

# Assessing a Child's Experience of Multiple Maltreatment Types: Some Unfinished Business

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**Abstract** Available research indicates that maltreated children frequently experience multiple types of maltreatment, although relatively few studies examine this issue directly. Review of existing studies also shows that, when investigated, maltreatment types are often correlated. However, from study to study the strength of associations among maltreatment types varies considerably, apparently due to methodological differences, such as differences in operational definitions of the maltreatment types, composition of samples and/or method of scaling used. Failure to account for overlap among maltreatment types can result in a misleading picture of a child's trauma history. This in turn can lead to an inaccurate evaluation of the relationship between a child's victimization experiences and later developmental outcomes. The wide variation in correlations among the maltreatment types from study to study raises questions about the validity of the different operational definitions used. Improving the construct validity of the maltreatment type measures is proposed as the means to obtaining more consistent results. Steps by which to achieve this objective are outlined.

**Keywords** Child maltreatment · Co-occurrence · Multi-type maltreatment · Construct validity · Measurement

## Introduction

The recent identification of the extent to which maltreated children are subjected to other forms of victimization (Finkelhor et al. 2007) continues a several decades long progression of broadening our understanding of the damaging experiences that can befall children. This process has, however, often occurred without refining existing methods and integrating available evidence. One such topic is the precision with which existing conceptual and operational definitions can both identify and clearly differentiate the different types of victimization. Clear definitions are important for characterizing a particular type of victimization, for determining precisely which consequences follow from it, which antecedents precede it, and what to target in an effort to treat or prevent it.

Historically, identification and examination of a child's experience of each maltreatment type has occurred individually and over time. Child physical abuse was the first to appear in the research and practice literature (Kempe et al. 1962). Child neglect, long known to child welfare workers, was identified next (Newberger 1973; Polansky et al. 1981). Emotional abuse followed (Baily and Baily 1986; Brassard et al. 1987; Garbarino et al. 1986; Martin and Beezley 1976). Concurrently, child sexual abuse was identified as a fourth type (Briere and Runtz 1987; Finkelhor 1979). More recently, a child's observing the abuse of other family members has been added to the conceptualization of maltreatment by some researchers (Edleson 2001; Herrenkohl and Herrenkohl 2007; Wolfe and McGee 1994).

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This step-wise process, combined with a tendency for researchers to focus on a single maltreatment type, as well as difficulties measuring multiple maltreatment types, have slowed progress in identifying the precise nature and degree of overlap of maltreatment types in children's maltreatment experiences and in identifying the resulting impact on child victims (Crittenden et al. 1994; Higgins and McCabe 2000a; Lau et al. 2005; National Research Council 1993; Rosenberg 1987). A small amount of recent research provides evidence that children often experience multiple maltreatment types (Higgins and McCabe 2001b) that is, some combination of physical, emotional, sexual abuse, and neglect. More recently, a child's witnessing domestic violence is included (Edleson 2001; Herrenkohl and Herrenkohl 2007). Research has also demonstrated the negative consequences of multi-type maltreatment (Arata et al. 2005; Clemmons et al. 2003; English et al. 2005b; Higgins and McCabe 2000a; Lau et al. 2005; Ney et al. 1994; Vranceanu et al. 2007).

Such research requires that the maltreatment types be assessed concurrently and that each type be clearly distinguished from other types and from other forms of victimization. The obstacle to doing so is not the conceptual, that is, the abstract, theoretical, definition of each maltreatment type. These are relatively clear. For example, Kolko (2002) defines physical maltreatment as "physical acts that caused or could have caused physical injury" (p. 23, U.S. Department of Health and Human Services 2000). Hart et al. (Hart et al. 2002) define psychological maltreatment as repeated caregivers' behaviors that convey to a child that he or she is "worthless, flawed, unloved, unwanted, endangered, or only of value in meeting another's needs" (p. 81, APSAC 1995). Berliner and Elliott (2002) define sexual maltreatment as "any sexual activity with a child where consent is not or cannot be given" (p. 55, Berliner 2000). Finally, Erickson and Egeland (2002) specify the features of five types of neglect: physical, emotional, medical, mental health, and educational.

The difficulty is with the operational definitions of each maltreatment type. Operational definitions, rather than being abstract, specify the behaviors defined by the maltreatment construct. For example, conceptually, physical maltreatment involves acts that cause physical injury. Operationally, this means hitting, kicking, punching, etc. Because there are potentially many behaviors that reflect a conceptual definition, there can be multiple operational definitions assumed to reflect a single conceptual definition of a maltreatment type. Consequently, evidence is needed to indicate which operational definition(s) provide an accurate or 'valid' reflection of a maltreatment type.

The discussion that follows examines several inter-related issues. First, how frequently do maltreated children

experience more than one type of maltreatment? Second, to what degree are the maltreatment types correlated? Third, what is required to establish the validity of each operational definition of each maltreatment type?

The literature uses different terminology to identify a child's experience of multiple types of maltreatment. Sometime it is referred to as 'co-occurrence' (Clausen and Crittenden 1991), sometimes as 'co-morbidity' (Lau et al. 2005), and sometimes as 'multi-type' maltreatment (Higgins and McCabe 2000a). The term, "multi-type" is used in the present discussion.

### How Frequently Does Multi-Type Maltreatment Occur?

Relatively few studies report the frequency of children's experience of multiple types of maltreatment. Table 1 presents findings from studies that give this information. These studies differ in the sources of data used to identify the experience. Some researchers content-analyzed case records of maltreated children served by Child Protective Services (CPS). Some questioned adults from the community who retrospectively reported their childhood maltreatment experience. Others employed multiple sources and/or methods to assess maltreatment. Studies in Table 1 are grouped broadly according to the source of the data used to identify the frequencies, that is, by content analysis of case records, by child self-reports, or by composites of multiple methods.

Among studies that report results of CPS case record analyses, Herrenkohl and Herrenkohl (1981) found that approximately one-third of the 328 families engaged in more than one type of maltreatment. Barnett et al. (1993) reported that children in three-quarters of the nearly 200 maltreating families studied were subjected to more than one maltreatment type. Cicchetti and Ragosch (1997) found that 73.2% of 133 maltreated children experienced multiple forms of maltreatment. McGee et al. (1997) reported that 94% of 160 maltreated adolescents had experienced more than one maltreatment type. Bolger et al. (1998) identified 65% of 107 maltreated children as having experienced more than one maltreatment type.

Some studies that examined CPS records report results differently. Lau et al. (2005) ranked maltreatment types for predominance by two different criteria, then examined children's multi-type experience type by type. Using the 'hierarchical type' prioritization, when sexual maltreatment was identified, 91.4% involved multiple maltreatment types; when physical maltreatment was predominant, 78.7% experienced other types; when neglect was predominant, 36.5% involved other types. Prioritizing type by severity/frequency, when sexual was more severe/frequent, 76.3% involved other types; when physical was more

**Table 1** Frequency of multi-type maltreatment

Reference	Data source	Operational definition	# Abused	% Multi-type	Nt
Child Protection (CPS) Record Analysis (Herrenkohl and Herrenkohl 1981)	CPS ( <i>n</i> =328)	Analysis CPS records, frequency multi-type	328*	33.0	
	CPS ( <i>n</i> ~200)	Analysis CPS records, severity each type	~200	75.0	
	CPS ( <i>n</i> =133) No CPS record ( <i>n</i> =80)	Analysis CPS records, severity each type	133	73.2	
	Adolescents CPS caseload ( <i>n</i> =160)	Analysis CPS records, severity each type	160	94.0	
	CPS ( <i>n</i> =107)	Analysis CPS records, severity each type	107	65.0	
	CPS ( <i>n</i> =519)	Analysis CPS records, each type, identified:	519		
		Predominant type / Frequency & severity	S	105 / 38	91.4 / 76.3
		Predominant type / Frequency & severity	P	178 / 65	78.7 / 41.5
		Predominant type / Frequency & severity	N	230 / 410	36.5 / 43.9
		Predominant type / Frequency & Severity	E	6 / 6	0 / 0
Community / self-report	Patients gynecologic practice ( <i>n</i> =668)	Questionnaire, occurrence P,S,E	354	45.5	
	Community ( <i>n</i> =497)	Interview, occurrence P,S,E	107	34.6	
	Community (Adults <i>n</i> =175)	Comp. child maltreatment, frequency each type (also witnessing FV)	118	64.4	
	College students ( <i>n</i> =112)	Child maltreatment interview, occurrence P,S,E (also witnessing FV)	76	42.1	a
	College students ( <i>n</i> =384)	Childhood trauma questionnaire, frequency each type	193	47.2	
	Patients gynecologic practice ( <i>n</i> =100)	Comp. child maltreatment (adults), frequency each type (also witnessing FV)	85	PN=56 PESN=13	
	Patients health management org. ( <i>n</i> =18,175)	Questionnaire, frequency each type, identified	2275	31.4	
			P / E	2275	32.4
			P / S	2275	32.2
			P / EN	2275	80.5
Multiple sources, methods	CPS / community non-abused ( <i>n</i> =137)	Analysis CPS record, child abuse check list occurrence P,E,N	70	79.0	
	Abused, CPS / non-abused, community ( <i>n</i> =840)	Analysis CPS record, frequency each type	420	24.0	
			E / P	878	42.3
			E / S	878	58.9
			E / EN	878	40.7
			S / P	1812	25.9
			S / EN	1812	20.5
			S / E	1812	52.7
			PN / P	855	35.7
			PN / S	855	31.7

Table 1 (continued)

Reference	Data source	Operational definition	# Abused	% Multi-type	Nt
(Ney et al. 1994)	Psychiatry practice, adolescent unit, youth offenders center, high school ( $n=167$ )	Questionnaire by child, parent, staff, frequency and severity each type	167	95.0	
(McGee et al. 1995)	CPS ( $n=160$ )	Social worker, researcher, child ratings severity each type	160	93.7	
(Kaufman et al. 1994)	CPS ( $n=56$ )	Analysis CPS & medical records, parent intvs, observation, identified severity	56	84.0	
(Crittenden et al. 1994)	CPS ( $n=100$ )	State assessment / Parental assessment severity each type	77 / 77	52.0 / 34.0	
(Clausen and Crittenden 1991)	CPS, mental health centers ( $n=390$ )	Analysis CPS records, parent intvs, Baily assess., identified severity	175	89.0	
			E, also P or N	86.0	

P Physical, S Sexual, E Emotional, N Neglect, PN Physical neglect, EN Emotional neglect, FV Family violence, n number of cases, \*families

severe/frequent, 41.5% involved other types; when neglect was more severe/frequent, 43.9% involved other types.

Several studies asked adults from the community about their childhood experience of maltreatment. Moeller et al. (1993) assessed 668 female patients registered in a gynecological practice of whom 354 (53%) reported experiencing one or a combination of physical, emotional or sexual maltreatment. Neglect was not considered. Among the 161 maltreated as children, 45.5% ( $n=73$ ) reported experiencing two or three maltreatment types. Mullen et al. (1996) interviewed 497 women from the community. Of the 107 who reported being maltreated, 65% ( $n=70$ ) experienced multiple maltreatment types. Higgins and McCabe (2000a) report that of 175 community-based adults 118 (67.4%) were maltreated and 76 (64.4%) met their criterion for maltreatment on two or more maltreatment scales. Higgins and McCabe (2000a) include witnessing domestic violence as a maltreatment type. Clemmons et al. (2003) found that among 112 college students, 76 (67.9%) were maltreated as children. Of the maltreated, 42.1% ( $n=32$ ) experienced multi-type maltreatment. Arata et al. (2005) assessed 384 college students. Of the 193 who reported being maltreated, 47.2% ( $n=91$ ) experienced multiple maltreatment types. Vranceanu et al. (2007) assessed 100 low-income women from a gynecological treatment center and found that 85 (85%) reported being maltreated. Among the latter, 66% ( $n=56$ ) experienced physical abuse and neglect and 15% ( $n=13$ ) experienced all four types.

Dong et al. (2004) assessed 18,175 adults enrolled in a large health management organization (HMO) and reported multi-type maltreatment by each type. Among those who experienced physical maltreatment ( $n=2,275$ ), 31.4% also experienced emotional maltreatment, 32.4% experienced sexual maltreatment and 32.2% experienced emotional neglect. Among those who experienced emotional maltreatment ( $n=878$ ), 80.5% also experienced physical maltreatment, 42.3% experienced sexual maltreatment, and 58.9% experienced emotional neglect. Among those who experienced sexual maltreatment ( $n=1,812$ ), 20.5% experienced emotional maltreatment, 40.7% experienced physical maltreatment and 25.9% experienced emotional neglect. Among those who experienced physical neglect ( $n=855$ ), 31.7% experienced emotional abuse, 52.7% experienced physical abuse and 35.7% experienced sexual abuse.

Among studies using multiple methods, for example, multiple data sources or multiple assessment procedures, to identify multi-type maltreatment Kaufman and Cicchetti (1989) assessed 137 children, 70 (51%) of whom were maltreated and determined that 55 (79%) of those maltreated had experienced multi-type maltreatment. Echenrode et al. (1993) found that of 420 maltreated children, 24% ( $n=101$ ) had experienced multiple forms of maltreatment. Ney

et al. (1994) identified 95% of 167 maltreated children as subjected to multiple types of abuse or neglect. McGee et al. (1995) studied 160 maltreated adolescents of whom 93.7% ( $n=150$ ) experienced multiple types of maltreatment (observing family violence was included as a type).

Kaufman et al. (1994) found that among 56 maltreated children, 84% ( $n=47$ ) had experienced multiple types of maltreatment. Crittenden et al. (1994) assessed 100 children from maltreating families, 77 were maltreated and 23 at risk but not maltreated. Two procedures were used. Considering only physical and emotional maltreatment, a state-mandated assessment identified 52% who experienced both physical and emotional maltreatment. Using an assessment of parental psychologically maltreating behavior, 34% experienced both physical and emotional maltreatment. Clausen and Crittenden (1991) used multiple methods to assess children in families served by child protection ( $n=175$ ). They found that among children who experienced physical maltreatment and/or neglect, 89% also experienced emotional maltreatment, while 86% of emotionally maltreated children also experienced physical maltreatment and/or neglect.

Comparing results from difference studies, among maltreated children the percentage who experienced multi-type maltreatment ranged widely. Among studies based on CPS records, the range is from a low of 33% to a high of 94%. When the occurrence of multi-type maltreatment is reported type by type, rather than for all four types, the range is roughly the same, from 36% to 91%. Studies of adults from the community report percentages that range from 34% to 66%. When frequencies are reported for each type, the range is from 16% to 80%. Studies that involve multiple sources and/or methods report percentages that range from 24% to 95%. When frequencies are reported for each type, the range is from 86% to 89%.

In summary, precise one-to-one comparisons of studies that assess the frequency of maltreated children's experiencing multiple maltreatment types are difficult to make because sources of data, methods of obtaining the data, and/or formulation of reports of multi-type frequencies vary considerably. In spite of these differences, percentages that are reported or can be derived are often quite high. Overall, the implication is that maltreated children often experience more than one type of maltreatment. Higgins and McCabe (2001b) reviewed several studies that examined multi-type maltreatment and came to a similar conclusion that "a substantial proportion of maltreated individuals experience multi-type maltreatment" (p. 575).

### Are the Different Maltreatment Types Correlated?

Is each maltreatment type independent of or related to the other maltreatment types? Researchers differ on the answer.

Some (Kinard 2001; Lau et al. 2005; Manly et al. 1994) consider each type to be independent. Others consider some maltreatment types, for example, emotional maltreatment (Binggeli et al. 2001; Brassard et al. 2000) or neglect (Newberger 1973), to co-occur with other types. The apparent frequency of overlapping maltreatment types would suggest some degree of correlation among operational definitions of the different types. Because multiple types of maltreatment are infrequently examined concurrently, evidence of correlations is scarce.

Why is knowledge of correlations among the maltreatment types important? First, if theory says that the maltreatment types are independent, but measures of the different types are correlated, then either the measures are not valid or the theory is incorrect. Second, since any statistically significant correlation between two measures indicates that they share variance, that is, they are "confounded" (Nunnally and Bernstein 1994), this confounding should be considered when interpreting any relationship between one of the confounded variables and some other variable, such as antecedents or consequences of a maltreatment type. Third, if the different maltreatment types are correlated, finding that a child has experienced one type (e.g., sexual maltreatment) increases the likelihood that the same child has experienced one or more additional maltreatment types with which the initial type is correlated (Dong et al. 2004; Sedlak 1997). All of these issues have implications for understanding etiology and can influence how prevention and intervention are addressed.

Table 2 contains correlations among the maltreatment types reported by a small set of studies. Several of these report more than one set of correlations, based on different samples or different measurement strategies. Correlations from the Lehigh Longitudinal Study (Herrenkohl et al. 1991) are in three sets, based on the same overall sample of families and their children. One (Lehigh 1) involves case record analyses of families served by child protection. A second (Lehigh 2) involves parent self-reports of physical and emotional discipline of preschool age children from families served by child protection and families from the broader community. Neglect for this set is based on direct observation of the household environment (Polansky et al. 1981) by two observers while scoring structured parent-child interactions at preschool age (Herrenkohl et al. 1984). The only assessment of sexual maltreatment for the preschool assessment was that provided by the case record. As adolescents, children in the Lehigh Study retrospectively reported the childhood maltreatment they experienced (Lehigh 3).

As Table 2 indicates, the correlations of physical and emotional maltreatment across studies range from  $r=.13$  to  $r=.78$ . The correlations of physical and neglect range from  $r=-.26$  to  $r=.63$ . The correlations of physical and sexual



**Table 2** Correlations among different maltreatment types: reports from different studies

Reference	Data source	Variable type	CORRELATIONS									
			P×E	P×N	P×S	E×N	E×S	N×S	Nt			
Child Protection (CPS) Record Analysis (Bolger et al. 1998)	CPS (n=107)	CPS records, severity each type	.33	**	.00	-.02	.19	*	.15	-.02	a	
					-.18		.22			-.02	b	
					-.12	**	.10	*	-.07	*	.04	-.09
(English et al. 2005b)	CPS (n=203)	CPS records, severity each type	.16	***	.16	***	.16	**	.11	.10	* b	
Lehigh 1	CPS (n=207)	CPS records, frequency each type	.13	***	-.26	***	-.08		.11	.08		
Professional judgment		Average	.206		-.080		.084		.100	.010		
(McGee et al. 1995)	Adolescents served by CPS (n=160)	Caseworker evaluation, severity each type	.55	**	.29	**	.44	**	.18	*	.14	
(McGee et al. 1995)	Adolescents served by CPS (n=160)	File researcher evaluation, severity each type	.49	**	.30	**	.50	**	.28	**	.18	*
		Average	.520		.295		.470		.230	.160		
Parents' report of child's experience (Higgins and McCabe 1998)	Community & human services (n=50)	Family and life experiences, frequency each type	.62	***	.52	***	.73	***	.28	**	.07	
					.44	*	.51	***	.07		.11	
					.15	**	.02		×	×	×	c
(Higgins and McCabe 2003)	Community (n=50)	Comprehensive child maltreatment, frequency each type	.66	***	.44	*	.51	***	.07	.11		
Lehigh2	CPS & community (n=396)	Interview P & E, observation N, severity P, E, N	.40	***	.15	**	.02		×	×	×	
		Average	.560		.370		.420		.175	.090		
Community / Self-report (McGee et al. 1995)	Adolescents served by CPS (n=160)	Interview, severity each type	.59	**	.41	**	.60	**	.14	.11		
					.63	***	.63	***	.42	***	.50	***
					.63	***	.37	***	.74	***	.43	***
(Higgins and McCabe 2000b)	Adults from community (n=175)	Comprehensive child maltreatment, frequency each type	.74	***	.63	***	.63	***	.42	***	.50	
(Higgins and McCabe, 2003)	Adults from community (n=138)	Comprehensive child maltreatment, frequency each type	.78	***	.63	***	.74	***	.43	***	.33	
(Arata et al. 2005)	College students (n=384)	Childhood trauma questionnaire, frequency each type	.71	***	.56	***	.57	***	.48	***	.49	
Lehigh 3	Adolescents CPS & community (n=409)	Interview, severity each type	.65	***	.37	***	.40	***	.32	***	.35	
		Average	.694		.520		.588		.358	.356		
Multiple sources / methods (Ney et al. 1986)	Children's psychiatric unit (n=57)	Interview, frequency each type	.52	***	.10		.11		.20	.45	*** d	
					.40	***	.61	***	.25	.25	f	

	Children's psychiatric unit (n=57)	Interview, severity each type								
(Ney et al. 1986)			.56	***	.15	.17	.13	.16	.46	*** d
(Kaufman et al. 1994)	Children referred from CPS (n=56)	CPS records, parent interviews, med. records, observation	.24		.28 *	.09	.40 ***	.22	.25	f
(Wolfe and McGee 1994)	CPS adolescents (n=71 males 0–6 yrs.)	Age specific analysis CPS records, frequency each type	.49	***	.27 *	.24 *	.36 **	.16	.23	*
(Wolfe and McGee 1994)	CPS adolescents (n=71 males 7–12 yrs.)	Age specific analysis CPS records, frequency each type	.50	***	.18	.28 *	.03	.14	.25	*
(Wolfe and McGee 1994)	CPS adolescents (n=91 females 0–6 yrs.)	Age specific analysis CPS records, frequency each type	.55	***	.31 **	.38 ***	.26 **	.28 **	.09	
(Wolfe and McGee 1994)	CPS adolescents (n=91 females 7–12 yrs.)	Age specific analysis CPS records, frequency each type	.42	***	.19	.36 ***	.27 **	.21 *	.12	
		Average	.469		.228	.244	.262	.196	.229	

n=number of cases

P Physical, E Emotional, S Sexual, N Neglect

a N is failure to provide, b N is lack of supervision, c S is not available, d N is physical neglect, e Correlations involving S, n=302, f N is emotional neglect

\*p<.05, \*\*p<.01; \*\*\*p<.001

range from  $r=-.02$  to  $r=.51$ . The correlations of emotional and neglect range from  $r=-.08$  to  $r=.74$ . The correlations of emotional and sexual range from  $r=.04$  to  $r=.48$ . The correlations of neglect and sexual range from  $r=-.09$  to  $r=.50$ .

To seek to explain the wide variation of the correlations in Table 2, each set of correlations was grouped according to the type of operational definition used to gather the data on which the correlations were based. These groupings are not clearly mutually exclusive, although they do capture some notable operational distinctions. Three groupings in Table 2, *case record analyses*, *child/adult self-reports*, and *multiple methods*, were the same as in Table 1. In addition, there were three more. *Professional judgments* involve child protection workers, medical personnel, research personnel, or similar individuals who judge the maltreatment experience of a child often using more than one source of evidence. *Parent/caretaker reports* involve data from interviews or questionnaires about maltreating behaviors the child has experienced. *Observation of parent-child interactions* involves observing a parent and a child interacting, either informally, or when performing specified tasks. No published reports of correlations involving the latter method were identified although Kaufman et al. (1994) combined interaction data with data gathered by other methods.

As Table 2 indicates, the average correlation for physical by emotional maltreatment was lowest when case record analysis was the method (av  $r=.206$ ) and highest when self-reports were used (av  $r=.694$ ). This pattern is repeated for the other five maltreatment type pairings. Case record analysis has the lowest average on all six of the pairings. Self-report has the highest average on all six pairings.

Caution is important when interpreting these relatively limited results. However, one can ask: How could the different operational definitions of the same maltreatment types give rise to such different correlations? A report by McGee et al. (1995) is suggestive. It gives two sets of correlations listed under the ‘professional judgment’ method and one under the ‘self-report’ method. These authors studied adolescents served by child protection. Their report indicates that in the child protection case record the “official reason for service” was indicated to be parent-child conflict (47%), neglect (17%), physical abuse (15%), personal counseling (12%), sexual abuse (6%), family violence (2%), or emotional abuse (1%). These percentages add to 100%, which means that a case record attributed only one reason for service to each adolescent. If an adolescent were labeled ‘physically maltreated,’ he or she could not be identified as experiencing other maltreatment types. Multi-type maltreatment could not be identified. As a result correlations among the types would be low. To this point, McGee et al. (1995) note “... the ‘official reason for

service code' supplied by the agency greatly underestimated the co-occurrence of maltreatment in these cases" (p. 239).

Why does this limitation exist? Lau et al. (2005) describe a process used by child protection agencies to define 'predominant type.' This means that a child has attributed to him or her only a single maltreatment type with type prioritized as sexual, physical, neglect, or emotional. The highest priority type experienced is the one attributed to a child. Any lower priority type is not identified. This is illustrated by the Lau et al. (2005) entry in Table 1 that has the frequency of emotional maltreatment as a remarkably low 6 out of 519 cases.

If such a prioritization procedure were followed in gathering information to include in a case record, it could result in low to negative correlations between higher priority types and lower priority types. Similarly, a child protection worker may focus on the maltreatment type that is most likely to be upheld in a court hearing. Either strategy might explain why correlations in Table 2, involving case records, tend to be low, even negative.

Why are the correlations reported by McGee et al. (1995) as high as they are? Having indicated what the case records report, these authors had three sets of raters: social workers, file researchers, and adolescent victims, "rate the extent to which the adolescent had experienced five types of maltreatment" (p. 236). This means that the rating of each type was independent of the ratings of other types so that multi-type maltreatment could be identified. Only when there is such independence is it appropriate to seek explanations for differences in the magnitudes of the correlations.

In Table 2 the correlations among the maltreatment types reported by McGee et al. (1995) and by others (e.g., Higgins and McCabe 1998, 2000b, 2003, and Arata et al. 2005), were based on measurement strategies that allow for the identification of multi-type maltreatment. The resulting correlations are positive and relatively high in contrast to the low correlations based on case records. It appears that operational definitions based on certain data sources constrain the identification of multi-type maltreatment and affect the resulting correlations.

An accurate estimate of the correlations among operational definitions of different maltreatment types is important for correctly interpreting any relationship between a maltreatment type and a non-maltreatment construct. If two maltreatment types are correlated, they are to some degree 'confounded,' that is, they share variance (Kerlinger 1966). The presence of this shared variance should be considered when interpreting the relationship between one of the two maltreatment types and another construct, such as a developmental outcome.

Table 2 indicates instances of such shared variance or confounding. For example, the correlations between phys-

ical maltreatment and emotional maltreatment are often high, ranging from  $r=.13$  to  $r=.78$ . Results from a study by Bernstein et al. (1994) even raise questions about the independence of some types. These authors report that a factor analysis of items that reflect the different maltreatment types resulted in a single factor that included both physical and emotional maltreatment items. Bolger and Patterson (2001) also combine the physical and the emotional maltreatment dimensions. These findings raise questions about the adequacy of the operational definitions of these two maltreatment types.

The present examination of children's experience of multiple maltreatment types reveals the variety of strategies used to measure the maltreatment types. Specifics of the operational definitions and associated methods are provided in Tables 1 and 2. Taken as a whole, there is a range of *sample sources*: child protection units, social service programs for children, psychiatric programs, medical facilities, educational institutions, and the community at large. *Data sources* are child protection records, professional judgments, parent/caretaker reports, structured observations of parent and child, medical records, and child/adult self-reports. *Variables* may be dichotomous or continuous, the latter scaled by frequency or severity. Variables may also comprise composites of ratings by multiple observers and judges. It is not clear how these differences affect correlations among the types.

A National Research Council report (1993) some years ago cautioned that "Research definitions of child maltreatment are inconsistent, and the breadth and quality of instrumentation for child maltreatment studies are seriously incomplete" (p. 31). The quantitative consequences of such inconsistency are reflected in Tables 1 and 2. Inconsistent operational definitions lead to inconsistent results. Inconsistent results raise questions about which operational definitions most accurately reflect the maltreatment type of interest.

### Working Toward Common Definitions of the Maltreatment Types

Validity is what is at issue, specifically, the construct validity of the operational definitions of the maltreatment types. Cook and Campbell (1979) indicate that construct validity poses the question: "Can I generalize from this one operation or set of operations to a referent construct?" (p. 39). The basis for accurately distinguishing maltreatment types in the same study and for comparing results across studies involving the same constructs is the demonstrated ability of each operational definition to reflect the construct it is assumed to represent (Nunnally and Bernstein 1994).



An operational definition's construct validity involves both conceptual and operational considerations. First, a clear construct definition or 'theory' is needed (Judd and Kenny 1981). This is a precise statement about the meaning of the construct and how it functions, that is, how it relates to other relevant constructs. In general, the meaning of each maltreatment type is well defined. Examples of relevant definitions can be found in the APSAC Handbook (Myers et al. 2002). These are outlined above. From each construct definition a list of caretaker behaviors that reflect each definition can be developed. Such lists were developed by, for example, Baily and Baily (1986), Herrenkohl et al. (1991), Barnett et al. (1993), Bernstein et al. (1994), and Higgins and McCabe (2001a). Differences among these and other lists need to be resolved.

What is not well delineated is how each maltreatment construct functions in relation to other constructs. This, however, is a central feature of construct validity (Nunnally and Bernstein 1994). Two sets of hypotheses are involved. One concerns the degree to which each maltreatment type is correlated with each of the other maltreatment types. There are discussions of whether or not the types are independent (Kinard 2001; Lau et al. 2005; Manly et al. 1994), as well as discussions of the difficulty of demonstrating such independence (Barnett et al. 1993; Kinard 1994). Hypotheses about the degree of correlation to expect among operational definitions of the maltreatment types are lacking. These hypotheses have implications for both how we think about the maltreatment types and about how we conduct statistical analyses that involve them.

A second set of hypotheses in a construct definition specifies a construct's relationships to relevant non-maltreatment constructs, such as developmental outcomes. While it is sometimes assumed (Crittenden et al. 1994; English et al. 2005a) that each maltreatment type has distinct effects on a child's development, there are few formulations of relevant hypotheses. Wolfe and McGee (1994) noted more than a decade ago that "most research in this area has attributed the 'effects' of various forms of child maltreatment only globally and without much differentiation among types of experiences" (p. 166). This lack of specificity continues.

Together the two sets of hypotheses constitute the construct theory. They specify how the construct is expected to function. These hypotheses are important as a standard for judging whether an operational definition of a maltreatment type functions as predicted and thus is or is not valid.

In addition, there is limited consideration of how the experience of multiple maltreatment types affects a child. A few studies (Echenrode et al. 1993; English et al. 2005b; Moeller et al. 1993; Mullen et al. 1996; Ney et al. 1994; Wolfe and McGee 1994) have examined such consequences

and found various, often more severe, effects. A question arising from these studies is whether it is the combination of maltreatment types that exerts its own singular effect, dependent on the specific combination involved, or whether it is the specific types of maltreatment in any combination each of which exerts its own independent effect. Ney et al. (1994) indicate that some combinations have worse consequences than others. Another question is how interactions among the types exert their effects. A third set of hypotheses is needed to address these questions.

Tables 1 and 2 (above) identify a variety of operational definitions. Tests of these and other operational definitions are needed to determine how well each meets relevant standards of measurement including construct validity. This should include determining the degree to which operational definitions of the same maltreatment type are actually correlated. This can be done using multi-trait, multi-method analyses to assess convergent and discriminant validity (Campbell and Fiske 1959, Reichardt and Coleman 1995).

Until more attention is given to construct validity, the questions raised above—Which maltreatment types, singly and in combination, result in which outcomes and why?—cannot be answered clearly. Finding answers requires two steps: identifying operational definitions of the maltreatment types that have demonstrated construct validity, then testing hypotheses about how the operational definitions function. From such operational definitions will come more valid and, presumably, more consistent results.

### What Needs to be Done: Some Recommendations

The preceding discussion of multi-type maltreatment has described a set of inter-related challenges. One is the importance of examining a maltreated child's experience of multiple maltreatment types. The issue was highlighted by the NRC report (1993) and its frequency documented by the relatively small number of studies described above and by an earlier review (Higgins and McCabe 2001b). A second challenge is the importance of examining correlations among the different maltreatment types. The relatively few studies that examine correlations among the maltreatment types often find them to be sizeable. Little attention has been given to the implications of these correlations for understanding multi-type maltreatment or for understanding how the maltreatment types, singly and in combination, relate to other relevant constructs. A further issue, arising from the first two, is the challenge of measuring concurrently each of the maltreatment types. The key is to address the construct validity of the different operational definitions of the maltreatment types. While new and revised operational definitions have been reported during the last two decades, inconsistencies among them, pointed to by the

NRC report (1993), specifically, questions about their construct validity, have gone largely unaddressed.

The significance of multi-type maltreatment for children provides an appropriate focus for addressing the broader research issues involved. To this end, several steps to address these challenges are proposed.

*Conduct validity studies* There is a need for more studies that employ multiple methods of measuring each maltreatment type. Methods should include not only different operational definitions but also, for the same operational definition, variations in data sources and type of scaling. Such studies will provide data for conducting case-by-case comparisons as well as multi-trait, multi-method analyses, which examine the degree to which different operational definitions of the same maltreatment type are correlated (convergent validity) and operational definitions of different maltreatment types are not correlated (discriminant validity). The present review has identified six relatively distinct operational strategies for measuring each maltreatment type. When possible, two or more strategies can be examined to determine which provides the more valid reflection of each maltreatment type. Such information will, as evidence accumulates, indicate which are the more valid operational definitions and provide a firmer base for examining multi-type maltreatment.

*Measure all types* At the outset, commitment to measure all maltreatment types requires answers to several questions. One is what represents “all types?” For example, there are decisions to be made about how many and which reflections of neglect are to be delineated. As Table 2 indicates, there are several. Further, is domestic violence to be included? Decisions are also needed about whether the variables are to be dichotomous or continuous and whether scaling is to measure frequency or severity of occurrence (Pedhazur and Schmelkin 1991).

*Report relevant statistics* As a result of measuring all maltreatment types, several sets of statistics become available and should be reported. First, there are the means and standard deviations that result from measuring the maltreatment types in a particular study. Second, there are the correlations among the maltreatment types. Third, there are the frequencies of the different combinations of types. This latter will require deciding numerically the demarcation between maltreatment and non-maltreatment. Overall, assessing each maltreatment type and reporting relevant statistics will aid researchers in judging the comparability of results from different studies and specifically from different samples.

*Develop and test hypotheses about how each maltreatment type functions* Paralleling the measurement issues is a need

for a conceptualization and hypotheses about how each maltreatment type functions. A review of the literature describing the different conceptual perspectives, along with a review of results of any empirical tests of these perspectives, can be a useful guide to developing such hypotheses. Three types of hypotheses are relevant. One is hypotheses about the strength of relationships among the maltreatment types themselves. Are relationships to be expected and why? Another set of hypotheses concerns the non-maltreatment variables each maltreatment type is expected to affect. Which are these variables and why is an effect expected? Finally, hypotheses are needed about which configurations of multi-type maltreatment result in which effects and why.

Even negative results, especially if multiple researchers test the hypotheses, can help to clarify how the different maltreatment types and configurations of multiple maltreatment types function. As these tests proceed, careful attention should be paid to the adequacy of the operational definitions, bearing in mind that negative results can arise either because the result indicates the real state of affairs or because an operational definition is not a valid reflection of a maltreatment type.

Finally, the steps proposed here do not address several issues identified as possible contributors to the consequences of maltreatment (Barnett et al. 1993; English et al. 2005b; Lau et al. 2005; Litrownik et al. 2005; Manly et al. 1994). These concern, for example, how severe each maltreatment type is, a child’s age when first maltreated, how extended over time (‘chronic’) the maltreatment is, and/or whether the multiple types are experienced at the same time or singly over time. The ability to arrive at valid answers to these questions depends on having valid measures of each maltreatment type.

## Summary

The preceding discussion indicates that maltreated children experience multi-type maltreatment relatively frequently, that studies often do not assess the different maltreatment types, and that when assessed the maltreatment types are often found to be correlated. These correlations vary considerably from study to study, a result that raises questions about the validity of the operational definitions used to measure the maltreatment types.

The failure to examine multi-type maltreatment can result in a partial, if not a distorted, picture of a child’s maltreatment experience. Further, a failure to examine correlations among operational definitions of different maltreatment types can result in failing to consider possible confounding of the operational definitions of the maltreatment types. Such confounding can affect the interpretation

of correlations between measures of each maltreatment type and the assessment of a maltreatment type's presumed consequences. A result of these failings can be an inaccurate understanding of the consequences that follow from a child's experience of maltreatment.

The availability of data on all maltreatment types, and on their overlap generated by operational definitions of known validity, will provide a more precise and complete base upon which to develop hypotheses about how maltreatment affects a child. Given the degree of overlap identified here, these hypotheses must account for the interdependent workings of the different types as well as their independent influences. Such information will provide a clearer guide to efforts to treat and possibly to prevent maltreatment.

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