Identification of child maltreatment using prospective and self-report methodologies: A comparison of maltreatment incidence and relation to later psychopathology☆

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ABSTRACT

Objectives: One of the greatest methodological problems in the study of childhood maltreatment is the discrepancy in methods by which cases of child maltreatment are identified. The current study compared incidents of maltreatment identified prospectively, retrospectively, or through a combination of both methods.

Method: Within a cohort of 170 participants followed from birth to age 19, incidents of maltreatment which occurred prior to age 17.5 were identified via prospective case review and interviewer ratings of retrospective self-reports. Multi-informant measures of behavior problems were obtained at age 16, and diagnostic assessments of psychopathology were completed at age 17.5.

Results: While the maximal number of maltreatment cases was identified by using a combination of all available identification methods, the prospective method was the single most comprehensive method for identifying the most cases of childhood physical abuse, sexual abuse, and neglect. Those who were identified as maltreated by a combination of both prospective and self-report methods experienced the greatest number of incidences of maltreatment (i.e., 49% of this group experienced more than one type of maltreatment) and displayed the most emotional and behavioral problems in late adolescence (i.e., 74% met diagnostic criteria for a clinical disorder).

Conclusions: This study emphasizes the variability in the incidence rates of maltreatment and the psychological outcomes that result from utilizing different methods of identification. The most severe cases of maltreatment are likely to be identified by both prospective and retrospective methods; however, cases that are identified solely through retrospective self-report may have unique relations to psychopathology in late adolescence.

Practice implications: Reliance on a single method to identify childhood maltreatment incidents often overlooks many cases. Comparing both prospective case reviews and retrospective self-reports in late adolescence, the most severe cases of multiple incidents of abuse were most likely to be identified by both methodologies. The less severe maltreatment incidents were more likely to be missed, either by prospective methods or, more frequently, by self-report methods. Practitioners must be continually sensitive to possible abuse histories among their clients, seeking out information from multiple sources whenever feasible. Additionally, the potential effects of abuse disclosure on pre-existing or developing psychopathology should be considered.

Introduction

Research continues to provide evidence of the risk of developing psychopathology in the wake of child maltreatment, including child behavior problems and later problems with adult functioning (Cicchetti & Toth, 2000; Knutson, 1995). Despite this widespread consideration of child maltreatment as a risk factor for later maladaptation, numerous methodological problems complicate this field of study, most especially the definition and identification of maltreatment, which result in varying estimates of the incidence and psychological sequelae of child maltreatment (Manly, 2005; Putnam, 2003). The authors of the third National Incidence Study of Child Abuse and Neglect have noted that the accurate identification of child maltreatment via official reports by Child Protective Services (CPS) occurred in less than one-half of children independently identified through their study as having been harmed or endangered (Sedlak & Broadhurst, 1996).

Definitions of maltreatment have never been universally operationalized (Briere, 1992; Cicchetti & Toth, 1995; Giovanni, 1989); differing standards apply when defining maltreatment from legal, research, or clinical perspectives. Legal definitions, such as those applied by CPS, are based in current and culturally relative societal norms, which reduce consistency across cultures and even geographic areas. Definitions of maltreatment from a research perspective are generally broader than legal definitions, but also represent objective attempts to operationalize acts of maltreatment. For example, several researchers have devised detailed coding schemes in order to capture the scope of child maltreatment (e.g., Barnett, Manly, & Cicchetti, 1993; Manly, 2005; McGee, Wolfe, & Wilson, 1997; Wolfe & McGee, 1994). However, the victim's subjective account of the abusive experience is also relevant (Wekerle et al., 2001). Clinical definitions of maltreatment are more likely to give weight to the victim's perception of the incident in defining an act as maltreatment (McGee et al., 1997). From a clinical perspective, the meaning and interpretation an individual gives an experience are highly relevant in determining whether it constitutes maltreatment; however, it is important to note that multiple circumstances can interfere with the reporting of past experiences of maltreatment, including accuracy of memory, motivation, relationship with the abuser, and current psychopathology (Briere, 1992; Cicchetti & Rizley, 1981).

In addition to definitional issues, the methodology used to collect information regarding maltreatment also impacts the identification of a sample, and the sources used to collect data are closely tied to the definitions of maltreament which are employed. For example, caregivers' reports of child maltreatment are used as a method of identifying abusive incidents; however, there are inherent difficulties in obtaining accurate information in this manner when the caregiver is also the abuser. A primary method for identifying histories of childhood maltreatment among adults is through retrospective self-report. Self-reports, however, can be problematic due to potential biases in self-perceptions of abusive experiences which may affect the accuracy of reports. It has been shown empirically that even maltreatment occurrences that were officially documented in CPS records may not be subjectively reported in adulthood (Widom, 1998; Widom, Raphael, & DuMont, 2004; Williams, 1995). Some evidence of the reliability of retrospectively reported maltreatment has also been presented (Dube, Williamson, Thompson, Felitti, & Anda, 2004), and retrospective reports of maltreatment can be valuable in that they may provide information on maltreatment experiences that were missed by prospective methods of identification, which could include chronic cases of maltreatment that were not stopped by the intervention of protective services (Kendall-Tackett & Becker-Blease, 2004). Furthermore, retrospective studies are more common in the literature, due to their reduced cost and time, but their restriction to data collection at a single time point is often a major disadvantage in drawing conclusions about causal relations between maltreatment and later outcomes.

In comparison to retrospective studies of maltreatment, which typically rely on self-reports obtained in adulthood, studies that use prospective designs or define maltreatment via objective criteria offer a different perspective on the study of child maltreatment. One approach when studying child maltreatment is to use CPS records, which has the advantage of not relying exclusively on self- or family-report and thus obtaining a more "objective" rating of a potentially sensitive issue as well as reducing common method variance in linking maltreatment to other self-reports of adjustment. However, exclusive reliance on CPS reports will only include officially reported cases of maltreatment. Notably, only a fraction of the total number of maltreatment cases are identified through CPS reports (Sedlak & Broadhurst, 1996), and many incidents of child maltreatment are neither disclosed nor corroborated (Briere, 1992); therefore, CPS reports are generally assumed to underestimate the incidence of maltreatment in a given population.

Methodological variability in data collection methods not only thwarts efforts to obtain consistency and generalizability across studies, but is likely to have real implications for the patterns of findings which are obtained (Widom et al., 2004). For example, in comparisons of maltreatment reports obtained from researchers' ratings of CPS files, adolescents' self-reports, and social workers' ratings, McGee and colleagues have found that self-reports are the strongest predictor of emotional and behavioral problems as rated by the adolescents and by their parents (McGee et al., 1997; McGee, Wolfe, Yuen, Wilson, & Carnochan, 1995). Similarly, in another sample, depression has been more closely linked with self-reports of maltreatment than with objective research definitions (Carlin et al., 1994). A recent study by Cohen, Brown, and Smailes (2001) compared official maltreatment reports of physical abuse and neglect, obtained prospectively throughout childhood, and self-reports of physical abuse and sexual abuse, obtained retrospectively in late adolescence. Cohen et al. found notable differences in rates of psychological disorders among maltreatment groups in terms of both type of abuse and type of report. For example, those with official reports of physical maltreatment initially had higher levels of psychopathology than those who self-reported physical maltreatment, but the rates of psychopathology among those with official reports declined across adolescence. In addition, the participants who in late adolescence self-reported sexual abuse experiences in childhood did not show the overall declines in symptomatology over time which were generally demonstrated in the other maltreatment groups, and

instead showed significantly more elevated rates of Axis I and Axis II disorders in late adolescence. While Cohen et al. (2001) noted the occasional overlap of identification groups, where some participants had both prospective reports and retrospective self-reports of abuse, this combined group remains understudied. In post hoc analysis, the authors did find that the group of individuals with both official and self-reports of physical maltreatment were among the most symptomatic of the study participants, suggesting that future analyses could consider groups with both prospective and retrospective reports as a potential index of abuse severity. Additionally, the Cohen et al. (2001) study is somewhat limited by the fact that they were unable to compare each maltreatment type by each type of report (i.e., prospective and/or retrospective).

In order to determine and compare the incidents of maltreatment obtained by using prospective and retrospective approaches, the current study utilizes a combination of the previously described methods for reporting maltreatment across different types of maltreatment (physical abuse, sexual abuse, and neglect) within a high-risk sample. Prospectively, information about maltreatment was obtained throughout childhood and adolescence regarding any incidents of maltreatment occurring since birth. Retrospective self-reports were obtained from interview data from the participants in early adulthood. For the purposes of the current study, comparisons were made among the individuals identified as maltreated by either retrospective or prospective methods, as well as an additional group comprised of those who were identified by both retrospective and prospective methods.

Because few studies have directly compared rates of maltreatment obtained via multiple methods, our hypotheses are largely exploratory but guided by the current literature. In terms of particular types of abuse, higher rates of neglect are expected to be obtained via the prospective method as compared to the self-report method, as previous research has found lower rates of agreement between self-ratings and objective ratings for neglect more so than other types of maltreatment (McGee et al., 1995). Higher rates of sexual abuse are expected to be detected via self-report than prospective analysis; since official identification of sexual abuse is rarely made in the absence of the victim's account (Beutler & Hill, 1992), the self-report method is expected to include the majority of cases included in the prospectively identified group as well as additional cases that were not reported during childhood. For similar reasons, and in line with the findings of Cohen et al. (2001), more cases of physical abuse are hypothesized to be identified via self-report than by the prospective method alone. Finally, the combination of retrospective self-reports and prospective reports of abusive experiences (i.e., identification of maltreatment by prospective and/or retrospective methods) is expected to identify the greatest number of cases.

This study seeks to compare the association of maltreatment to psychological outcomes as a function of differences in the methodologies used for maltreatment identification. Incidence is expected to vary among the different methods used to identify maltreatment, such that those individuals who are consistently identified as maltreated via both prospective and retrospective methods are hypothesized have the most extensive histories of childhood maltreatment, as compared to those identified by only one methodology. Psychological adjustment will also be compared among the different methods used to identify maltreatment, although the hypotheses in this area are more speculative due to the conflicting nature of previous studies' methods and findings. As previously noted, research has shown that the subjective perception (i.e., self-report) of maltreatment is a better predictor of psychological symptomatology than the objective identification of maltreatment (Carlin et al., 1994; McGee et al., 1997; Wekerle et al., 2001). Recent findings by Cohen and colleagues (2001), however, showed higher rates of psychopathology among participants with prospectively coded reports of physical abuse and neglect (though not sexual abuse) when compared to retrospective reports, although these findings were limited to early adolescence. Therefore, in the current study, it is hypothesized that the self-report methodology used to identify childhood maltreatment will be related to higher self-reported rates of psychological disturbance which were obtained in later adolescence. It is less clear how ratings of psychological disturbance made by reporters other than the participant will vary by methods used to identify maltreatment. It is possible that parent or teacher reports will be less subject to the potential "bias" of the retrospective group, in which participants report their own maltreatment history as well as their psychological functioning. On the other hand, parents and teachers certainly may be less aware of an adolescent's psychological distress, particularly in terms of internalized psychopathology. Therefore, these comparisons are considered to be exploratory for the purposes of the current study.

Methods

Participants

The participants for this study are drawn from the Minnesota Longitudinal Study of Parents and Children, a prospective, longitudinal study which began in 1975 (see Egeland, 1991). At that time, a sample of 267 women of low socioeconomic status who were in the third trimester of their first pregnancy were recruited through a public health clinic where they were receiving prenatal care. All participants provided informed consent at each data collection in accordance with procedures approved by the Institutional Review Board of the University of Minnesota. Mothers' ages at the time of birth ranged from 12 to 32 years (mean = 20.6). Sixty percent of the mothers were unmarried, and 35% had not completed high school, thus reflecting the high-risk nature of the sample. In terms of ethnicity, the mothers were primarily Caucasian (80%), as well as African American (13%) and Latino or Native American (7%). At age 16, 171 adolescents completed self-report measures; 175 adolescents were interviewed for the 17.5-year assessment, and 170 adolescents were interviewed for the 19-year assessment. The current sample consists of 170 participants (90 males, 80 females) who are the first-born children of the mothers described above. Of those participants lost to attrition, the majority were lost in the very early assessments. Those participants

who were not identified as maltreated by either prospective or retrospective methods were retained as the nonmaltreated control group for the purposes of comparative analyses ($n = 82$; 48%). Data for the current study are drawn from assessments completed from the participants' birth through age 19.

Procedures and measures

Prospective identification of maltreatment

Prospective identification of child maltreatment was accomplished by gathering information from participants and their caregivers throughout childhood and adolescence. Interviews with caregivers about CPS involvement, reviews of CPS and medical records, and observation of caregivers and their children at home and in the laboratory at 16 time points from birth to age 6 identified cases of physical abuse, sexual abuse, and neglect (for additional details on the prospective identification of maltreatment in this sample, see Pianta, Egeland, & Erickson, 1989). For the purposes of the current study, the definitions of physical and sexual abuse included incidents perpetrated by persons both within and outside the family. This initial list of prospectively identified cases of maltreatment, as compiled Pianta et al. (1989) though 54 months, was augmented by an additional review of all interviews and observations conducted with parents, teachers, and the participants from 54 months to 17.5 years of age. For each interview, all questions that pertained to involvement with CPS or social services, separations from caregivers, child-directed physical violence in the home, and harsh parental discipline were considered as possible sources of maltreatment information. Although information from the participants' interviews was examined, prospective identification of child maltreatment required corroboration from another reporter, such as a parent or teacher.

The interviews from each assessment were coded according to the coding scheme developed by Barnett et al. (1993) for the maltreatment categories of physical abuse, sexual abuse, and physical neglect. Within each category of maltreatment, a continuous severity score was assigned on a five-point scale. For the purposes of the current study, the scale was dichotomized such that a score of three or higher indicated occurrence of maltreatment. To establish coding reliability, 10% of the cases were coded by an independent rater, and kappa coefficients were computed to measure rating agreement: physical abuse, $k = .81$; neglect, $k = .89$; sexual abuse, $k = .85$; and for all types of maltreatment, $k = .86$.

Retrospective identification of maltreatment

The Adult Attachment Interview (AAI), conducted with participants at age 19, was used to identify retrospective self-reports of child maltreatment, as the interview elicits information about childhood experiences, specifically maltreatment. The AAI, which was designed to measure attachment classifications in adults with respect to childhood attachment figures, asks participants to provide descriptions of each childhood attachment relationship and then asks for specific examples to support the descriptions (George, Kaplan, & Main, 1985). AAI interviewers were not aware of participants' maltreatment histories.

The AAI provides information about childhood experiences in general, which allowed for the potential disclosure of abusive or neglectful experiences that may not have been perceived or labeled by the participant as maltreatment. For example, a participant may discuss a pattern of parenting in which as a preschooler they often "babysat" their younger siblings because their caregiver was absent from home for eight hours or more. While the participant may not later label this incident as maltreatment when asked directly, this incident could still be coded by an independent rater as self-reported neglect. Therefore, a self-reported maltreatment group was created by rating each interview for incidents of maltreatment, again according to the coding scheme developed by Barnett et al. (1993), and dichotomized using the same severity cut-points (i.e., ratings of 3 or higher). Inter-rater reliabilities were also calculated for the self-report group and found to be acceptable: physical abuse, $k = .75$; neglect, $k = .77$; sexual abuse, $k = .95$; and all types of maltreatment, $k = .78$.

Although not specifically designed as a measure of retrospectively reported childhood maltreatment, the AAI includes questions which probe for childhood events such as injury, illness, or loss, and a specific question regarding maltreatment occurs approximately halfway through the interview. Based on responses to this question, a separate group of participants who subjectively self-identified as maltreated was created. However, in order to obtain sample sizes large enough to conduct meaningful analyses, this self-identified group was combined with the larger self-report group (including those who retrospectively reported abusive experiences but did not subjectively identify as having been abused) rather than analyzed separately.

Emotional and behavioral problems

Child Behavior Checklist scales were administered at age 16. The scales are designed to measure emotional and behavioral problems, by rating a series of 113 items reflecting emotional and behavioral symptoms on a three-point scale. The scores are standardized as *T* scores, and each Achenbach scale has well-established reliability and validity (Achenbach, 1991a, 1991b, 1991c). Three separate forms were administered: the Teacher Report Form (TRF) to teachers, the Child Behavior Checklist (CBCL) to parents, and the Youth Self-Report form (YSR) to the participants. From these reports, the current study utilized the internalizing scale, measuring symptoms such as depression or anxiety, and the externalizing scale, measuring problems such as inattention, hyperactivity, or aggression; and the summary total problem scale. All results utilized standardized *T* scores with a normed mean of 50 and standard deviation of 10.

Table 1
Frequencies of maltreatment type by method of identification

	Physical abuse	Sexual abuse	Neglect	Any maltreatment
Retrospective only	12	3	11	12
Proportion of sample	8.5%	2.5%	8.8%	7.1%
Prospective only	25	15	22	35
Proportion of sample	17.9%	12.9%	17.6%	20.6%
Prospective/retrospective	19	14	8	39
Proportion of sample	13.6%	12.1%	6.4%	22.9%
Total reports	56	32	41	86
Combined proportions (across methodologies)	40.0%	27.6%	32.8%	50.9%

Note. Percentages are reported as proportions of the total available sample ($n = 170$) within each subgroup (physical abuse $n = 140$; sexual abuse $n = 116$; neglect $n = 125$).

At age 17.5, the K-SADS (Kiddie Schedule of Affective Disorders and Schizophrenia) semi-structured diagnostic interview was administered to assess current and past levels of psychopathology as described in the Diagnostic and Statistical Manual of Mental Disorders, revised third edition (DSM-III-R, American Psychiatric Association, 1987). Diagnoses were made by trained clinical interviewers based on DSM-III-R criteria. Broad dimensions of psychopathology, comparable to those obtained from the Achenbach scales, were created using both present and past diagnoses. Three psychopathology scales were created: the internalizing disorders scale is a sum of all present and past diagnoses of depression, overanxious disorder, dysthymia, panic disorder, separation anxiety disorder, and obsessive-compulsive disorder. The externalizing scale is a sum of all present and past diagnoses of conduct disorder, oppositional defiant disorder, attention deficit/hyperactivity disorder, and substance abuse. A third scale of total diagnoses represents the sum of internalizing and externalizing disorders; this scale is conceptualized as a marker of disorder comorbidity, which is theorized to indicate overall severity levels of psychopathology (Angold, Costello, & Erkanli, 1999).

Data analysis

Among participants with reports of maltreatment, groups were created to indicate the method of maltreatment identification. In order to create nonoverlapping, mutually exclusive groups, individuals were categorized according to whether their experiences of maltreatment were identified by retrospective report only, by prospective report only, or by both prospective *and* retrospective report (a group hereafter identified as prospective/retrospective). These groups were used in comparisons of types of maltreatment experienced, and diagnoses of psychopathology in late adolescence.

In order to compare maltreatment histories among groups, a maltreatment exposure index was created which reflected the number of types of maltreatment experienced; categories included no maltreatment, one type of maltreatment (i.e., physical abuse, sexual abuse, or neglect), or more than one type of maltreatment. These comparisons were also made contingent on gender. Groups were compared using Kruskal-Wallis nonparametric analyses due to the ordinal and categorical nature of the data.

Groups were also compared in terms of psychopathology measures obtained in late adolescence. The four groups (retrospective only, prospective only, prospective/retrospective, and nonmaltreated) were compared on the Achenbach behavior problems scales from age 16. These comparisons were conducted via analyses of variance, separately for parent, teacher, and self-report. Data obtained from the K-SADS diagnostic interview at age 17.5 was also used to compare frequencies of diagnoses across groups. Past and present diagnoses were totaled, and also analyzed for the separate dimensions of internalizing and externalizing disorders. Again, due to the categorical nature of diagnostic data, Kruskall-Wallis nonparametric analyses were used.

Results

Frequencies for each type of maltreatment (i.e., sexual abuse, physical abuse, neglect) are reported in Table 1, and are separated by method used to identify maltreatment. Note that the methods are mutually exclusive; that is, participants identified via a combination of retrospective and prospective methods are not included in the groups that were identified via one method only (either retrospective or prospective). Frequencies are reported by type of maltreatment type and identification methodology as proportions of the available sample within each subgroup. This variation in sample size is due to the multiple data collection points and the variability in missing data, such that sample sizes were not equal across subgroups. For each type of maltreatment, the greatest number of maltreatment occurrences were identified solely via the prospective method (25 cases of physical abuse, 15 cases of sexual abuse, 22 cases of neglect). However, a substantial additional number of cases were identified via both prospective and retrospective methods (19 cases of physical abuse, 14 cases of sexual abuse, 8 cases of neglect). The total maltreatment rates

obtained by summing across all methods used to identify maltreatment, in proportion to the total available sample, were markedly higher (physical abuse, 40.0%; sexual abuse, 27.6%; neglect, 32.8%) than the rates obtained from any single methodology.

Next, comparisons among identification groups (nonmaltreated control, prospective only, retrospective only, and prospective/retrospective) were conducted to explore the possibility that the groups may differ in terms of severity of maltreatment experienced; specifically, we tested the hypothesis that the participants who were identified both prospectively and retrospectively may have experienced the most types of maltreatment. As expected, results indicated that the prospective/retrospective group most frequently reported the greatest number of maltreatment experiences. Rank means significantly differed across all maltreatment identification groups via Kruskal-Wallis nonparametric tests ($p < .01$). Follow-up Mann-Whitney U tests showed that the prospective/retrospective group experienced multiple types of maltreatment more frequently than either the prospective only group ($p < .01$) and the retrospective only group ($p < .01$); the prospective and retrospective groups did not differ from each other. More specifically, 49% of the prospective/retrospective group experienced more than one type of maltreatment, whereas the frequencies of multiple maltreatment were lower for the prospective and retrospective groups (26% and 33%, respectively).

Further analyses explored gender differences by type of maltreatment type and method of identification. Within the retrospective only group, there were no significant gender differences for total maltreatment, physical abuse, or neglect. Across all groups, females were marginally more likely to report sexual abuse than males ($p = .062$). When the retrospective only group was added with the prospective/retrospective group, the χ^2 became significant ($p < .05$; 21 females and 11 males). These gender differences were only found for the participants who retrospectively self-reported sexual abuse; among the prospective only group, significant differences were not detected between the percentage of males ($n = 7$) and females ($n = 8$) who were identified as sexually abused. However, small sample sizes precluded the possibility of separating the remainder of the analyses by gender.

Achenbach behavior problems scales

In the first set of analyses, the standardized total problem behavior scales were analyzed separately for all three reporters: teacher (TRF), parent (CBCL), and participant (YSR). The main effect of maltreatment group status was significant for each of the informants: TRF, $p < .05$; CBCL, $p < .001$; YSR, $p < .05$. As shown in Table 2, post hoc analyses for the CBCL and YSR revealed that the nonmaltreated control group was significantly lower than the prospective/retrospective group; no other significant group differences were found on these measures of total problem behaviors. Post hoc contrasts using the TRF indicated that the retrospective group was significantly lower than the prospective/retrospective group.

Analyses of variance were also conducted for the internalizing subscales, and the main effect for maltreatment group status was significant for the YSR, $p < .05$, but not for the TRF or CBCL. Post hoc analyses of the YSR indicated that the nonmaltreated group reported significantly lower levels of internalizing problems than the prospective/retrospective group (see Table 2). For the externalizing subscales, the main effect for maltreatment group status was significant for the CBCL, $p < .01$, but not for the TRF or YSR. Post hoc analyses of the CBCL showed that parents of the nonmaltreated participants reported significantly lower levels of externalizing problems than parents of the participants identified as maltreated via both prospective and retrospective methods (see Table 2).

K-SADS diagnoses

The maltreatment identification groups were also compared using the data obtained from the K-SADS diagnostic interview at age 17.5. Table 3 displays the number of diagnoses for each maltreatment identification group, as well as the percentage of participants in each maltreatment group with any diagnoses. The percentage of participants with more than one diagnosis is also presented, and is conceptualized as a marker of severity of psychopathology. As shown in Table 3, the prospective/retrospective group had the highest percentage of diagnoses (73.7%), while the retrospective only group had the highest percentage of multiple diagnoses (54.5%).

In order to investigate differences among the groups, the mean number of total diagnoses on the K-SADS assessment was compared among the four maltreatment identification groups. Kruskal-Wallis tests indicated that the rank means significantly differed across all maltreatment groups ($p < .01$), with the following rank ordering from fewest to most diagnoses: nonmaltreated control, prospective only, retrospective only, prospective/retrospective. Follow-up Mann-Whitney U tests detected significant differences between the control group and the retrospective only group ($p < .05$) and between the control group and the prospective/retrospective group ($p < .001$). In each of these analyses, the nonmaltreated control group had significantly fewer psychiatric diagnoses than the comparison group.

Among the internalizing disorders as assessed by the K-SADS, significant differences among maltreatment groups were detected via Kruskal-Wallis tests ($p < .01$). The mean rank orderings of groups on internalizing disorders, from lowest to highest, were the nonmaltreated group, followed by the prospective group, the retrospective group, and the prospective/retrospective group. Follow-up Mann-Whitney U tests showed that the prospective/retrospective group had significantly more internalizing diagnoses than the nonmaltreated control group ($p < .01$) and the prospectively identified group ($p < .01$); no other significant group differences were detected.

Table 2
Mean scores on Achenbach behavior problems scales (age 16) by method of maltreatment identification

	Teacher Report Scale (TRF)			Child Behavior Checklist (CBCL)			Youth Self-Report (YSR)		
	Total	Int.	Ext.	Total	Int.	Ext.	Total	Int.	Ext.
Nonmaltreated ($n = 82$)	$54.57_{a,b}$ (8.11)	53.23_a (7.91)	55.13_a (8.29)	49.35_a (11.16)	48.92_a (9.53)	51.97_a (10.49)	53.45_a (8.67)	50.85_a (9.27)	55.99_a (9.53)
Prospective only ($n = 36$)	$55.79_{a,b}$ (8.36)	53.52_a (9.55)	55.53_a (8.79)	$53.76_{a,b}$ (8.76)	50.24_a (10.84)	$54.88_{a,b}$ (8.63)	$54.67_{a,b}$ (7.36)	$50.36_{a,b}$ (6.84)	58.27_a (9.68)
Retrospective only ($n = 12$)	50.18_a (7.29)	50.00_a (6.27)	51.36_a (7.92)	$54.60_{a,b}$ (11.39)	51.27_a (14.98)	$54.90_{a,b}$ (9.46)	$54.90_{a,b}$ (7.72)	$52.45_{a,b}$ (7.23)	58.27_a (5.98)
Prospective/retrospective ($n = 45$)	58.58_b (9.25)	56.42_a (7.70)	58.37_a (10.11)	59.06_b (11.00)	55.11_a (11.40)	60.30_b (11.39)	58.91_b (10.22)	55.92_b (10.61)	60.16_a (10.41)

Note. All scores reported are standardized *T* scores. Means with the same subscript are not significantly different at $p < .05$ using Tukey's HSD post hoc tests. Standard deviations are in parentheses.

Table 3
K-SADS diagnoses (age 17.5) by method of maltreatment identification

	Number of diagnoses				Percent with any diagnosis	Percent with >1 diagnosis	Mean total Dx	Mean int. Dx	Mean ext. Dx
	0	1	2–3	4–6					
Nonmaltreated (n=82)	48	19	13	2	41.5	18.3	$.73_a$ (1.08)	$.29_a$ (.64)	$.43_a$ (.86)
Prospective only (n=36)	14	14	7	1	61.1	22.2	$1.03_{a,b}$ (1.20)	$.31_a$ (.90)	$.71_{a,b}$ (1.13)
Retrospective only (n=11)	4	1	5	1	63.6	54.5	1.81_b (1.72)	$.73_{a,b}$ (.90)	1.09_b (1.22)
Prospective/retrospective (n=45)	12	12	11	10	73.7	46.7	2.05_b (1.91)	1.07_b (1.20)	1.03_b (1.20)

Note. Means with the same subscript are not significantly different at $p < .05$ using Mann-Whitney U tests. Standard deviations are in parentheses.

Externalizing disorders identified via the K-SADS assessment were also compared among maltreatment groups. Overall, an omnibus tests revealed that mean ranks of externalizing disorders differed by method of maltreatment identification ($p < .05$) and in a similar pattern to that found among internalizing disorders. In follow-up Mann-Whitney U tests, the nonmaltreated control group exhibited significantly fewer externalizing diagnoses than the retrospective only group ($p < .05$) and the prospective/retrospective group ($p < .01$). No other significant group differences were detected.

Discussion

The results of this study revealed fairly large differences in child maltreatment rates according to the methodology used to identify the occurrence of maltreatment. In a comparison of single identification methodologies (i.e., prospective only or retrospective only), the prospective only method identified a greater number of cases of maltreatment (20.6% of the sample) than the retrospective method (7.1% of the sample). The total number of cases identified through a *combination* of prospective and retrospective report methods also resulted in greater frequencies of maltreatment identification than those identified using the retrospective method only, and the largest number of maltreatment occurrences (22.9% of the sample) was identified by summing across both methodologies. These results may thus be viewed as lending additional support to what many other researchers have previously noted, that the employment of a single method to detect instances of child maltreatment is frequently inadequate or incomplete (Briere, 1992; Finkelhor, 1986; Finkelhor & Hotaling, 1984), and may under-represent the actual incidence of maltreatment in a population.

However, investigations of occurrences of childhood maltreatment rarely have access to both retrospective and prospective data, nor do researchers often have the ability to combine these data in order to identify maximal instances of maltreatment. Therefore, an important question addressed by this study is the direct comparison of maltreatment occurrences identified via different methodologies. Across all types of maltreatment investigated, discrepancies in identifications of maltreatment were noted according to the methodology utilized. Contrary to predictions, rates of both physical and sexual abuse were higher using prospective identification methods, as opposed to retrospective reports. Greater rates of neglect were also identified via prospective methods, as hypothesized. Taken together, these results suggest that prospective methodologies detect more occurrences of child maltreatment than retrospective reports; however, this finding is most likely due to the repeated number of assessments and detailed reviews of records that occurred over time, features which are unique to this prospective longitudinal study. This methodological discrepancy may be especially relevant in identifying sexually abused males, as no gender differences were observed in prospectively identified occurrences of sexual abuse. This finding is in contrast to the preponderance of sexually abused females identified via retrospective self-report methods, a phenomenon which is more frequently noted in the literature (e.g., Sedlak & Broadhurst, 1996).

A second purpose of the current study was to investigate the relations of different maltreatment identification methodologies with multiple measures and multiple reporters of emotional and behavioral disturbance. Overall, and as expected, the nonmaltreated control group generally had the lowest levels of disturbance as compared to the participants who were identified (either prospectively or retrospectively) as maltreated in childhood. Furthermore, the maltreatment identification group that was exposed to the most types of abusive experiences – the combined prospective/retrospective group – generally had the highest levels of emotional and behavioral problems across assessments, a finding which is consistent with previous research (e.g., Cohen et al., 2001). For example, from the K-SADS assessment at age 17.5, the combined group had significantly greater internalizing, externalizing, and total diagnoses when compared to the nonmaltreated control group. From the age 16 assessment, using the parent- and self-report versions of the Achenbach behavior problems scales, the same general trend was observed such that the combined group had significantly higher levels of problems than the nonmaltreated controls in all but one comparison. Among the other maltreatment identification groups, participants who were identified by a single method (either prospective only or self-report only) did not consistently demonstrate elevated levels of psychopathology relative to the nonmaltreated control group. However, the retrospective only group did have a significantly greater number of externalizing and total diagnoses than the control group as assessed via the K-SADS at age 17.5, and the prospective only group had a greater number of internalizing diagnoses than the control group using the same assessment instrument.

Several more specific hypotheses regarding the use of different reporters were also tested. The hypothesis that retrospectively *self-reported* maltreatment would be associated with greater *self-reported* psychological problems was partially supported; those who self-reported child maltreatment, with or without additional prospective identification, had significantly more diagnoses on the K-SADS than the nonmaltreated controls, and showed trends toward exceeding the number of diagnoses in the prospective only group. However, this pattern of findings was not detected in the Youth Self-Report version of the Achenbach behavior problem scales. The specific hypothesis that parent and teacher ratings of emotional and behavioral disturbance would be highest among the most severe maltreatment cases (i.e., those cases identified via both prospective and self-report methodologies) was supported, as noted above. However, no other group differences by maltreatment identification methodology were detected using the parent-report Child Behavior Checklist. The results for the Teacher Report Form did not reveal statistically significant differences among the groups for either the internalizing or the externalizing scales. These results from the parent and teacher reports raise the possibility that the "objective" raters employed in this study were not the most accurate reporters of the participants' adjustment. Teachers, for example, generally only observe a student for a relatively brief period each day in larger classes during adolescence, as compared to earlier in childhood. Parents may also be less aware of problems that their children may be experiencing in adolescence, due to increased independence and reduced supervision. In addition, many potential confounding factors attend the use of parent reports in studies of child maltreatment (if, for example, the parent was also the abuser), which may compromise the validity of parent reports.

Although the overall findings indicate that maltreated children are more likely to have behavior problems and psychopathology in adolescence than nonmaltreated children, these findings mostly hold true for the group identified via both retrospective and prospective methods, which represents the more severe, multiple-incident cases of abuse. We failed to detect a pattern of significant differences in levels of behavioral and emotional disturbance between the nonmaltreated control group and either the prospective only group or the retrospective only group. One possible explanation for these findings may be the high-risk nature of the sample: it may be that emotional or behavioral disturbance is somewhat prevalent among all participants, regardless of maltreatment status. For example, approximately 40% of the nonmaltreated participants met diagnostic criteria for at least one mental disorder in late adolescence. Certainly, while maltreatment has consistently been found to be a serious risk factor for later psychopathology, many other factors which are associated with low socioeconomic status such as family life stress, maternal depression, and parental conflict are also predictors of later psychological problems.

On the other hand, the findings may demonstrate that, regardless of maltreatment identification methodology, the most severe cases of child maltreatment are discovered. In the current study, the cases which were identified both prospectively and retrospectively, which were analyzed as a separate category, were judged to have likely been the most severe cases as well. Therefore, the cases which comprised the prospective only and retrospective only groups were probably less severe in nature, which may partially explain the inconsistent ability to detect differences in psychological disturbance between these groups and the nonmaltreated control group. These findings support the suggestion that future outcome analyses may be more meaningful if they are based on indicators of maltreatment severity rather than dichotomous classification.

An additional caveat regarding the interpretation of the findings in the current study regards the composition of the maltreatment identification groups. In order to create nonoverlapping groups and simultaneously assess the rate of individuals who were identified using both methods, the retrospective and prospective identification groups represent those who were *only* identified via a single method of detecting maltreatment, and not the entire set of participants identified via that method. Although this may limit some comparisons to previous research using retrospective or prospective methods, it also allows the current study a rare opportunity to elucidate differences among those identified by each method and especially those identified by both methods, an option which is not typically available to maltreatment researchers.

Taken together the results clearly support findings from a large number of studies which empirically demonstrate the negative consequences of childhood maltreatment (e.g., Cicchetti & Toth, 1995; Egeland, 1997; McGee et al., 1997). However, it is also evident that the extent to which psychopathological sequelae occur and/or are detected depends in part on the selection of maltreatment samples, informants, and control groups (Carlin et al., 1994; Cohen et al., 2001; McGee et al., 1995; Wekerle et al., 2001). These findings highlight the difficulties inherent in accurately identifying incidents of child maltreatment and the differing outcomes which can result from utilizing various research methodologies. Discrepancies seem particularly likely to occur in the detection of less severe (i.e., single occurrence or less physically evident) cases of child maltreatment. In this study, for example, the participants who experienced the most incidents of maltreatment in childhood were more likely to be those who were identified by both the prospective and the retrospective methods, whereas those whose abuse experiences were characterized as less severe were more likely to be identified by only one of the methodologies used.

The current study has some limitations that should be noted. Certainly, this study is limited by its characterization of maltreatment severity (i.e., based on the number of different types of maltreatment experienced), and a more thorough examination of other aspects of maltreatment severity (e.g., duration, frequency) may provide additional insight to this question. Furthermore, the study is limited by a small sample size, a common issue in many studies of child maltreatment, which limits the empirical power to detect significant differences among groups. Finally, particular characteristics of the current sample, such as the low-SES status of the participants, limit the generalizability of the findings and the relatively

high frequency of prospective data collection (while a strength of the current study's design) limits the ability to compare the results of this study to other prospective studies of child maltreatment.

This study raises a question of both methodological and clinical interest in attempting to characterize the cases of maltreatment that were identified only by retrospective self-report, and not detected via prospective methods. It is clear that many incidents of maltreatment are not identified by CPS or other outside sources and only identified through retrospective self-report. While it may be the case that many of these cases were simply missed by prospective methods such as inspections of CPS reports, there may be other cases in which the adolescent has retrospectively concluded that an experience (or collection of experiences) in childhood was abusive. The subjective identification of such experiences might potentially have a nontrivial influence on the development of psychopathology, or may itself be colored by concurrent psychopathology.

In conclusion, it is erroneous to assume that retrospective reports of child maltreatment are inherently problematic as compared to prospectively identified reports. Rather, both methods provide valuable information regarding maltreatment experiences (Kendall-Tackett & Becker-Blease, 2004). This study represents a rare opportunity to combine methods for identifying maltreatment, and offers the reassuring conclusion that the most severe cases are identified via a combination of both methods. We also reiterate the caveat that no single method provides a complete picture of maltreatment histories, and the differences among cases identified by varying methods may be significant. Future research is needed to replicate and extend these results and conclusions.

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