

Exceptionality, Education, and Maltreatment

Dick Sobsey

*JP Das Developmental Disabilities Centre
University of Alberta*

Although the association between child maltreatment and childhood disability has been identified for many years, little was known about the nature or extent of the relation until recently. It is now apparent that children with a wide variety of disabilities are several times as likely to have a history of maltreatment as children without disabilities. Almost one third of children with special needs have substantiated histories of maltreatment and it is extremely likely that many others have experienced unreported or unsubstantiated maltreatment. Current research suggests three categories of relation between maltreatment and disability: (a) Maltreatment causes many disabilities, (b) children with disabilities are more vulnerable to maltreatment, and (c) some other primary causal factors increase risk for both violence and disability. Maltreatment is a significant impediment to student achievement whether a particular maltreated student is classified as having special needs and whether maltreatment was a significant factor in a student's primary diagnosis. Similarly, maltreatment contributes substantially to student behavior problems. To be effective in addressing learning and behavior problems, teachers and schools must identify and respond to child maltreatment and its effects.

Links between child maltreatment and developmental disabilities have been generally identified for many years. In what is generally considered to be the first scientific exploration of crime victims, von Hentig (1940, 1948) identified people with mental disability among those most likely to be victimized. Elmer and Gregg (1967) reported that 50% of the children whom they examined on follow up after abuse were cognitively disabled. This strong association between cognitive disability and child abuse appeared to have important implications. Either children with disabilities were many times more likely to be abused than other children were, or child abuse was one of the most frequent and virtually unrecognized causes of cognitive disability, or some powerful third factor linked the other two (Sandgrund, Gaines, & Green, 1974; Sobsey, 1994). Despite these implications, the findings of the Elmer and Gregg study and several other studies (e.g., Brandwein, 1973;

Sandgrund et al., 1974) suggesting a strong relation between abuse and disability received little attention for the next 2 decades.

Systematic study of the nature and extent of possible relations was extremely limited until the late 1980s. Since that time, much has been done to clarify the link between maltreatment and childhood disability. Before this, the connection between childhood disability and child abuse had been explained away simplistically in one of two ways. First, the dependency–stress theory suggested that children with disabilities created excessive stress for their caregivers, who responded to that stress by abusing the child (e.g., Friedrich & Boriskin, 1978). This theory was based on assumption and when it was tested, it was not empirically supported. Stress and dependency levels turned out to have little value in predicting abuse (e.g., Benedict, Wulff, & White, 1992). Second, it was assumed that cognitive and neurological disabilities were simple outcomes of physical trauma. Although it was certainly true that some neurological deficits did result from the direct effects of battery, many findings, such as those linking incest to abnormal neurological findings (Davies, 1978), could not be explained as the direct physical effects of battery.

In the last decade or so, researchers have given growing attention to the relation between child maltreatment and childhood disability. Although there is a great deal still to be learned, emerging research is helping to clarify the relations between violence against children and childhood disability.

RELATIVE RISKS

Until the 1990s, researchers had not provided well-controlled studies demonstrating the relation between violence and disability. Although a number of studies suggested that a strong association existed, most of those studies suffered from methodological weaknesses, such as small samples that were not randomly selected. Although Sobsey and Varnhagen (1989) concluded tentatively that children with a wide variety of disabilities were at least 1.5 times as likely to be abused as were children without disabilities, this conclusion was based on combining evidence from a variety of small studies rather than any conclusive piece of research.

Using a large, nationally representative sample of confirmed reports of child maltreatment, Crosse, Kaye, and Ratnofsky (1993) concluded that children with disabilities were 1.67 times as likely to be maltreated as children without disabilities. Although this is a very significant increase in risk, the authors cautioned that their estimate of relative risk was likely to be low for two reasons. First, control procedures suggested that it was likely that disabilities had been underdiagnosed among the maltreated children, and the sampling method was likely to have missed most group care settings. In addition to this limitation, the study used atypical categories of disability making it difficult to make statements about the relative risk for children with a particular kind of disability.

Verdugo, Bermejo, and Fuertes (1995) examined 445 children and adolescents (aged birth–19) with disabilities living in institutions in Spain. Their results indicated maltreatment to be 7.7 times as common among those with disabilities as among a control group

without disabilities. The authors noted that these children remained vulnerable throughout adolescence, whereas the vulnerability of controls declined.

Sullivan and Knutson (1998) reported a strong association between disability and child maltreatment in an epidemiological study of children who had been in a hospital or residential program. Although they found extremely strong relations between behavior disorders and maltreatment, and very strong relations between mental disabilities and maltreatment, these associations are difficult to interpret because disability may have played a role in placement in a residential program or hospital.

Sullivan and Knutson (2000) carried out another study that compensated for many of the limitations of the earlier study. Rather than using a nationally representative sample, these researchers used a large cohort of 50,278 children attending school in Omaha. Although the study may be less generalizable to the country as a whole, the internal validity is improved because it allows direct comparison of children who have been abused with those who have not and direct comparison of children with disabilities to those without disabilities within the same data set. Sullivan and Knutson (2000) found children who had been identified by their schools as requiring special education services were 3.4 times as likely to be maltreated as children who had not be found to need services. This meant that almost one fourth (22%) of children with a history of maltreatment were identified as needing special education, and almost one third (31%) of children in special education had a confirmed history of child maltreatment. Because only confirmed cases of maltreatment are included, the actual percentage of children with disabilities who are abused is likely to be higher. The authors showed that the single most prevalent form of maltreatment was neglect, but most maltreated children experienced more than one form of maltreatment. Abused children with disabilities were significantly more likely to experience more than one form of maltreatment and multiple episodes of abuse than were other abused children. Children with disabilities were 3.88 times as likely to be emotionally abused, 3.79 times as likely to be physically abused, 3.76 times as likely to be neglected, and 3.14 times as likely to be sexually abused as children without disabilities.

The Sullivan and Knutson (2000) study also provides the clearest indication to date of how strongly various specific disabilities are associated with child maltreatment. More than one half of children with behavior disorders and more than one third of children with speech and language disorders had confirmed histories of maltreatment. More than one fourth of children with mental retardation or health impairments had confirmed histories of abuse. Children with hearing impairments, learning disabilities, physical disabilities, and visual disabilities also had significantly increased rates of maltreatment when compared to children without disabilities.

Although we now know that there is a very strong link between child maltreatment and disability, we know little about the nature of that link. Three theories could explain the link, and it is likely that all three play some role:

1. Child maltreatment could be an important cause of disability.
2. The presence of a disability may in some way increase risk for abuse.
3. The same primary causal factors that increase risk for disability increase the risk for child abuse.

MALTREATMENT AS A CAUSE OF DISABILITY

The simplest way to explain the strong association between child abuse and disability is to assume that it results from the fact that abuse can be a cause of disability. Certainly, we know that some disabilities do result from child abuse and neglect. The most common cause of serious brain injury in children under 1 year old is child abuse (Billmire & Myers, 1985; Carty & Ratcliffe, 1995; Reece & Sege, 2000).

Direct Effects of Trauma

Although estimates vary, about one fourth of serious brain injury in children is the result of child abuse. For example, Reece and Sege (2000) found that 19% of the children they studied who were hospitalized for brain injury and were 6.5 years of age and younger had injuries that resulted from abuse. The number of children who were injured intentionally was about the same number as those whose injuries resulted from motor vehicle accidents, the largest single cause of accidental injury. In addition, surface injuries that were consistent with intentional injuries were present in about one sixth of the children whose injuries were attributed to accidental causes, suggesting that the actual number of intentional injuries may be far greater. Furthermore, the brain injuries that resulted from child abuse were more serious than those resulting from accidental injury. Ewing-Cobbs et al. (1998) found 45% of children surviving brain injury resulting from violence to be mentally retarded compared to only 5% of those surviving accidental injury. In another study, DiScala, Sege, Li, and Reece (2000) reported 10.6% of all brain injury to children 5 years old and under resulted from battery (53.0%), shaking (10.3%), and other forms of violence (36.7%). They also found children who were intentionally abused were more than three times as likely to have extensive physical limitations on discharge.

Shaken baby syndrome (SBS) is one condition that clearly links abuse and disability. About 60% of infants who survive SBS will become children with severe disabilities (Lund, Sandgren, & Knudsen, 1998), and most of the remaining survivors will have milder disabilities. A few studies of long-term follow up of children treated for SBS report similar results. Sinal and Ball (1987) followed 15 survivors of SBS for 4 years. One of the 15 was described as normal, 7 were classified as severely or profoundly disabled, and the remaining 7 had significant disabilities. Fischer and Allasio (1994) traced the records of 25 SBS infants. Four died after admission, and 4 of 6 who were returned to their original homes had to be excluded from the study because they had been reinjured. In addition, 7 could not be contacted for follow up. Of the 10 remaining survivors, only 3 were classified as normal on discharge and only 1 on follow-up examination. Most of the others had severe disabilities, "including paralysis, seizures, mental retardation, blindness, and behavior disorders" (Fischer & Allasio, 1994, p. 697). Bonnier, Nassogne, and Evrard (1995) also found only one of the 13 SBS children whom they followed to be free of disability. They pointed out that some children appear to be symptom free on discharge or short-term follow up, but develop significant disability 2 to 6 years after being injured. These delays make it difficult to establish clear cause-and-effect relations.

Although research clearly links acute brain injury and long-term disability to children, the cumulative effects of chronic subclinical brain injury due to physical abuse are not well studied or understood. The fact that a significant number of children admitted for acute inflicted brain injury have evidence of prior damage suggests that chronic subclinical injuries may be a major contributor to childhood disabilities (Ewing-Cobbs et al., 1998).

Neglect

Neglect is also a significant cause of childhood disability. The effects of severe neglect were well documented in the first half of the 20th century in studies of institutional care (e.g., Skeels & Dye, 1939; Spitz, 1949), and the basic findings have not changed, although more recent studies have provided greater detail. Ames's (1997) study, for example, reports similar behavioral and cognitive deficits among young children who spent significant time in Romanian orphanages. Although these children made significant, sometimes even remarkable, gains when placed in adoptive families, some effects were not easily or quickly overcome. Medical neglect, often associated with general neglect, can also contribute to disability. For example, children whose ear infections go untreated often acquire permanent hearing impairment (Flaherty & Weiss, 1990).

Psychological and Psychobiological Effects

Even when no physical harm is apparent, abuse and neglect can contribute to childhood disability through its psychological effects. Learning and behavior problems are among the most common effects of child maltreatment even when no organic damage is noted. Posttraumatic stress disorder (PTSD) represents a serious and sometimes incapacitating psychological condition found in some victims of child abuse, including but not limited to, some with other disabilities (Mansell & Sobsey, 2001). Less dramatic, but more common forms of social-emotional-behavioral effects of abuse include withdrawal, aggression, sexually inappropriate behavior, depression, sleep disorders, and a damaged self-image. In some cases, these may be severe enough to result in children being labeled as having behavior disorders.

Regression and learning problems are also common symptoms of abuse. These can result in a diagnosis of cognitive disability. Sullivan and Knutson (2000) reported that among children without disabilities, maltreatment was associated with verbal and nonverbal achievement test scores that were about 15 percentiles lower than those for nonabused children. Although this finding must be treated with some caution because the study did not control for other variables that might account for lower scores, it suggests a potentially huge effect on learning. Although the loss of about 1 *SD* on achievement test scores would be inadequate to explain the diagnosis of a disability, it could easily combine with other factors to tip the balance. In other words, children who would likely perform academically at or above normal under ideal circumstances are likely to perform at lower, but still normal academic levels if maltreated. Those children, how-

ever, who might perform academically at levels considered to be normal, but below average under ideal circumstances, are likely to have their level of performance compromised further to a point that results in diagnosis of disability. As a result of this effect, large numbers of students might be added to the roles of those identified with special needs as a result of the interaction between the effects of maltreatment and other factors that affect learning and behavior.

Although the traditional views of the effects of maltreatment on children separate the organic damage from psychological effects, some contemporary research suggests that the line between organic and psychological effects may be arbitrary and changes as new organic effects are identified. A growing number of researchers suggest that chronic and severe psychological trauma during the developmental years can produce long-term or permanent physiological and anatomical change in children (e.g., Bremner, 1999; De Bellis et al., 1999; Joseph, 1999).

One of the early indicators of this process came from Davies (1978, 1979), who showed that incest survivors were more likely to have epilepsy and atypical electroencephalograms than were other adolescents. This demonstrated that seizures among adolescents who experienced incest were not only a behavioral manifestation of an emotional or psychological state.

More recent studies suggest some of the mechanisms that result in changes in brain chemistry, electrical activity, anatomy, and function as a result of severe stress and psychological trauma. It appears that the severe stress of psychological trauma results in the increased production of cortisol (hydrocortisone) and other related chemicals. These substances alter brain function and ultimately brain structure (e.g., Bremner et al., 1997). Although some of these changes occur in adults as well as children, the effects on the brain during the developmental period appear to be particularly powerful. For example, prolonged and extreme trauma is associated with small volume of the hippocampus (an area of the brain critical for memory) in both children and adults, but limbic function (critical to attention) appears to be affected more severely in children exposed to severe trauma (Teicher, Glod, Surrey, & Swett, 1993). Many researchers who have studied the relation between psychological trauma and brain development have focused on sexual abuse, in part because it makes it easier to separate psychogenic effects from the effects of physical trauma. There is some indication, however, that children who experience multiple forms of maltreatment have the most severe effects (Teicher et al., 1993). The implications of this line of research are powerful. It provides strong additional evidence of the potential for devastating effects of child maltreatment. Brownlee (1996) used the term *soul murder* (p. 71) to describe the developmental effects of violence on children, including mental illness, physiological vulnerability to drug addiction, damage to the structure and function of the hippocampus, seizures, attention deficits, and reduced cortical size and function. Nevertheless, it is important to remember that this is a new area of research and that many important questions remain unanswered.

Although we can now be reasonably certain that severe and prolonged child maltreatment results in long-term or permanent neurological deficits, this must not be interpreted as meaning that abused children can never achieve productive, happy, or normal lives. Many survivors of severe child maltreatment have demonstrated through their resilience that such negative expectations are not generally justified. This re-

search is helping to clarify how child maltreatment may add substantially to disorders of learning and behavior.

Many of these effects have important implications for learning. For example, because children who have been abused typically respond to even mild stress with intense chemical and neurological reactions that can block their ability to learn, establishing a nonthreatening learning environment may be an essential prerequisite for learning. More detailed recommendations for educators appear at the end of this article.

To explain the association between child maltreatment and childhood disability, child abuse and neglect would have to be the leading causes of disability among children by far. Studies of the etiology of childhood disability, however, typically do not even mention it. For example, Batshaw and Shapiro (1997) attributed only 5% of mental retardation to all types of postnatal brain damage (i.e., infection, poisoning, accidental injury, and violence). Even if one assumes that all of this 5% should be attributed to violence, it falls far short of explaining the large excess of children with mental retardation among victims of abuse described by Sullivan and Knutson (2000). To explain the association between mental retardation and abuse solely on the basis of abuse causing mental retardation, about 75% of all cases of mental retardation would have to result from child abuse. Similarly, to explain the even stronger association between behavior disorders and child abuse solely on the basis that abuse creates behavior disorders, between 80% and 90% of all behavior disorders would have to be the result of maltreatment.

Considering contemporary research on the effects of violence on the developing brain and that no cause can be clearly identified for more than half of the cases of mental retardation (Yeargin-Allsopp, Murphy, Cordero, & Hollowell, 1997), future estimates of the contribution of violence to mental retardation may be considerably higher. Maltreatment could eventually be shown to account for 20% or 25% of cases and someday may be recognized as the most frequent single causal factor. Such an estimate, however, would be highly speculative at this time. It seems unlikely that it could account for more than about 25% in view of the fact that many other well documented causes account for a large portion of known cases.

DISABILITY AND VULNERABILITY

If some, but not all, of the association between child abuse and disability can be explained by violence causing disability, the remaining association may be the result of disability acting in some way to increase risk for violence. Although a complete analysis of how disability can contribute to violence goes beyond the scope of this article and has been discussed extensively elsewhere (e.g., Sobsey, 1994; Sobsey & Calder, 1999), a general summary of some of the complex relations is provided here. This summary is based on the multifactorial model developed by Sobsey and Calder. This multifactorial model is an elaboration of Bronfenbrenner's (1977) ecological model of child development that Belsky (1980) adapted to child abuse, and Sobsey later adapted further to violence against people with disabilities.

Child characteristics and behavior are at the center of the model. All children are vulnerable to abuse because they lack the power and skills to avoid, escape from, or resist

powerful abusers. Disabilities can increase this risk. For example, a child who cannot walk cannot run away, and a child with limited communication skills may have more difficulty getting help. For very young children, disability makes little difference, but as children without disabilities begin to develop skills that reduce vulnerability, children who do not develop all of these skills are increasingly vulnerable.

The effects of a child's disability on vulnerability to maltreatment can be conceptually divided into direct and secondary effects. Direct effects can be attributed to a specific impairment, for example, paralysis might make it harder to escape from a risky situation or to resist an abuser. Secondary effects, which may play a larger role, result from the environmental responses to disability. For example, special education programs that teach compliance and violate age-appropriate protection of personal space through extensive physical prompting may leave students more vulnerable to maltreatment (Sobsey & Mansell, 1997).

Potential abusers also are an important factor in the model. Children with disabilities typically have more caregivers and therefore a greater probability of encountering one who is abusive. This risk is substantially compounded by the presence of predatory caregivers who are attracted to human services because they provide access to vulnerable victims, and opportunistic caregivers who become abusive when they realize that they have access to a vulnerable victim in a system that offers little protection (Sobsey, 1994).

Organizational environments and interpersonal relationships also influence the probability of abuse. For example, children with disabilities are more likely to be living outside natural families in foster care, group homes, and large institutions. These environments typically have higher levels of risk. In some cases children who are very vulnerable are placed together with adults or even other children who are known to be violent. This obviously increases the risk for violence and abuse. According to the routine activities model of crime (also known as the lifestyles model), one of the best indicators of risk is the extent to which a potential victim is exposed to potential offenders and isolated from potential sources of protection (Hindelang, Gottfredson, & Garofalo, 1978). One application of how children with disabilities are exposed to this risk is abuse by special transportation providers. Sobsey and Doe (1991) reported that about 7% of the cases of sexual abuse children and sexual assault of adults with disabilities occurred when people with disabilities were sent by taxi or minibus to special programs. Typically, these cases involved the isolation of a vulnerable person with an unknown driver for a period of time, and some schools that carefully checked the histories of their own staff made no attempt to check the staff of contracted services.

Cultural attitudes and beliefs may also play an important part in the abuse of children with disabilities (Grossman, 1995; Sobsey, 1994). Researchers (e.g., Johansson, Bergvall, & Hansen, 1999; Sundberg, Barbaree, & Marshall, 1991) believe that most people have learned to inhibit their violent impulses through the socialization process. Inhibition can be broken down, however, as a result of a number of disinhibiting events (e.g., Johansson et al., 1999). Three powerful means of disinhibition are (a) social distancing or depersonalization, (b) devaluation, and (c) blame. Social distancing rationalizes the abuse of children with disabilities by implying that the victim is not really "one of us." Offenders have rationalized the abuse of children with disabilities saying that they do not really understand what is happening, so they do not suffer the way other children

would. Although this kind of rationalization may seem alien, it is not unique to child abuse offenders. Many prominent bioethicists, for example, argue that “Killing a defective infant is not morally equivalent to killing a person” (Singer, 1979, p. 138). If we as a society accept this proposition, the same logic implies that burning, beating, or sexually assaulting a child with a severe disability are lesser crimes than they would be if committed against a child without a disability. If ethical “experts” define a child with a disability as something less than a person, can we expect greater empathy from other members of society? If depersonalization is a key to the disinhibition of violence, can we define some individuals as less than persons without targeting for maltreatment?

Devaluation acts in much the same way. When the social worth or quality of life of people with disabilities is presented as very low, violence is disinhibited because it is viewed as less harmful. Suffering is viewed as less important because the victims are portrayed as already having ruined lives. Even murder is excusable when the killer rationalizes it as release from suffering.

Blame also disinhibits violence. Children with disabilities are often portrayed as provoking violence with problem behavior or through the stress created by their demands on caregivers. In fact, for many years the primary explanation in professional literature used to explain violence against children with disabilities was the dependency–stress hypothesis (Sobsey, 1994). This explanation suggested that children with disabilities made their caregivers abuse them because of excessive and stressful caregiving demands. In fact, this theory was never supported by research and when tested by research was unsupported (Benedict et al., 1992). Stress may play some role in child abuse, particularly as a triggering mechanism for outbursts of violence, but it does not appear to be a significant cause of abuse.

All of these factors appear to increase the risk of abuse for children with disabilities. We can now say with certainty that the relation between abuse and disability is bidirectional. Abuse causes disability and disability increases risk for victimization.

PRIMARY CASUAL VARIABLES

There are many circumstances and conditions that are known to or suspected to increase the risk for both child abuse and disability. These include parental substance abuse, spousal abuse during pregnancy, poverty, disorganized parental behavior, and a number of other factors. Two of these, parental substance abuse and spousal abuse during pregnancy, are discussed here as examples of how such factors might link abuse and disability.

Substance abuse during pregnancy is associated with higher risk for disability. About 2% of pregnant women consume five or more drinks in 1 day at least once during their first trimester of pregnancy, putting approximately 80,000 newborns at significant risk for fetal alcohol syndrome (FAS) each year in the United States. Another 3% or more abuse alcohol at some time during their pregnancies. As a result, about 1 or 2 babies out of 1,000 are born with FAS, and about 3 to 5 out of 1,000 are born with milder fetal alcohol effects. These children account for 10% to 20% of all children with mental retardation, and many also have behavioral and physical symptoms (Batshaw & Conlon, 1997). Alcohol, however, is not the only drug that causes childhood disability. As many as 1% of pregnant women use

cocaine at some time during their pregnancies. Many of these women are addicted to cocaine, and many of them also use alcohol or opiates during pregnancy.

The effects on children are complex and variable, but babies born to women who abuse substances during pregnancy are much more likely to be small (under 2,500 g), premature, small for gestational age, have cranial hemorrhages, have slow growth and development, and exhibit a wide array of other problems. In addition, women who use cocaine are much more likely to be infected with hepatitis, HIV, and other sexually transmitted diseases. Infants born to these mothers are six times more likely to contract HIV infections as are other babies. These diseases produce additional damage compounding the child's disability. Although it is essential to recognize that children whose mothers use cocaine during pregnancy have a much higher risk for childhood disability, it is also important to remember that many of these children grow up with little or no disability. Other drugs used during pregnancy also increase risk for childhood disability. For example, heroine, other opiates, and nicotine are associated with low birth weight babies. The effects of many other drugs remain unknown or are only partially understood.

Because maternal alcohol or cocaine use increases risk for disability, disproportionate numbers of children with disabilities are born into families where one or both parents use these drugs. Parental use of these drugs, however, is also strongly associated with risk for child abuse (Leventhal et al., 1997). In one study, more than 90% of urban caregivers reported for child abuse were also involved in substance abuse (Scherling, 1994). In another study using a broader sample of court-identified child abusers, 67% involved parents who were substance abusers (Famularo, Kinscherff, & Fenton, 1992).

Because alcohol and cocaine abuse are associated with both childhood disability and family violence, children with disabilities are more likely to be born into families where violence and abuse are problems, and their risk is increased. Although these children are also more likely to be removed from their homes to foster care and other living alternatives (Leventhal et al., 1997) these placements are also associated with higher than average risks. Children living in foster care are more likely to have reported and substantiated maltreatment than children in typical natural families are (Hobbs, Hobbs, & Wynne, 1999; Kears, 1996; Sobsey, 1994).

Spousal abuse during pregnancy may also be a factor linking child abuse and childhood disability. The presence of violence between marital partners in a family is associated with high risk for violence against children. A number of studies suggest that in 30% to 60% of families where spousal violence occurs, violence against children also occurs (Edleson, 1999). Some studies report even higher rates of child abuse in families where spousal abuse takes place (e.g., Bowker, Arbitell, & McFerron, 1988)

There is also strong reason to suspect that families with spousal abuse problems are more likely to have children with disabilities (Sobsey, 1994). Although estimates vary, about 10% of women report violence during pregnancy. Mothers abused during pregnancy are more than twice as likely than other mothers to deliver premature and low birth weight babies considered to have increased risk for being disabled (Fernandez & Krueger, 1999). Although the direct effects of battery on the fetus might be considered a probable causal factor, it is interesting to note that these outcomes have been found in mothers who experience either physical or nonphysical abuse (Campbell et al., 1999). The extreme stress experienced by mothers abused during pregnancy (Muhajarine &

D'Arcy, 1999) may provide an alternative explanation regarding how abuse leads to disability in the baby. High levels of anxiety in expectant mothers have been linked to increased resistance to blood flow in the uterus and, in turn, to babies who are smaller and at greater risk for disability (Teixeira, Fisk, & Glover, 1999).

Other factors, such as poverty and some psychiatric disorders in parents, may also be associated with both child maltreatment and childhood disability. More research is needed to clarify if and how these and other factors increase risk. Because these factors are often coexisting and appear to interact with each other, it may be both difficult and counterproductive to attempt to isolate their effects. For example, severe depression during pregnancy may be associated with poor prenatal care and, later on, with neglect of the child. It may also be associated with substance abuse and domestic violence that compound the problem.

EDUCATIONAL IMPLICATIONS

The prevalence of child maltreatment is high. Studies like the one conducted by Sullivan and Knutson (2000) suggested that all teachers can expect to have approximately 1 student in 10 who has a confirmed history of maltreatment. Teachers of students with disabilities can expect the proportion to be significantly higher. Because the maltreatment experienced by many children is not reported or not proven to a standard required for confirmation, it is likely that considerably more than 1 in 3 students with special needs has experienced significant maltreatment. Considering the substantial effects that abuse and neglect have been shown to have on learning and behavior along with frequency of this problem in children's lives, child maltreatment is a significant educational problem. It now appears to be both a major cause of childhood disability and an important secondary factor complicating and aggravating the effects of disabilities that resulted from other causes.

Prevention

Because child maltreatment has powerful effects that interfere with learning, child abuse prevention is essential to optimizing learning potential for all children. Programs that help prevent child abuse and other forms of violence should not be seen as another optional curricular diversion, but rather as an essential element of the entire educational process. Because children with a variety of special needs have a much greater risk of being victimized, it is essential that they are included in programs that are appropriate to their individual needs. Schools can play a valuable role in prevention and treatment programs (Orelove, Hollahan, & Myles, 2000).

Learning

Now that we know that the trauma of maltreatment frequently results in substantial obstacles to learning, prevention, and elimination of maltreatment must be considered to be

critical goals for education, as well as individual and societal well-being. Students who experience concurrent abuse and neglect are severely disadvantaged for learning, and students whose past trauma has resulted in long-term psychological and biological harm may be equally disadvantaged. Stopping current maltreatment and ameliorating the effects of past trauma are important first steps toward learning. These children need safe and supportive learning environments and the opportunity to develop trusting relationships with caring teachers (Morrow, 1987).

Little is known about specific educational interventions that may prove useful for these students. Preliminary indications suggest that various learning problems may occur in isolation from or, more frequently, in combination with each other.

Individuals who have been abused or neglected experience more physical illness and chronic health problems (Mansell & Sobsey, 2001). It is not surprising that they have more absences from school. Sullivan and Knutson (2000) found that children who were abused missed significantly more days of school than nonabused children. Children with special learning needs also missed more days of school than those without identified exceptionalities. The effects interacted so that abused children with special learning needs missed even more time due to absence. Frequent absences compound their learning problems. Measures that can improve general wellness, improve attendance, or compensate for reduced instructional opportunities due to absence may prove useful for these students.

Many children who are maltreated, particularly those who show signs of PTSD, display symptoms of attention deficit disorder (ADD) such as activity profiles and characteristic brain wave activity (Glod & Teicher, 1996). At this time, it seems reasonable that the same kinds of treatments that work for other children with ADD can prove useful with this subgroup of children, but more research is required to determine whether these ADD children respond like others. In addition, other maltreated children, particularly those who show more signs of depression and fewer signs of post-traumatic stress, do not exhibit typical signs of ADD (Glod & Teicher, 1996).

Some children who have been maltreated have strong stress reactions to what may seem as mild stress to others. In addition, situations and environmental stimuli that do not appear at all stressful to outside observers may trigger these stress reactions. Nevertheless, these severe stress reactions and anxiety attacks overwhelm the student and make learning extremely difficult if not impossible. One approach that has been used for teaching these students is to have these students wear stress monitors that signal the teacher if a student's heart rate accelerates to a level that signals a stress reaction. The teacher can then use this information to determine the best ways and times to deliver instruction.

Detecting and Reporting Maltreatment

Schools play a vital role in detecting and reporting maltreatment of children. There are two reasons to believe that this role is even may be critical in the protection of children with disabilities. First, because students with disabilities appear have a much higher risk, vigilance in detection is particularly important. Second, research suggests that children with disabilities depend on schools to report abuse more than other children do (Crosse et al., 1993). Reports showed that 21.3% of confirmed cases of maltreatment of children

without disabilities were initially reported by school personnel, and 36.2% of the cases of maltreatment of children with disabilities were reported by school personnel (Crosse et al., 1993). Although this finding may indicate that schools are doing a more thorough job protecting children with disabilities, it seems to reflect, at least in part, that other referral sources are less likely to detect or report abuse of children with disabilities. Family members, friends, neighbors, social service agencies, mental health treatment programs, and substance abuse treatment programs accounted for 39.9% of the referrals for children without disabilities, but only 17.3% of referrals of children with disabilities.

Cases of children who “fall between the cracks” indicate that better schools and other agencies can do more to protect children. One basic action that schools can take is the simple enforcement of compulsory attendance rules. Educational neglect often is the presenting symptom of an array of serious problems. The case of a Wisconsin girl with cerebral palsy who weighed 15 pounds when she starved to death in 1998 provides a powerful example. She had not attended school in years; neighbors were unaware of her existence, and she did not see a physician until it was much too late to save her (Demand Accountability, 1998).

It is important to remember that concern for the welfare of the child does not always suggest blame for the family. Families are not responsible for all maltreatment. Some families who have good intentions may lack the competency or resources necessary to care adequately for their children, and need assistance, not blame. In addition, some symptoms of maltreatment have other explanations. For example, some disabilities are associated with frequent bruising or fractures. The role of school personnel should not be to draw conclusions or accuse. Rather, schools should raise concerns and allow properly qualified professionals to evaluate them properly.

Service Delivery Systems

Attempts to teach while ignoring past or even current maltreatment in a student’s life are not likely to be successful. Many child welfare programs, however, are isolated from educational programs (Weinberg, 1997). In some cases, educators are not informed of the maltreatment history of their students. The placement of children into foster care is often done without consideration of the children’s educational needs, and children in foster care are often moved from location to location, resulting in changes in schools, and making it more difficult to identify educational needs. The fragmentation of children’s services into separate entities with little communication or coordination effectively ensures the failure of protective, therapeutic, and instructional goals. As a first step, schools and child welfare agencies must work to improve coordination of their efforts. As an ultimate goal, schools and child welfare might be more effective if they were combined into a single agency.

Schools also must recognize their responsibility to provide reasonable protection for all students. Although it is unreasonable to expect schools to provide perfect safety for all students, schools have a responsibility to maintain levels of safety that are not substantially worse than other community agencies and that demonstrate efforts to control known risks (Sobsey, 1994). Practices such as contracting with taxi companies to trans-

port students to special programs without measures to ensure student safety have been shown to be risky. Schools that persist in these procedures risk civil liability as well as harm to their students.

In some cases the disciplinary practices used by schools have been criticized as a form of maltreatment of students (e.g., Hyman, 1978). Corporal punishment, restraint, and various aversive procedures are considered abusive by some authorities. Although the debate about whether such procedures can ever be justified goes beyond the scope of this article, there are two aspects of this discussion that have special relevance. First, even if corporal punishment and other aversive or restrictive procedures can be used appropriately in some instances, they are extremely likely to do serious harm if applied to children who have already been traumatized by maltreatment. Corporal punishment and ridicule have been linked to emotional damage, increases in violent and disruptive behavior, and learning difficulties (Hyman, 1978). These children have been left vulnerable to stress and any form of violence. The additional trauma of punishment for these students may immediately suppress behavior problems, but the long term results of additional trauma are more likely to lead to worse behavior.

Second, it is important for school personnel to understand that the use of restrictive procedures has resulted in serious harm and sometimes death to significant numbers of students. For example, many children with disabilities have died while being restrained by so-called "safety" procedures. The risks to students are significant and, increasingly, schools and individual staff members employing such techniques without adequate safeguards are being held responsible.

The identification of children with special needs as a subpopulation of students at risk for maltreatment also raises the issue of whether schools should isolate these students for their own protection. Currently, there is no reason to believe that segregating students with special needs into isolated programs keeps them safer and there is some reason to believe that segregated programs increase their risk (Sobsey, 1994). For example, one study found that students who were deaf attending residential schools were much more likely to be sexually abused than students who were deaf attending mainstream schools (Sullivan, Brookhouser, Knutson, Scanlan, & Schulte, 1991). School and community inclusion may actually provide a degree of relative safety for students with special needs, but it is certainly not adequate in itself to ensure safety.

Behavior Disorders

The strong link between behavior disorders and violence suggests the need for great caution in how behavior disorders are analyzed and treated. For example, one study found that aggressive and dominant behavior, episodes of inappropriate anger, and self-injury were common findings among children with developmental disabilities who were sexually abused (Mansell, Sobsey, & Moskall, 1998). These same findings were also common among children without disabilities who had been sexually abused. When these symptoms appear in children without developmental disabilities, etiologies such as child abuse or depression are typically considered and intervention aimed solely at suppressing these symptoms through aversion are considered both countertherapeutic and unethical. These

same standards should be applied to children with developmental disabilities. It is tragic that abuse is rarely considered when these symptoms occur in children whose disability places them in a category known to be associated with a risk for abuse almost four times as high as the risk that other children have.

It has also been demonstrated that other underlying conditions, such as medical problems, may be a cause of behavior problems in many individuals with developmental disabilities (Gunsett, Mulick, Fernald, & Martin, 1989), suggesting that complete multidisciplinary evaluation is essential rather than merely attributing behavior problems to a child's disability. Medical neglect experienced by many maltreated children with disabilities may result in a combination of medical and maltreatment related factors combining to result in behavior problems. As educators become more aware of the frequent role of abuse and neglect as causal factors in behavior problems, they must not overgeneralize to assume that every behavior problem results from maltreatment or that all maltreatment-related behavior can be blamed on families. Many children with learning and behavior problems have excellent families and healthy families remain one of the most valuable assets that children with special needs can have.

Behavior problems that result from maltreatment are rarely if ever helped by aversive and restrictive procedures, although these children may benefit from structure. The establishment of trust is critical to long-term progress, and this requires supportive programs and compassionate teachers (Morrow, 1987). Some children who have been maltreated need much more than supportive schools and families; these children need counseling and, in some cases, medical intervention (Mansell & Sobsey, 2001). Medical intervention for these children should not be aimed at suppressing problem behavior. The use of major tranquilizers, beyond short term emergency treatment, may add to learning problems and aggravate behavioral and emotional symptoms in children who have been maltreated. Other medications such as antidepressants may also prove useful. In some cases, drugs that reduce the production of cortisol and other related compounds may be used to reduce the neurological effects of trauma on children (Perry, 1994). Communication and coordination between school and medical or psychological interventions is important for obtaining the best possible outcome (Orellove et al., 2000).

CONCLUSION

Child maltreatment is a serious problem for all children with significant educational implications. Although all teachers in all schools must confront this issue, teachers serving students with special needs must be particularly prepared because these students are much more likely to be affected than others are. Although much more needs to be learned about the best ways to address the learning and behavior problems of students who have experienced maltreatment, researchers and clinicians have established some basic rules and procedures for working with these students. Schools and other social agencies that serve children need to develop better methods for coordinating their efforts to serve children who have experienced maltreatment.

ACKNOWLEDGMENTS

The development of this article was supported in part by the Temple University Institute on Disability's End the Silence Project with funding as a project of National Significance provided by the United States Administration on Developmental Disabilities, Department of Health and Human Services. The opinions expressed are those of the authors and not necessarily those of the Project, Institute, or Funding Agency.

REFERENCES

- Ames, E. (1997). Developmental milestones and intelligence. *The development of Romanian orphanage children adopted to Canada. Final Report*. Ottawa: National Welfare Grants Program.
- Batshaw, M. L., & Conlon, C. J. (1997). Substance abuse: A preventable threat to development. In M. L. Batshaw (Ed.), *Children with disabilities* (4th ed., pp. 143–162). Baltimore: Brookes.
- Batshaw, M. L., & Shapiro, B. K. (1997). Mental retardation. In M. L. Batshaw (Ed.), *Children with disabilities* (4th ed., pp. 335–359). Baltimore: Brookes.
- Belsky, J. (1980). Child maltreatment: An ecological integration. *American Psychologist*, *35*, 320–335.
- Benedict, M. I., Wulff, L. M., & White, R. B. (1992). Current parental stress in maltreating and nonmaltreating families of children with multiple disabilities. *Child Abuse & Neglect*, *16*, 155–163.
- Billmire, M. E., & Myers, P. A. (1985). Serious head injury in infants: Accident or abuse? *Pediatrics*, *75*, 340–342.
- Bonnier, C., Nassogne, M. C., & Evrard, P. (1995). Outcome and prognosis of whiplash shaken infant syndrome: Late consequences after a symptom-free interval. *Developmental Medicine and Child Neurology*, *37*, 943–956.
- Bowker, L. H., Arbitell, M., & McFerron, J. R. (1988). On the relationship between wife beating and child abuse. In K. Yllo & M. Bogard (Eds.), *Feminist perspectives on wife abuse* (pp. 158–174). Newbury Park, CA: Sage.
- Brandwein, H. (1973). The battered child: A definite and significant factor in mental retardation. *Mental Retardation*, *11*(3), 50–51.
- Bremner, J. D. (1999). Does stress damage the brain? *Biological Psychiatry*, *45*, 797–805.
- Bremner, J. D., Randall, P., Vermetten, E., Staib, L., Bronen, R. A., Mazure, C., Capelli, S., McCarthy, G., Innis, R. B., & Charney, D. S. (1997). Magnetic resonance imaging-based measurement of hippocampal volume in posttraumatic stress disorder related to childhood physical and sexual abuse—A preliminary report. *Biological Psychiatry*, *41*, 23–32.
- Bronfenbrenner, U. (1977). Toward an experimental ecology of human development. *American Psychologist*, *32*, 513–531.
- Brownlee, S. (1996, November 11). The biology of soul murder. *U.S. News and World Report*, *121*, 71–73.
- Campbell, J., Torres, S., Ryan, J., King, C., Campbell, D. W., Stallings, R. Y., & Fuchs, S. C. (1999). Physical and nonphysical partner abuse and other risk factors for low birthweight among full term and preterm babies: A multiethnic case-control study. *American Journal of Epidemiology*, *150*, 714–726.
- Carty, H., & Ratcliffe, J. (1995, February 11). The shaken infant syndrome. *BMJ: British Medical Journal*, *310*, 344–345.
- Crosse, S. B., Kaye, E., & Ratnofsky, A. C. (1993). *A report on the maltreatment of children with disabilities* (Contract No: 105–89–1630). Washington, DC: National Center on Child Abuse and Neglect.
- Davies, R. K. (1978). Incest: Some neuropsychiatric findings. *International Journal of Psychiatry in Medicine*, *9*, 117–121.
- Davies, R. K. (1979). Incest and vulnerable children. *Science News*, *116*, 244–245.
- De Bellis, M. D., Keshavan, M. S., Clark, D. B., Casey, B. J., Giedd, J. N., Boring, A. M., Frustaci, K., & Ryan, N. D. (1999). A. E. Bennett Research Award. Developmental traumatology. Part II: Brain development. *Biological Psychiatry*, *45*, 1271–1284.

- Demand Accountability for Death. [Editorial]. (1998, December 2). *Wisconsin State Journal*, p. 11A.
- DiScala, C., Sege, R., Li, G. H., & Reece, R. M. (2000). Child abuse and unintentional injuries—A 10-year retrospective. *Archives of Pediatrics & Adolescent Medicine*, *154*, 16–22.
- Edleson, J. L. (1999). The overlap between child maltreatment and woman battering. *Violence Against Women*, *5*, 134–154.
- Elmer, E., & Gregg, G. S. (1967). Developmental characteristics of abused children. *Pediatrics*, *40*, 596–602.
- Ewing-Cobbs, L., Kramer, L., Prasad, M., Canales, D. N., Louis, P. T., Fletcher, J. M., Vollero, H., Landry, S. H., & Cheung, K. (1998). Neuroimaging, physical, and developmental findings after inflicted and noninflicted traumatic brain injury in young children. *Pediatrics*, *102*, 300–307.
- Famularo, R., Kinscherff, R., & Fenton, T. (1992). Parental substance abuse and the nature of child maltreatment. *Child Abuse & Neglect*, *16*, 475–483.
- Fernandez, F. M., & Krueger, P. M. (1999). Domestic violence: Effect on pregnancy outcome. *Journal of the American Osteopathic Association*, *99*, 254–256.
- Fischer, H., & Allasio, D. (1994). Permanently damaged: Long-term follow-up of shaken babies. *Clinical Pediatrics*, *33*, 696–698.
- Flaherty, E. G., & Weiss, H. (1990). Medical evaluation of abused and neglected children. *American Journal on Diseases of Children*, *144*, 330–334.
- Friedrich, W. N., & Boriskin, J. A. (1978). Primary prevention of child abuse: Focus on the special child. *Hospital and Community Psychiatry*, *29*, 248–256.
- Glod, C. A., & Teicher, M. H. (1996). Relationship between early abuse, posttraumatic stress disorder, and activity levels in prepubertal children. *Journal of the American Academy of Child & Adolescent Psychiatry*, *35*, 1384–1393.
- Grossman, D. (1995). *On killing*. Boston: Little, Brown.
- Gunsett, R. P., Mulick, J. A., Fernald, W. B., & Martin, J. L. (1989). Brief report: Indications for medical screening prior to behavioral programming for severely and profoundly mentally retarded clients. *Journal of Autism and Developmental Disabilities*, *19*, 167–172.
- Hindelang, M. J., Gottfredson, M., & Garofalo, J. (1978). *Victims of personal crime*. Cambridge, MA: Ballinger.
- Hobbs, G. F., Hobbs, C. J., & Wynne, J. M. (1999). Abuse of children in foster and residential care. *Child Abuse & Neglect*, *23*, 1239–1252.
- Hyman, I. A. (1978). Corporal punishment in schools: America's officially sanctioned brand of child abuse. In M. L. Lauderdale, R. N., Anderson, & S. E. Cramer (Eds.), *Child abuse and neglect: Issues on innovation and implementation* (Vol. 1, pp. 138–143). Washington, DC: National Center on Child Abuse and Neglect.
- Johansson, A. K., Bergvall, A. H., & Hansen, S. (1999). Behavioral disinhibition following basal forebrain excitotoxin lesions: Alcohol consumption, defensive aggression, impulsivity and serotonin levels. *Behavioral Brain Research*, *102*, 17–29.
- Joseph, R. (1999). The neurology of traumatic “dissociative” amnesia: Commentary and literature review. *Child Abuse & Neglect*, *23*, 715–727.
- Kearse, B. P. (1996). Abused again: Competing constitutional standards for the state's duty to protect foster children. *Columbia Journal of Law and Social Problems*, *29*, 385–410.
- Leventhal, J. M., Forsyth, B. W. C., Qi, K., Johnson, L., Schroeder, D., & Votto, N. (1997). Maltreatment of children born to women who used cocaine during pregnancy: A population-based study. *Pediatrics*, *100*, E7.
- Lund, A. M., Sandgren, G., & Knudsen, F. U. (1998). Shaken baby syndrome. *Ugeskrift for Laeger*, *160*, 6632–6637.
- Mansell, S., & Sobsey, D. (2001). *Counseling people with developmental disabilities who have been sexually abused*. Kingston, NY: NADD Press.
- Mansell, S., Sobsey, D., & Moskall, R. (1998). Clinical findings among sexually abused children with and without developmental disabilities. *Mental Retardation*, *36*, 12–22.
- Morrow, G. (1987). *The compassionate school: A practical guide to educating abused and traumatized children*. Englewood Cliffs, NJ: Prentice Hall.
- Muhajarine, N., & D'Arcy, C. (1999). Physical abuse during pregnancy: Prevalence and risk factors. *Canadian Medical Association Journal*, *160*, 1007–1011.
- Orelove, F. P., Hollahan, D. J., & Myles, K. T. (2000). Maltreatment of children with disabilities: Training needs for a collaborative response. *Child Abuse & Neglect*, *24*, 185–194.

- Perry, B. D. (1994). Neurobiological sequelae of childhood trauma: Post traumatic stress disorders in children. In M. Murburg (Ed.), *Emerging concepts: Catecholamine function in post traumatic stress disorder* (pp. 253–276). Washington, DC: American Psychiatric Press.
- Reece, R. M., & Sege, R. (2000). Childhood head injuries: Accidental or inflicted? *Archives of Pediatric and Adolescent Medicine*, *154*, 11–15.
- Sandgrund, A., Gaines, R. W., & Green, A. H. (1974). Child abuse and mental retardation: A problem of cause and effect. *American Journal of Mental Deficiency*, *79*, 327–330.
- Scherling, D. (1994). Prenatal cocaine exposure and childhood psychopathology: A developmental analysis. *American Journal of Orthopsychiatry*, *64*, 9–19.
- Sinal, S. H., & Ball, M. R. (1987). Head trauma due to child abuse: Serial computerized tomography in diagnosis and management. *Southern Medical Journal*, *80*, 1505–1152.
- Singer, P. (1979). *Practical ethics*. Cambridge, England: Cambridge University Press.
- Skeels, H. M., & Dye, H. B. A. (1939). A study of the effects of differential stimulation mentally retarded children. *Proceedings & Addresses of the American Association on Mental Deficiency*, *44*, 114–136.
- Sobsey, D. (1994). *Violence and abuse in the lives of people with disabilities: The end of silent acceptance?* Baltimore: Brookes.
- Sobsey, D., & Calder, P. (1999, October). *Violence against people with disabilities: A conceptual analysis*. Paper commissioned by the Committee on Law and Justice of the National Research Council, Washington, DC.
- Sobsey, D., & Doe, T. (1991). Patterns of sexual abuse and assault. *Journal of Sexuality and Disability*, *9*, 243–259.
- Sobsey, D., & Mansell, S. (1997). Teaching people with disabilities to be abused and exploited: The special educator as accomplice. *Developmental Disabilities Bulletin*, *25*, 77–93.
- Sobsey, D., & Varnhagen, C. (1989). Sexual abuse of people with disabilities. In M. Csapo & L. Gougen (Eds.), *Special education across Canada: Challenges for the 90s* (pp. 199–218). Vancouver: Centre for Human Development & Research.
- Spitz, R. A. (1949). The role of ecological factors in emotional development in infancy. *Child Development*, *20*, 145–155.
- Sullivan, P. M., Brookhouser, P. E., Knutson, J. F., Scanlan, J. M., & Schulte, L. E. (1991). Patterns of physical and sexual abuse of communicatively handicapped children. *Annals of Otolaryngology, Rhinology, and Laryngology*, *100*, 188–192.
- Sullivan, P. M., & Knutson, J. F. (1998). The association between child maltreatment and disabilities in a hospital-based epidemiological study. *Child Abuse & Neglect*, *22*, 271–278.
- Sullivan, P. M., & Knutson, J. (2000). Maltreatment and disabilities: A population-based epidemiological study. *Child Abuse & Neglect*, *24*, 1257–1273.
- Sundberg, S. L., Barbaree, H. E., & Marshall, W. L. (1991). Victim blame and the disinhibition of sexual arousal to rape vignettes. *Violence and Victims*, *6*, 103–120.
- Teicher, M. H., Glod, C. A., Surrey, J., & Swett, C., Jr. (1993). Early childhood abuse and limbic system ratings in adult psychiatric outpatients. *Journal of Neuropsychiatry & Clinical Neurosciences*, *5*, 301–306.
- Teixeira, J. M., Fisk, N. M., & Glover, V. (1999). Association between maternal anxiety in pregnancy and increased intrauterine artery resistance index. Cohort based study. *British Medical Journal*, *318*, 153–157.
- Verdugo, M. A., Bermejo, B. G., & Fuertes, J. (1995). The maltreatment of intellectually handicapped children and adolescents. *Child Abuse & Neglect*, *19*, 205–215.
- von Hentig, H. (1940). Remarks on the interaction of perpetrator and victim. *Journal of Criminal Law and Criminology*, *31*, 303–309.
- von Hentig, H. (1948). *The criminal and his victim*. New Haven, CT: Yale University Press.
- Weinberg, L. A. (1997). Problems in educating abused and neglected children with disabilities. *Child Abuse & Neglect*, *21*, 889–905.
- Yeargin-Allsopp, M., Murphy, C. C., Cordero, J. F., & Hollowell, J. G. (1997). Reported biomedical causes and associated medical conditions for mental retardation among 10-year-old children, metropolitan Atlanta, 1985–1987. *Developmental Medicine & Child Neurology*, *39*, 142–149.

Copyright of Exceptionality is the property of Lawrence Erlbaum Associates and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.