al., 2000), even though these two ages can be quite different, can influence disclosure for different reasons, and may have distinct statistical effects on disclosure. We found two retrospective studies that examined the relationship between age at onset of sexual abuse and disclosure. Kogan (2004) analyzed the disclosures of girls ages 12 to 17 who reported unwanted sexual experiences as part of the National Survey of Adolescents, a national probability study of North American teenagers. In 35% of cases, girls who were ages 14 to 17 at age of onset had never disclosed their unwanted sexual experiences compared to 14% or less for younger ages of onset. Bottoms, Rudnicki, and Epstein's (2007) study of a sample of college women found no relationship between age of onset and disclosure. In several ways, these studies are different from the present one: (a) only small percentages of examined disclosures were to authority figures (6% and 9%, respectively), (b) neither specifically examined disclosure at a forensic interview, and (c) the sexual abuse was retrospectively self-reported by the respondent and by and large uninvestigated. To the best of the authors' knowledge, no study disentangles and compares the effect of both age at abuse onset and age at forensic interview on disclosure, despite the different effects they can be expected to have.

Abuse severity. The severity of abuse could increase the likelihood of disclosure because the consequences of the abuse continuing may be perceived as greater and the need to stop the abuse more critical, and it may be easier to recognize it as abuse (Cederborg, Lamb, & Laurell, 2007; Lamb & Edgar-Smith, 1994). In addition, children may less easily recognize as abuse, and remember abuse, that is relatively minor (e.g., a single episode of fondling; Cederborg et al., 2007). More severe abuse, however, might decrease the likelihood of disclosure because the child might be more afraid of the perpetrator or feel a heightened sense of self-blame (London et al., 2005). In their review of the literature, Paine and Hansen (2002) found that children who had been abused more severely, as indicated by penetration and physical aggression, were less likely to disclose. London et al. (2005), however, cite five retrospective studies showing either the opposite or no relationship between several indices of severity and disclosure. Findings on the relationship of abuse duration and frequency, which may also be related to severity, to disclosure are similarly mixed (see Paine & Hansen, 2002).

Perpetrator relationship to child. It seems likely that children abused by extrafamilial perpetrators would show an increased propensity to disclose their abuse, as their caregivers might be more supportive of their disclosures and children might feel less loyalty and protectiveness toward the perpetrator. A recent exploratory study, however, highlights the need to make finer distinctions than "intrafamilial" and "extrafamilial" to describe the perpetrator's relationship to the child. In 30 cases of extrafamilial abuse, Hershkowitz, Lanes, and Lamb (2007) found that most caregivers (75%) were supportive of their children's pre-investigation disclosures only when the perpetrators were strangers;

when the perpetrator was known to the family, few caregivers were supportive (11%).

Perhaps because of the variability within the categories of "intrafamilial" and "extrafamilial," research has been mixed regarding whether the child's relationship to the suspect predicts disclosure (see London et al., 2005, 2007). One study examining disclosure at a forensic interview, however, found that children with an intrafamilial perpetrator disclosed later than children with an extrafamilial perpetrator (Goodman-Brown et al., 2003). In this study, it was specifically children's fear of negative consequences to others that helped explain the delayed disclosure of intrafamilial abuse.

Suspect age. We know of no research that examines the probability of disclosure by the age group of the alleged perpetrator: child, adolescent, or adult. There are a number of reasons why offender age status could affect the likelihood of a disclosure. Children may fear, or want to protect, perpetrators of these different age groups to different degrees. Additionally, children may feel a different degree of culpability when the abuser is closer in age to them, may perceive the abuse differently, or may face different reactions to the abuse when it is first discovered (e.g., that it was natural, mutual sexual exploration) (Kellogg & Huston, 1995).

Caregiver support. Children may worry about the potential reactions of their caregivers to disclosure (see Hershkowitz, Lanes et al., 2007), which can range from being very supportive to being very angry at the child (Bolen & Lamb, 2004; Deblinger, Steer, & Lippmann, 1999; Elliott & Carnes, 2001; Jensen, Gulbrandsen, Mossige, Reichelt, & Tjersland, 2005). Of the seven studies we found that examined children's disclosure of abuse during a forensic interview (DeVoe & Faller, 1999; DiPietro et al., 1997; Elliott & Briere, 1994; Gries et al., 1996; Hershkowitz et al., 2005; Keary & Fitzpatrick, 1994; Lawson & Chaffin, 1992), only two investigated its relationship to caregiver support. Lawson and Chaffin (1992) found that children with sexually transmitted infections whose caregivers were supportive, versus unsupportive, disclosed at a 3.5 times higher rate, whereas Elliott and Briere (1994) found that children showed a higher rate of recanting disclosures of abuse when their caregivers were unsupportive. In an exploratory study of disclosure of extrafamilial abuse by children ages 7 to 12, Hershkowitz, Lanes et al. (2007) found that children's willingness to disclose immediately and of their own accord decreased when they expected negative caregiver reactions.

Initial disclosure. An initial disclosure might be expected to predict a child's disclosure at a forensic interview, as it may reflect the child's readiness to disclose the abuse or decrease children's fear of disclosing to an authority figure (see London et al., 2007). Both Keary and Fitzpatrick (1994) and DiPietro et al. (1997) studied disclosures among children referred to a children's hospital for a sexual abuse evaluation by a multidisciplinary team and found that a pre-investigation disclosure was highly predictive of a disclosure during a forensic interview. In Keary and Fitzpatrick's (1994) study, 86% of children (ages 3 to 17) who gave a prior disclosure of abuse disclosed during the forensic interview compared to 14% of children without a prior disclosure. Similarly, DiPietro et al. (1997) found that 72% of their sample (range = 1.4 to 22 years of age; $M = 7.5$) who gave a prior disclosure disclosed at the forensic interview versus 7% of children without a prior disclosure. One study focusing on a different interview setting and another study focusing on a different population also showed high rates of repeat disclosure. DeVoe and Faller (1999) found a 93% rate of repeat disclosure, compared to a 25% rate of first-time disclosure, from pre-evaluation to interview at a multidisciplinary clinic among children ages 5 to 10, although 15% of the repeat disclosures came during a second or later interview. A sample of foster children also showed a 93% rate of repeat disclosure (Gries et al., 1996).

CACs and Child Disclosure

CACs are designed to facilitate child abuse investigation and prosecution while reducing child and family stress and responding to children's medical and therapeutic needs (see Cross, Jones, Walsh, Simone, & Kolko, 2007; Cross et al., in press; Jackson, 2004; Simone, Cross, Jones, & Walsh, 2005; Walsh, Jones, & Cross, 2003). CACs might facilitate disclosures if children find the environment less stressful and more comforting than other possible interview locations (e.g., schools, homes, or police stations). The specially trained child forensic interviewers at CACs may also be more skilled at obtaining disclosures from children. It is also possible that CACs, by virtue of their community role, may receive cases after a disclosure has already been made; therefore, a comparison of disclosure across CAC and non-CAC cases should examine whether the interviewed children differed with respect to initial disclosures.

The Present Study

As previous studies have, the present research explores child, abuse, and suspect characteristics that predict disclosure at a forensic interview. Expanding on previous studies, it explores more thoroughly how previous disclosure relates to disclosure at a forensic interview, examines how both age at onset and age at forensic interview relate to disclosure, and tests whether disclosure rates differ across communities, including a comparison of communities with and without a CAC.

Method

This study uses secondary data analysis from a larger study, the Multi-Site Evaluation of Children's Advocacy Centers. This project was designed to evaluate the impact of CACs on child abuse victims, their families, investigation procedures, and communities. For additional details on study methodology, see Cross, Jones, Walsh, Simone, and Kolko (2007) and Cross, Jones, Walsh, Simone, Kolko, et al. (in press). Research teams collected data at four sites across the United States: the Dallas CAC (Dallas, Texas), the Dee Norton Lowcountry Children's Center, Inc. (Charleston, South Carolina), the National CAC (Huntsville, Alabama), and the Pittsburgh Child Advocacy Center (Pittsburgh, Pennsylvania).

Sample

Information was collected on a sample of each site's CAC cases and on a sample of child abuse cases from within-state comparison communities without CACs. Cases were enrolled into the study between December 2001 and December 2003 by research teams at each of the four sites. In general, the sample included every available case seen at the CAC and every available case investigated by the comparison community CPS agencies during the enrollment period. The South Carolina and Dallas County comparison samples also included police cases. When there were too many cases to abstract, a systematic sampling process (e.g., enrolling each third case) was used. If there were multiple victims or perpetrators per case, site research staff randomly selected a "target" subject.

The present study included only cases of alleged sexual abuse ($N = 1{,}221$). Furthermore, to be eligible for analyses on children's full disclosures during their forensic interviews, cases had to have included a child forensic interview with a known outcome ($N = 1{,}101$). The sample was further restricted to cases for which at least one investigating/evaluating party—law enforcement, CPS, CAC, or medical—believed that sexual abuse had or may have occurred, given that an analysis of predictors of abuse disclosure assumes that abuse occurred. The final sample consisted of 987 cases, 81% of the entire sample of sexual abuse cases.

Data Collection

At all sites, case abstractors on the research team collected data from case records. In addition to CAC records, data abstraction for CAC cases made use of records from CPS (59% of cases), police (58%), prosecutors (34.5%), and other agencies (e.g., mental health, medical, and school; 29.5%). Comparison cases used records from CPS (68% of cases), police (66.5%), prosecutors (26.5%), and other agencies (30%).

Variables

Case abstractors coded information on each forensic interview. We defined *forensic interview* as a professional interview designed to assess or evaluate the truth about a suspicion of child maltreatment (as well as identify the who, what, where, and when of the abuse). We excluded the following situations: any pre-investigation disclosures of abuse by the child to a parent, teacher, friend, and so on; talks that a parent had with a child to better understand what happened; a discussion of the abuse by a mental health professional for clinical purposes; and any initial contact by CPS or the police to assess briefly immediate risk (e.g., a minimal facts interview). Forensic interviewers at the CACs had a bachelor's or master's degree and social work, counseling, or child welfare backgrounds. They followed American Professional Society on the Abuse of Children interviewing guidelines. When research staff lacked the interview content to code a police or CPS interview, they erred on the side of calling any fact-finding interview with a CPS worker or police officer a "forensic interview."

For the disclosure variable, case abstractors recorded whether the child denied, disclosed fully or partially, or recanted allegations of abuse for each forensic interview (see Cross, Jones, Walsh, Simone, & Kolko, 2007; Cross et al., in press). Children's full disclosures were defined as a disclosure over the course of any single forensic interview of all sexual activity (all known sexual acts, all known incidents) that came to be known throughout the investigation, whether by the child's own disclosure, the suspect's confession, or a witness's account.

A range of demographic, family, abuse, and suspect variables were also coded. In the present analysis, the following variables were used as predictors of disclosure: whether there was a pre-interview disclosure (described within CPS, police, or medical records), whether a previous disclosure was the investigation elicitor, child age at onset of abuse, child age at forensic interview, child sex, abuse severity (vaginal or anal penetration, as reported by the child, suspect or eyewitness), alleged perpetrator relationship to child (intrafamilial or extrafamilial, as the study measures limited our ability to make finer distinctions; intrafamilial included biological, adoptive, and step-parents; siblings and stepsiblings; and other relatives; extrafamilial consisted of parents' paramours, foster parents, nonrelative caregivers, nonrelative authority figures, and known and unknown adults and children), alleged suspect age, caregiver support, and interview setting (CAC or non-CAC). Nonoffending caregiver support for the child was coded as yes versus no/ambivalent according to CPS' and police investigators' records of their judgment of the caregiver's supportiveness (judged according to the degree to which the caregiver believed the child's disclosure and was willing to stay with the child and prevent the suspect's having contact with the child). To avoid relying only on investigators' judgments, we also examined caregiver knowledge of the abuse prior to the investigation and specific caregiver actions related to support. We lacked the resources to conduct a formal reliability assessment on variables analyzed; however, the variables here mostly represent concrete events, and investigation records contained specific documentation on these events.

Data Analysis

Bivariate analyses using Pearson χ^2 and t tests were conducted to identify variables that distinguished full disclosers from nonfull disclosers (which included partial disclosures, no disclosures, and denials). The potential predictors of disclosure we examined were chosen because previous research or practice theory suggested their contribution. The variables that differed between the study's groups (full vs. nonfull disclosers) were then entered into binary logistic regression equations to determine their unique association with disclosure.

In the logistic regression equation, we replaced missing data with the sample mean of the continuous variables with at least 5% missing data (age of abuse onset and age at forensic interview) and adding "missing" as a category for the categorical variables with at least 5% missing data (pre-interview disclosure, caregiver support, abuse severity, child-suspect relationship) (Cohen, Cohen, West, & Aiken, 2003). When the value of the sample mean for age of abuse onset was higher than the child's age at first interview or when the value of the sample mean for age at first interview was higher than the child's age during the investigation, no replacement occurred (consequently, replacement occurred for a total of 12.6% of the age of abuse onset data and 4% of the age at forensic interview data). The logistic regression analysis then included a variable for age of abuse onset that represented whether the case originally had a missing value; this corrects for any bias that might arise from mean substitution (see Cohen et al., 2003). To account for possible curvilinear effects of age (e.g., both very young children and adolescents having lower rates than middle-age children), we entered a squared version of age to test for a quadratic effect. Age variables were centered to reduce multicollinearity (see Cohen et al., 2003).

Sample Characteristics

Table 1 shows sample characteristics. The majority of children were White (Hispanic and non-Hispanic). Of the children identified as non-White, the majority were identified as Black (28%); the remaining were either biracial (4%), Asian (0.3%), or Pacific Islander (0.2%). One was identified as Native American and the race of eight (.8%) children was unknown. The mean age at onset of abuse was 8.90 (minimum = 1) and the mean age at forensic interview was 9.91 (minimum = 2). In 55% of cases (n = 921), the suspect was a family member—defined as a blood relative, a stepparent, or an adoptive parent. In 30% of cases (n = 941), the suspect and child were living together when the abuse investigation began. When there was cohabitation, the suspect was usually related to the child (71%; n = 293).

Child age at abuse onset and at forensic interview were highly positively correlated, $r(680) = 0.88$, $p < .01$. The average difference between these two ages was 1.47 years, but the distribution of this variable was skewed: 65% of the sample had the forensic interview within 1 year of onset, 29% between 1 year to 7 years after onset, and 4% more than 7 years after onset. Children had an average of 1.4 forensic interviews (SD = 0.65, n = 979).

Results

Full disclosures occurred for 73% (722) of cases, partial disclosures for 12% (117), no disclosures (100) for 10%, and denials for 5% (48) of all cases. Of full disclosers with available time data (n = 482), 43% disclosed the abuse months after the last episode, 28% disclosed days after the last episode, and 29% within hours (see

Table 1
Study Sample Case Data ($N = 987$)

Variable	*N*	Percentage of *N*	*M*	*SD*
Child				
Female	985	81		
White	979	67		
Age at abuse onset	842		8.90	3.74
Age at first interview	969		9.91	4.06
Abuse				
Penetration	837	33		
Lasted beyond a week	542	44		
Suspect				
Intrafamilial	921	55		
Cohabiting with child	941	30		
Male	943	93.5		
White	873	66.5		
Age	977		32.97	17.69
Disclosure				
Full	987	73		
Years from onset	718		1.64	2.14
Disclosed within hours of last abuse[a]	482	29		
Prior disclosure	906	62		
Caregiver supportive	761	83		
Agency/community				
CAC				
Yes	677	69		
No	310	31		
State				
Pennsylvania	141	14		
Texas	317	32		
South Carolina	319	32		
Alabama	210	21		

*$p = .03$. **$p \leq .001$.
a. Versus disclosing within days or months of last abuse.

Figure 1
Disclosure Rates by Study Communities

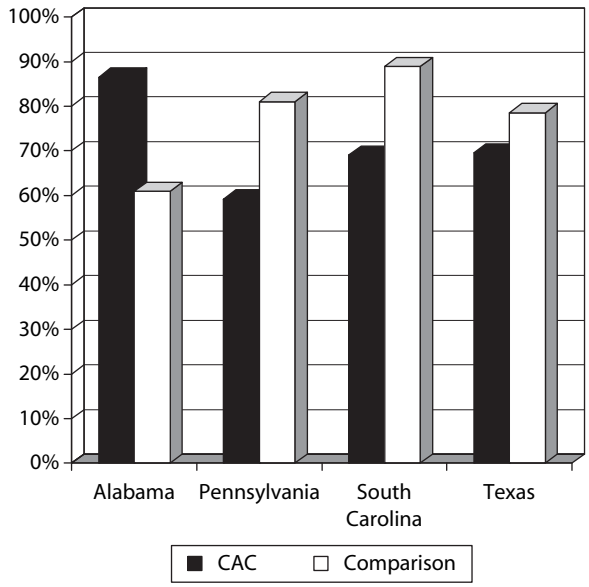

Table 1). The full disclosure rate varied across communities from 61% to 89% (see Figure 1).

Bivariate Relationship of Predictor Variables and Child Disclosure

Tables 2 and 3 show bivariate relationships of categorical and continuous predictor variables, respectively, to child disclosure. Girls were significantly more likely to make a full disclosure than boys. A full disclosure was positively related to both child age at abuse onset and child age at forensic interview. For both age at onset and age at forensic interview, only a small majority of children 0 to 6 years of age disclosed. Disclosure rates were much higher for older groups. The age of onset for disclosers ($M = 9.67$) was on average 3 years older than for nondisclosers ($M = 6.22$), $t(734) = -10.45$, $p < .001$, and disclosers' age at forensic interview ($M = 10.85$) was almost 3 years older on average compared to nondisclosers ($M = 7.34$), $t(967) = -12.90$, $p < .001$. Suspect age was negatively related to disclosure: suspects of children giving full disclosures ($M = 32.12$) were more than 3 years younger than suspects of non-full-disclosing children ($M = 35.50$), $t(382.42) = 2.24$, $p < .03$.

Children with an extrafamilial relationship with suspects were slightly more apt to make a full disclosure, but the child-suspect relationship was significantly correlated with several other predictor variables (child age at abuse onset, $r(730) = 0.20$, $p < .001$, child age at interview, $r(904) = 0.13$, $p < .001$, and suspect age, $r(661) = 0.26$, $p < .001$. A higher percentage of children disclosing severe abuse (actual/attempted vaginal or anal intercourse) gave full disclosures as compared to those with less severe abuse.

Sixty percent of cases without a pre-investigation disclosure had a full disclosure at the forensic interview compared to 81% of cases that had a prior disclosure, $\chi^2(1, n = 906) = 47.48$, $p < .001$. Nonoffending caregiver support for the child, as coded from investigators' records, was only marginally related to disclosure ($p = .08$). Nevertheless, several specific caregiver supportive actions were related to children's full disclosures during forensic interviews (see Table 2): contacting law enforcement, contacting another, restricting suspect contact with the child, and removing the suspect. No significant difference was associated with caregivers' contacting CPS, a CAC, a medical professional, relocating the child, or relocating with the child.

Table 2
Disclosure Rates by Categorical Predictor Variables

Variables	*N*	% Disclosed	χ^2
Child sex	985		
Female		76	15.30***
Male		62	
Child race	979		
White		73	0.18
Minority		74	
Child age at onset	842		
0 to 6		58	79.85***
7 to 12		83	
13 to 17		92	
Child age at interview	969		
2 to 6		51.5	117.19***
7 to 12		75	
13 to 17		92	
Suspect-child relationship	921		
Intrafamilial		70	7.77**
Extrafamilial		78	
Suspect cohabitation with child	669		
Yes		70	2.02
No		75	
Vaginal/anal penetration	837		
Yes		89	18.44***
No		77	
Duration of abuse	542		
More than 1 week		89	1.56
Less than 1 week		85	
Previous disclosure	906		
Yes		81	47.48***
No		60	
Caregiver support	761		
Yes		76	3.10[a]
No		69	
Caregiver knowledge of abuse	801		
Aware		83	8.00*
Unaware		78	
Suspected it, but uncertain		62	
Caregiver response to abuse	607		
Yes, contacted police		83.5 (vs. 72 no)	13.92***
Yes, contacted others		86 (vs. 75 no)	8.65**
Yes, restricted child-suspect contact		82 (vs. 75 no)	4.32*
Yes, removed the suspect		91 (vs. 77 no)	4.37*
Elicitor of abuse investigation	906		
Pre-investigation disclosure		81	52.73***
Witness to the abuse		71	
Child's behavior or symptoms		59	
Physical signs/medical evidence		54	
Other		57	
Children's Advocacy Center	987		
Yes		71	5.28[a]
No		78	
Location of communities (state)	987		
Pennsylvania		62	11.24**
Texas		73	
South Carolina		75	
Alabama		78	

a. $p = .08$.
*$p < .04$. **$p \leq .01$. ***$p < .001$.

Table 3
Age Variables and Years From Abuse Onset for Disclosure and Nondisclosure Cases

Variable	Disclosure	Nondisclosure	*t*	*df*
Age at abuse onset	9.67	6.22	–10.45**	734
Age at first interview	10.85	7.34	–12.90**	967
Suspect age	32.12	35.30	2.24*	382.42
Years from onset	1.59	1.80	0.31	716

*$p < .05$. **$p < .001$.

The rate of disclosure was significantly different between CACs (71% full) and comparison sites (78% full), $\chi^2(1, N = 987) = 4.85$, $p = .03$. We also examined differences with respect to disclosure when disclosure was divided into three categories and found a marginally significant difference between CACs (71% full, 13% partial, and 16% no disclosure or denial) and comparison sites (78% full, 9% partial, and 13% no disclosure or denial), $\chi^2(2, N = 987) = 5.28$, $p = .07$. Though there was a significant difference between CAC and comparison communities, they differed significantly on child race, age at abuse onset, age at forensic interview, and the perpetrator relationship to the child; they showed no difference with respect to the percentage of children giving pre-interview disclosures (62% for both), $\chi^2(1, n = 906) = 0.11$, $p > .10$. There were significant differences by state, although this almost certainly reflects specific characteristics of a particular site versus characteristics of the state as a whole. In the Pennsylvania communities, for example, where lower disclosure rates were found, a number of the children were interviewed at the Emergency Department of a Children's Hospital.

We also examined correlations between predictor variables and disclosure and among study variables (see Table 4). Correlations between child race, suspect race, and other variables were also examined separately. Child race (minority) was positively correlated with having an interview at a CAC, $r(979) = .20$, $p < .001$, suspect race, $r(870) = .80$, $p < .001$, and vaginal/anal penetration, $r(829) = .12$, $p = .001$. It was negatively correlated with caregiver support, $r(753) = –.09$, $p = .02$, and a disclosure being the investigation elicitor, $r(977) = –.07$, $p < .02$. Suspect race (minority) was similarly related to the foregoing variables, except disclosure being the investigation elicitor, for which it had no significant relationship ($p > .10$). Suspect race (minority) was uniquely correlated with suspect age, $r(872) = –.08$, $p = .004$, and extrafamilial abuse, $r(873) = .10$, $p = .004$.

Table 4
Intercorrelations Between Study Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Full disclosure	1.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2. Child sex	.13**	1.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—
(female)	985	985														
3. Child age at abuse onset	.36**	.18**	1.0	—	—	—	—	—	—	—	—	—	—	—	—	—
	736	734	736													
4. Child age at forensic interview	.38**	.16**	.86**	1.0	—	—	—	—	—	—	—	—	—	—	—	—
	969	967	718	969												
5. Suspect-child relationship	.07*	**0.03**	.20**	.11**	1.0	—	—	—	—	—	—	—	—	—	—	—
(extrafamilial)	980	**979**	730	963	980											
6. Suspect cohabit (no)	0.06	**0.06**	0.04	**0.02**	.25**	1.0	—	—	—	—	—	—	—	—	—	—
	669	**667**	565	**657**	666	669										
7. Vaginal/anal penetration (yes)	.15**	.07*	.22**	.29**	0.05	.11*	1.0	—	—	—	—	—	—	—	—	—
	837	835	684	822	833	599	837									
8. Abuse duration (> 1 week)	**.29****	**0.03**	**.24****	**.24****	**0.06**	**.21****	**.11****	1.0	—	—	—	—	—	—	—	—
	980	**978**	**729**	**964**	**975**	**666**	**837**	980								
9. Disclosure investigation elicitor	.19**	0.06	.12**	.15**	.16**	**0.02**	**.08***	0.02	1.0	—	—	—	—	—	—	—
	985	983	734	967	978	**667**	**747**	978	985							
10. Caregiver support (yes)	0.06	**.10****	**0.05**	**.13****	0.05	.24**	.10*	**0.07**	**.11****	1.0	—	—	—	—	—	—
	761	**760**	**609**	**743**	758	555	684	**756**	**761**	761						
11. Caregiver contact police (yes)	.14**	0.01	0.01	–.01	.11**	.14**	.09*	**.22****	**0.03**	.22**	1.0	—	—	—	—	—
	740	738	607	723	737	534	699	**738**	**739**	648	740					
12. Caregiver contact others (yes)	.11**	0.01	**.09***	**.10***	**.10****	**0.04**	–.03	0.01	0.01	**0.03**	.08*	1.0	—	—	—	—
	714	712	**589**	**697**	**711**	**505**	681	712	713	**632**	701	714				
13. Caregiver restrict contact (yes)	.08*	0.02	**0.06**	**.09***	**.10****	0.07	**0.05**	**0.02**	**0.04**	.15**	.17**	.32**	1.0	—	—	—
	674	672	**550**	**657**	**671**	466	**642**	**672**	**673**	588	662	657	674			
14. Caregiver remove suspect (yes)	.09*	0.03	**0.02**	**0.01**	**0.1**	**.20****	**0.01**	**0.01**	**0.01**	0.01	0.04	.21**	.25**	1.0	—	—
	607	605	**494**	**590**	**604**	**401**	**586**	**605**	**606**	530	601	600	594	607		
15. CAC	**.07***	**0.04**	**.12****	.16**	**.12****	**0.05**	0.01	0.01	**.12****	**0.02**	0.03	0.002	**0.02**	**0.06**	1.0	—
	985	**985**	**736**	969	**980**	**669**	837	980	**985**	**761**	740	714	**674**	**607**	985	
16. Suspect age	**0.05**	.13**	**.11****	**0.02**	**.08***	**.10***	**.18****	.15**	.09**	**.16****	**0.02**	0.02	0.03	0.003	–.06*	1.0
	977	976	**727**	**960**	**977**	**663**	**830**	972	816	**757**	**735**	709	669	602	977	977
17. Years from onset	0.02	0.04	**.29****	.34**	**.09***	**.12****	.08*	.19**	0.01	**.13****	0.01	0.04	.14**	0.02	0.03	.10**
	824	822	**718**	824	**819**	**593**	747	819	822	**658**	654	632	592	534	824	816

Note: Spearman's *rho* was used except when both variables were continuous; then, Pearson's *r* was used. Bold signifies a negative relationship.
*$p \leq .05$. ** $p \leq .01$.

Table 5
Final Logistic Regression Predicting Child Full Disclosure ($N = 739$)

Predictor	*B*	*SE*	Wald	*p*	Odds Ratio	95% CI
Child sex (female vs. male)	0.55	.26	4.37	.037	1.73	1.04 to 2.89
Age of abuse onset						
Age variable	0.19	.06	10.95	.001	1.21	1.08 to 1.35
Missing age of onset (yes/no)	–1.08	.43	6.43	.011	0.34	0.15 to 0.78
Age at forensic interview	0.10	.05	3.75	.053	1.11	1.00 to 1.23
Suspect age	–0.01	.01	0.60	.437	1.00	0.99 to 1.01
Suspect relationship to child (intra v. extra)	–0.01	.01	1.35	.245	0.99	0.98 to 1.01
Vaginal/anal penetration						
Yes vs. no	0.24	.26	0.79	.373	1.26	0.75 to 2.12
Missing severity (yes/no)	–2.61	.53	24.07	< .001	0.07	0.03 to 0.21
Previous disclosure						
Yes vs. no	0.83	.23	13.36	< .001	2.30	1.47 to 3.59
Missing previous disclosure (yes/no)	1.60	.81	3.87	.049	4.96	1.01 to 24.44
Caregiver support						
Yes vs. no	1.15	.30	14.70	< .001	3.14	1.75 to 5.65
Missing caregiver support (yes/no)	0.01	.32	0.01	.970	1.01	0.54 to 1.88
State						
Pittsburgh vs. Huntsville	0.13	.31	0.18	.673	1.14	0.62 to 2.10
Dallas vs. Huntsville	0.87	.28	9.40	.002	2.38	1.37 to 4.15
Charleston vs. Huntsville	2.05	.44	22.10	< .001	7.74	3.30 to 18.17

Note: CI = Confidence Interval.
*$p < .05$. **$p < .005$.

Multiple Predictor Model

In general, variables demonstrated by binary analyses to be significantly related to disclosure were then entered simultaneously into a logistic regression model. There were two exceptions. First, the variable "elicitor of abuse investigation" (disclosure vs. nondisclosure) was left out of the regression model because it is closely related to whether a child had already disclosed prior to the forensic interview. Second, caregiver support was entered into the regression. Although caregiver support was only marginally significant at the bivariate level of analysis, several variables measuring actions related to caregiver support were significant bivariate predictors of disclosure. These other caregiver actions, however, were each too specific and had too many missing data points to be good candidates for the logistic regression model.

Table 5 shows the model, which correctly classified 84% of the cases, 96% of the full disclosers, and 39% of the nonfull disclosers. Child sex, child age at abuse onset, abuse severity, pre-investigation disclosure, caregiver support at the time of the pre-interview disclosure, and investigation location each were uniquely associated with children's full disclosures. The adjusted odds of full disclosure during a forensic interview were 1.7 times greater for girls than boys. The adjusted odds of full disclosure were also 1.3 times greater per increased year of age at the time of abuse onset. Children whose severity of abuse was unknown had 0.7 the adjusted odds of full disclosure as children disclosing nonsevere abuse. This severity effect, however, likely reflects the reality that when children give partial or no disclosures of abuse, data on severity are often missing.

When there was a pre-investigation disclosure, the adjusted odds of disclosure at forensic interview were 2.3 times the adjusted odds of disclosure when there was no pre-investigation disclosure. Children whose primary nonoffending caregivers were judged by at least one investigator to be supportive had 3.14 the adjusted odds of disclosure at the forensic interview as children without a supportive caregiver. Finally, the Texas communities had adjusted odds of disclosure that were 2.38 greater than the Alabama communities', and the South Carolina communities had adjusted odds of disclosure that were 7.74 times greater than the Alabama communities'.

Because, as Figure 1 suggests, disclosure rates varied across individual communities within the CAC and state groupings, an additional logistic regression model was run that added a State × CAC interaction effect. In the additional model, this interaction effect was statistically significant ($p = .03$), but the model with the interaction effect was inferior to the prior model because of multicollinearity between "state" and the interaction variable.

Discussion

Unlike previous studies, the present research illuminates the specific relationship of child age at onset and child age at forensic interview to disclosure and suggests that rates of disclosure at the forensic interview may vary across communities. These results were consistent across bivariate analyses and a logistic regression that statistically controlled for relationships among predictor variables. The present study also replicates previous studies on the relationship of child sex and age, previous disclosure, and caregiver support to disclosure. Consistent with previous research (e.g., DeVoe & Faller, 1999; Gries et al., 1996; Hershkowitz et al., 2005), girls had a higher rate of full disclosure during a forensic interview than boys. The finding that children who disclosed prior to the forensic interview more often disclosed at the forensic interview than did children who had made no disclosure prior to the interview also replicated results of previous research (DiPietro et al., 1997; Keary & Fitzpatrick, 1994). The positive relationship between caregiver support and child disclosure is consistent with studies reviewed by Paine and Hansen (2002). Nonetheless, the fact that the investigators documenting caregiver support knew whether children disclosed should make us cautious about interpreting results for this variable. More research on caregiver support that operationalizes support through caregivers' actions is needed because of the biases introduced by relying on the judgments of investigators. The present study outlined various actions that could be used to define caregiver support. In bivariate relationships, contacting law enforcement, contacting another, restricting child-suspect contact, and removing the suspect were related to an increased likelihood of a full disclosure, but because of substantial missing data, these variables were excluded from the regression analysis. These variables merit further examination. In bivariate relationships, disclosure was more common among cases involving extrafamilial abuse, vaginal or anal penetration, and older suspects. But these variables were no longer significant when we controlled for related variables such as location and child age at onset and interview.

Age of Onset and Age at Forensic Interview

The findings on child age replicate and extend findings of previous studies by repeating the relationship of age at interview to disclosure but showing that age at onset has a unique association to disclosure at a forensic interview as well. As previous studies (DiPietro et al., 1997; Hershkowitz et al., 2005; Keary & Fitzpatrick, 1994; see London et al., 2005, 2007; Paine & Hansen, 2002, for reviews) have found, children who were older at the time of the forensic interview were likelier to disclose. Age at interview, however, was correlated with age of onset, and when a multiple predictor model including both ages was examined, both age of onset and age at interview were independently related to disclosure, with age of onset having a stronger independent relationship.

The relationship of age of onset to disclosure may be explained by the reality that the earlier that the abuse began, the older at least some of the memories of abuse will be. Children's ability to disclose may be hampered by the limits of their memory and developmental constraints on their capacity to understand what happened to them at the time. Moreover, a number of other variables (e.g., family dysfunction) may be correlated with age of onset of abuse, which may also affect disclosure. In a bivariate analysis, age at forensic interview was significantly related to disclosure but was a marginally statistically significant predictor ($p = .05$) when its effect independent of age at onset was estimated by the logistic regression analysis. It is likely that older children's greater ability to understand what is needed at a forensic interview and generally to relay more comprehensive narratives (e.g., Orbach & Lamb, 2007) also increases the probability of a full disclosure, independently of when the abuse happened. The logistic regression equation reduced the statistical power of both age at onset and age at forensic interview as predictors given the substantial multicollinearity between them. Nonetheless, it allowed estimation of the unique effect of each age on disclosure to help illuminate what age-related processes might affect disclosure.

Differences by Community

A lesson from the present study is the dependence of disclosure rates on the particular child population and organizations studied. The present study's disclosure rates from abuse investigations by CACs, CPS, and police were substantially higher than disclosure rates of studies that exclusively examined disclosure among children referred to a children's hospital (DiPietro et al., 1997; Keary & Fitzpatrick, 1994). In the present study, too, disclosure rates differed significantly between communities. This seems to be a function of particular characteristics of the multiple communities rather than attributable to differences by state or by CAC status. The CAC status variable was nonsignificantly related to disclosure, and the main effect of state was probably a function of the State × CAC interaction effect. Despite reason to believe that CACs might facilitate child disclosure, the rates of full child disclosures were similar between

CACs and non-CACs, once we accounted for case differences. Also, it should be noted that children interviewed at CACs and non-CACs showed an identical rate of preinterview disclosure. Further research should examine the influence of setting characteristics, interviewers' background (forensic interviewer vs. CPS vs. police), interview methods, the diversity of cases, and methodological differences on disclosure rates. For the time being, there is a limited ability to estimate the probability that, given a particular setting, a given child victim will disclose sexual abuse.

Conclusion

District attorneys often remind juries that there are usually only two witnesses to the crime of sexual abuse: the victim and the suspect. A disclosure during a forensic interview is therefore often critical to an effective response to child sexual abuse. For children whose investigation begins for reasons other than a disclosure, our finding that most of them disclosed fully during a forensic interview is encouraging. At the same time, there are lessons here that might help child abuse investigators, evaluators, and researchers understand better the conditions that help children disclose. Investigators need to be aware of whether children disclosed previously and what circumstances and responses surrounded their disclosures. They need to be sensitive to how old children were when abuse began and how long children have held on to the secret. Knowing the relevance of parental support to child disclosure, they need to assist parents to support their children. Research is needed to understand how a particular setting, its methods, and its child population might affect disclosure. Perhaps most of all, child abuse investigators and evaluators should have confidence that they can assist most child victims to disclose sexual abuse under the right conditions.

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Tonya Lippert, PhD, MSSW, coordinates a project involving foster youth at risk of homelessness at New Avenues for Youth and works for Kaiser Permanente conducting medical evaluations of child abuse at CARES NW. She worked as a research manager for the Dallas Children's Advocacy Center and the Multi-Site Evaluation of Children's Advocacy Centers. Her research interests include understanding how children disclose child maltreatment, predicting confessions among child abusers, and identifying effective methods of engaging and helping at-risk youth and families.

Theodore P. Cross, PhD, is a clinical psychologist and now visiting research professor at the Children and Family Research Center in the School of Social Work at the University of Illinois at Urbana-Champaign. He currently conducts research on placement outcomes, service delivery and well-being for children in foster care. Over the last 23 years, his research has focused on children's services and on the criminal justice response to child maltreatment.

Wendy A. Walsh, PhD, is a research assistant professor of sociology at the Crimes against Children Research Center at

the University of New Hampshire. Her research includes studies on evaluating the community response systems to child abuse, such as the Multi-Site Evaluation of Children's Advocacy Centers, and research on the criminal justice response to child victimization. She also has been conducting research on resilience among maltreated children using the National Survey of Child and Adolescent Well-Being data; statutory rape victimization; and sexual assault on college campuses.

Lisa M. Jones, PhD, is a research assistant professor of psychology at the University of New Hampshire and research faculty with the Crimes Against Children Research Center (CCRC). She has been conducting services and evaluation research on interventions in response to child abuse for over 10 years including research on Children's Advocacy Center (CAC) programs and services, child abuse trends, multidisciplinary team collaboration, and media coverage of child abuse.