A Dissertation

entitled

The Efficacy of Educating Medical Students on How to Identify and Report Suspected Child Maltreatment

by

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The consistently high prevalence of child maltreatment in the United States is cause for great concern. It is particularly alarming given the serious negative medical and psychological outcomes found to be associated with child maltreatment. While the literature in the field of child maltreatment has successfully identified child populations most at risk, these children continue to be maltreated. Research pertaining to secondary and tertiary prevention has identified possible factors hindering mandated professionals from reporting. Few programs have been implemented with medical professionals to reduce suspected child maltreatment. The current study examined the efficacy of providing training for medical students to identify and report child maltreatment using the Child Advocacy Studies Training (CAST) program. Results were as expected and yielded large effect sizes, and indicated that the CAST program demonstrated statistically
significant improvements in 1) students’ perceived preparedness to address child maltreatment, 2) knowledge (accuracy) pertaining to identification and reporting, 3) confidence and 4) attitudes toward child maltreatment issues. Implications of the current research include increased physician knowledge about child maltreatment, increased likelihood that physicians will report suspected maltreatment and more efficacious secondary and tertiary prevention of child maltreatment. The current study demonstrates that the CAST program is an effective method for training medical students on child maltreatment.
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Preface

Child abuse and neglect, often referred to as child maltreatment, has remained at alarmingly high rates for years (Trickett, Negriff & Peckins, 2011). Incidence reports have consistently shown that millions of children are affected by various forms of violence every year (NIS-4; Sedlak, Mettenburg, Basena, Petta, McPherson, Greene et al., 2010). Moreover, it is estimated that many more children experience child maltreatment but are never identified (Copeland, Keeler, Angold, & Costello, 2007). Approximately 2,000 children die annually as a result of child maltreatment (National Center for Child Death Review Policy and Practice; Retrieved from: http://www.childdeathreview.org/causesCAN.htm, July, 2011).

Child maltreatment is associated with both medical and psychological problems for children; for example, chronic obstructive pulmonary disease, heart disease, liver disease, anxiety, depression, suicide and many others (Anda, Felliti, Bremner, Walker, Whitfield, Perry et al., 2005; Corso, Edwards, Fang & Mercy, 2008; Repetti, Taylor, & Seeman, 2002; Taylor, Lerner, Sage, Lehman & Seeman, 2004). Furthermore, child maltreatment appears to affect children from all races, ethnicities and parts of the world (Kelly, 2010; Pinheiro, 2006). It has, however, been shown that child maltreatment is more likely to occur in some child populations more than others, for example, infants, children with special needs, and children of lower socioeconomic status (SES) (Hibbard & Desch, 2007; Stith et al., 2009; Wotherspoon, Vellet, Pirie, O’Neill-Laberge, Cook-Stanhope, & Wilson, 2010) are all at higher risk. Children from lower SES families may be at even greater risk than usual because of the current economic state of our country.
Research has shown that rates of child maltreatment are likely to rise during a recession (Millett, Lanier, & Drake, 2011).

Another major risk factor found to be associated with child maltreatment is the use of corporal punishment (Gershoff, 2002; Straus, 2000; Zolotor, Motsinger, Runyan, & Sanford, 2008). Parents may become angry and frustrated while physically disciplining their children and may cross the line into child maltreatment (Kadushin & Martin, 1981). Research has indicated that corporal punishment of very young children carries a high risk for physical injury of the child (Knox, 2009). Consequently, young children who are corporally punished experience an increased risk for physical abuse and related injuries.

Prevention efforts have focused on reducing child maltreatment, primarily via parent training programs (Lundahl, Nimer & Parsons, 2006). Research has shown that educating parents about the negative outcomes of using corporal punishment can change overall attitudes and beliefs about the effectiveness of corporal punishment (Lundahl et al., 2006; Taylor & Hamvas, 2011). However, there are few effective educational programs for parents (Lundahl, Nimer & Parsons, 2006).

When primary prevention efforts are not effective, secondary and tertiary prevention efforts need to be implemented. Secondary prevention efforts address and manage the acute results of child maltreatment while tertiary prevention manages more long-term results of child maltreatment. However, there are currently major problems with the secondary and tertiary preventions of child maltreatment. One of the largest gaps in the secondary and tertiary prevention of child maltreatment is the low adherence to mandated reporting among various professionals (Sege et al., 2006). Research with
medical professionals has identified several factors and characteristics of both the physician and patient that lead to low reporting rates for child maltreatment (e.g. Ashton, 2004; Feng & Levine, 2005; Flaherty et al., 2006; Flaherty et al., 2007; Gunn, Hickson, & Cooper, 2005; Warner-Rogers et al., 1996). In fact, medical professionals specifically report feeling under-trained and unprepared to identify and report child maltreatment (Flaherty, Sege & Binns, 2000; Flaherty et al., 2008; Lawrence & Brannen, 2000).

While research has informed the literature on factors that interfere with mandated reporting, little has been done to rectify the problem. There is some research that identifies the need for the development of training modules to be implemented with medical students (Reiniger, Robinson & McHugh, 1995 and Ward et al., 2004), however, only a few studies have actually outlined the elements essential for effective training pertaining to child maltreatment (e.g. Starling & Boos, 2003 and Reece & Jenny, 2005). And, there is only one published study that examined whether or not training young medical professionals in child maltreatment issues is effective (Dubowitz & Black, 1991). There are no studies that address this with medical students.

The current study examined the efficacy of educating first-year medical students on issues pertaining to the identification and reporting of child maltreatment. Ultimately, this study may provide a framework for future education on child maltreatment with medical students and other medical professionals.
Family violence and child maltreatment continue to put America’s children in danger. First, it is important to discuss the definitions included in the broad term “child maltreatment.” One problem, however, is that establishing a specific definition for the various types of child maltreatment is difficult as the legal definitions vary state to state. Definitions reported below were taken from the U.S. Department of Health and Human Services (Child Welfare Information Gateway, 2008, Retrieved: September, 2011, http://www.childwelfare.gov/pubs/factsheets/whatiscan.cfm).

**Family violence**

Family violence includes domestic violence, also known as domestic abuse, spousal abuse, child abuse or intimate partner violence and can be broadly defined as a pattern of abusive behaviors by one or both partners in an intimate relationship such as marriage, dating, family, friends or cohabitation.

**Physical abuse**

Physical abuse is non-accidental physical injury (ranging from minor bruises to severe fractures or death) as a result of punching, beating, kicking, biting, shaking, throwing, stabbing, choking, hitting (with a hand, stick, strap, or other object), burning, or otherwise harming a child, that is inflicted by a parent, caregiver, or other person who has responsibility for the child. Such injury is considered abuse regardless of whether the caregiver intended to hurt the child. Physical discipline, such as spanking or paddling, is not considered abuse as long as it is reasonable and causes no bodily injury to the child.
Neglect

Neglect is the failure of a parent, guardian, or other caregiver to provide for a child's basic needs. Neglect may be:

- Physical (e.g., failure to provide necessary food or shelter, or lack of appropriate supervision)
- Medical (e.g., failure to provide necessary medical or mental health treatment)
- Educational (e.g., failure to educate a child or attend to special education needs)
- Emotional (e.g., inattention to a child's emotional needs, failure to provide psychological care, or permitting the child to use alcohol or other drugs)

These situations do not always mean a child is neglected. Sometimes cultural values, the standards of care in the community, and poverty may be contributing factors, indicating the family is in need of information or assistance. When a family fails to use information and resources, and the child's health or safety is at risk, then child welfare intervention may be required. In addition, many states provide an exception to the definition of neglect for parents who choose not to seek medical care for their children due to religious beliefs that may prohibit medical intervention.

Sexual abuse

Sexual abuse includes activities by a parent or caregiver such as fondling a child's genitals, penetration, incest, rape, sodomy, indecent exposure, and exploitation through prostitution or the production of pornographic materials. Additionally, it is defined as the employment, use, persuasion, inducement, enticement, or coercion of any child to engage in, or assist any other person to engage in, any sexually explicit conduct or simulation of such conduct for the purpose of producing a visual depiction of such conduct; or the rape,
and in cases of caretaker or inter-familial relationships, statutory rape, molestation, prostitution, or other form of sexual exploitation of children, or incest with children.

**Emotional abuse (or psychological abuse)**

Emotional abuse is a pattern of behavior that impairs a child's emotional development or sense of self-worth. This may include constant criticism, threats, or rejection, as well as withholding love, support, or guidance. Emotional abuse is often difficult to prove and, therefore, child protective services may not be able to intervene without evidence of harm or mental injury to the child. Emotional abuse is almost always present when other forms are identified.

**Abandonment**

Abandonment is now defined in many states as a form of neglect. In general, a child is considered to be abandoned when the parents’ identity or whereabouts are unknown, the child has been left alone in circumstances where the child suffers serious harm, or the parent has failed to maintain contact with the child or provide reasonable support for a specified period of time.

**Other relevant definitions**

In this document, the term “child maltreatment” will include all forms of maltreatment defined above, unless otherwise specified. In order to document and report accurate incident rates of child maltreatment, the federal government assembled a task force to investigate the prevalence of child maltreatment. The most recent incidence report was called the Fourth National Incidence Study of Child Abuse and Neglect (*NIS-4*; Sedlak et al., 2010). The *NIS-4* used a systematic method of categorizing maltreatment by placing less emphasis on the various definitions of each type of abuse.
and, instead, coded all reported and investigated abuse into categories (see Appendix A). Additionally, the incidence report upheld a stringent Harm Standard. “For children to be countable under the Harm Standard, for the most part, they have to have experienced observable harm from their maltreatment (NIS-4; Sedlak et al., 2010).” In an effort to ensure that children who met the definition of maltreatment but did not suffer injury were accounted for, the Endangerment Standard was enacted. “The Endangerment Standard has been in use since the NIS–2. It is more lenient, counting children in the study estimates if the source (Child Protective Services) considered the perpetrator’s actions or omissions to have placed the child at serious risk of harm. The Endangerment Standard includes all Harm Standard countable children, but adds in other children as well (NIS-4; Sedlak et al., 2010).”

**Prevalence of child maltreatment**

The most recent incidence reports indicate that approximately 1,256,600 children experienced Harm Standard maltreatment from 2005 to 2006. In other words, one in 58 children in the United States was investigated for allegations of child maltreatment (NIS-4; Sedlak et al., 2010). While this statistic does reflect a 26% decrease in the overall rate of Harm Standard maltreatment since the previous incidence report in 1993, it is still alarming. Moreover, incidence reports can only account for the children who are reported into the system and investigated. Many more children silently suffer from maltreatment and are never identified. It is estimated that at least three million children are maltreated each year (Copeland et al., 2007). The NIS-4 (Sedlak et al., 2010) determined that 323,000 children met criteria for physical abuse, 135,300 for sexual abuse, 148,500 for emotional abuse, and 771,700 for at least one of the types of neglect.
(i.e. physical, emotional, educational or medical). Additionally, it is estimated that between 20-25% of families in the United States experience family violence (Howard, Trevillion, Kahlifeh, Woodall, Agnew-Davies & Feder, 2010). In other words, many children are witnessing or included in domestic violence within the home.

Many children are abused on multiple occasions without intervention. Although prevalence rates vary across studies, it is estimated that more than 30% of children experience one or more traumatic events related to abuse by late adolescence (Copeland et al., 2007). Repeated or prolonged incidents of child maltreatment are more likely to cause death; however, it is possible for one-time, isolated events to also result in the death of a child. In the United States, approximately 2,000 children die each year as a result of abuse or neglect (National Center for Child Death Review; Retrieved from: http://www.childdeathreview.org/causesCAN.htm, July, 2011). However, the actual number of abuse and neglect deaths is estimated to be much higher than what is reported in statistics data.

Younger children are most vulnerable to death as a result of maltreatment. According to national statistics, children under six years of age account for 86% of all maltreatment deaths in the U.S. Of those deaths, 43% of deaths are in infants. In fact, child abuse/neglect is the leading cause of death for infants. Each year in the U.S., approximately 1,200 to 2,000 babies are shaken violently enough to require medical attention. It is important to know that, most often, the perpetrators are fathers and/or mothers’ boyfriends. Mothers are more often responsible for neglect fatalities (National Center for Child Death Review; Retrieved from: http://www.childdeathreview.org/causesCAN.htm, July, 2011). Children who are
fortunate enough to survive maltreatment are then faced with various negative outcomes found to be associated with child maltreatment.

**Negative outcomes of child maltreatment**

The negative outcomes of child maltreatment can be vast and chronic. These outcomes are both short and long-term and include poorer mental health, poorer physical health and health-related quality of life (Anda et al., 2005; Corso et al., 2008; Repetti, et al., 2002; Taylor et al., 2004). Victims of child maltreatment generally experience developmental difficulties, with the most frequently observed problems occurring in the behavioral and emotional domains (Repetti, Taylor, & Seeman, 2002). Negative mental health outcomes of child maltreatment include anxiety, depression, suicide, aggressive behavior, delinquency, posttraumatic stress disorder, and criminal behavior. Negative health consequences of child maltreatment include injuries, death, chronic obstructive pulmonary disease, smoking, heart disease, liver disease, and drug use. Lastly, negative health-related outcomes of child maltreatment include physical disabilities and developmental delays that can place barriers on brain development and learning (Anda, Croft, Felitti, Nordenberg, Giles, Williamson et al., 1999; Corso et al., 2008; Repetti et al., 2002; Taylor et al., 2004).

**Children at highest risk for maltreatment**

Child maltreatment occurs across different cultures, races, and/or religious beliefs (National Center for Child Death Review; Retrieved from: http://www.childdeathreview.org/causesCAN.htm, July, 2011). Although child maltreatment can be identified in various populations, some children are at greater risk than others. Research has identified infants, toddlers, children with special needs, and
children from families in the lower socioeconomic class to be most vulnerable to child maltreatment (Hindley, Ramchandani & Jones, 2006; Palusci, 2011; and Stith, Liu, Davies, Boykin, Alder, Harris et al., 2009).

**Infants and toddlers.** Of those identified as being at high risk for child maltreatment, infants and toddlers are at the highest risk (Wotherspoon et al., 2010). They are at higher risk, in part, because infants and toddlers are most fragile during the early critical period of brain development and require more active care-giving in order to survive (De Bellis, 2005; Wotherspoon et al., 2010). When a parent does not carry out the vital responsibilities associated with caring for an infant or toddler, the consequences can be severe (De Bellis, 2005; Lee, Ogle, & Sapolsky, 2002; Tanner & Turney, 2003). Misunderstandings about the potential consequences of child neglect increase the risk of negative outcomes.

Many believe that neglect of a child’s needs is the least severe or damaging form of maltreatment compared to other forms (e.g. physical abuse, sexual abuse, emotional abuse and psychological abuse). Possible explanations for this misinterpretation were discovered using surveys from social workers affiliated with child protective services that suggested that neglect referrals are less likely to be responded to in an urgent fashion, are assessed as being lower risk than other referrals for maltreatment, and are less likely to be investigated and substantiated (English, 1999; Turney & Tanner, 2005). The reality is that infants are more likely to experience neglect than any other form of maltreatment and most infant maltreatment fatalities result from neglect (Harden, 2007).

Research demonstrates that neglected infants perform much worse than older children or children who suffer from other types of maltreatment on nearly every measure
of child well-being (Arata, Langhinrichsen-Rohling, Bowers, & O’Brien, 2007; Gauthier, Stollak, Messe, & Aronoff, 1996; Hildyard & Wolfe, 2002). Despite this, the likelihood that these children will receive necessary services is hindered by the general tendency to underestimate the negative impact of physical and emotional neglect. Infants and toddlers are less likely to be identified as needing health, developmental, or mental health services compared to children of all ages who suffer from more overt forms of child maltreatment (Dicker & Gordon, 2004). Moreover, relative to physically abused children, neglected children have more severe cognitive and academic deficits, social withdrawal and limited peer interactions, and internalizing (as opposed to externalizing) problems due to neglect experienced during infancy and toddler years (Hildyard & Wolfe, 2002).

Infants depend on predictable, repetitive and nurturing interactions for brain development to occur properly (Glaser, 2000). According to Hildyard and Wolfe (2002), neglect occurring early in life is particularly detrimental to subsequent development as it can lead to smaller or altered brains in a child. Emotional neglect, even when physical care is adequate, is especially devastating during infancy (De Bellis, 2005; Geiger & Crick, 2010). As cited by Wotherspoon and colleagues (2010, p. 506), “When a mother is perceived as unavailable, whole cascades of events occur in the infant’s brain which triggers the release of cortisol, a stress hormone. Persistently high levels of cortisol are known to cause cell death in key structures within the brain such as the hippocampus, the area responsible for new learning and memory (Lee et al., 2002).” Quantifiable changes in the size and structure of the brain are associated with permanent cognitive deficits that impair the child’s ability to learn and to form close emotional connections to others (De

**Children with special needs.** Children with failure to thrive, cognitive impairments, social deficits or children with disabilities may be at increased risk for maltreatment (Hibbard & Desch, 2007; Rodriguez & Murphy, 1997). Earlier research in the field of child maltreatment found that disabilities were twice as prevalent among maltreated hospitalized children when compared with non-maltreated hospitalized children (Sullivan & Knutson, 1998). Although the results of Sullivan and Knutson’s (1998) epidemiological study could not determine whether disabilities increase the risk of maltreatment or if maltreatment contributes to the development of disabilities, their discovery laid the foundation for future work with children with special needs. In a later epidemiological study, children with disabilities were 3.4 times more likely to be maltreated than their non-disabled peers (Sullivan & Knutson, 2000). More recent research has identified a child’s special needs to be a significant predictor of child maltreatment. In a prospective, longitudinal study conducted by Dubowitz and colleagues (2011), results indicated that while several factors were found to be associated with child maltreatment, low scores on a mental development assessment during the first 3.5 years of life was the only child variable that significantly predicted child maltreatment in a low-income, urban population (Dubowitz, Kim, Black, Weisbart, Semiatin, & Magder, 2011). Data in this study were collected from 332 families recruited from pediatric clinics serving low income, urban families (Dubowitz et al., 2011).
Children who struggle to emotionally connect with others, who demonstrate difficulties with memory, attention, self regulation, and who suffer from internalizing disorders, cognitive and/or academic deficits all require more specialized attention and advocacy compared to typically developing children (Hildyard & Wolfe, 2007; Trickett, Negriff, Ji, & Peckins, 2011). The special needs of children who experience such difficulties can be particularly demanding for parents to attend to and can lead to child maltreatment as a result of frustration and depletion of a caretaker’s physical and emotional resources (Montoya, Giardino & Leventhal, 2010; Rodriguez & Murphy, 1997). High levels of parental stress and frustration can lead to more physical methods of discipline in an effort to correct the behaviors of a child with special needs (Rodriguez & Murphy, 1997; Straus, 2000). Too often, maltreatment of a child with special needs goes undetected for longer periods of time compared to typically developing children because children with age-appropriate development are more likely to be in environments that encourage healthy early child development (e.g. pre-school or quality day care).

Moreover, these environments usually have professionals who are trained to identify child maltreatment (Dubowitz et al., 2011). In addition to, or in some cases as a result of lower involvement in environments that encourage healthy early child development, children with special needs often do not benefit from identification, evaluation and specialized services (Giardino, Hudson & Marsh, 2003).

Despite the increasingly recognized risk of child maltreatment among children with special health care needs, child abuse teams may be unprepared to appropriately evaluate children with various special health care needs (Giardino et al., 2003). In a study examining mental health referrals and services for maltreated children in both
community-based facilities and hospitals, results indicated that 67.7% of the evaluation teams did not have a special program or specialized staff to serve children with special health care needs (Montoya et al., 2010). In the same study, 82.2% of the teams evaluating children with special needs indicated that more time was needed to evaluate children with special needs than children without special needs. Moreover, 69.1% of the community and hospital-based service providers found arranging mental health referrals and services for a special needs child to be more difficult than for children without special needs (Montoya et al., 2010). The results of Montoya and colleagues’ work (2010) highlight the difficulty in accessing mental health care for maltreated children experiencing developmental delays.

In summary, children with special needs have been identified as being at higher than average risk to experience maltreatment. Various factors play a role in heightened risk level. First, parents of children with special needs often resort to physical discipline due to high levels of stress and frustration. Second, children with special needs are less likely to be involved with environments that encourage healthy early child development where there are professionals trained to identify and report child maltreatment. Third, community-based facilities and hospitals are often unprepared to provide services to children with special health care needs. Furthermore, they believe that the mental health referral process for children with special needs is more difficult than the referral process for children without special needs. The perceived difficulty regarding the referral process for a child with special needs is particularly concerning as it may mean that professionals in community and hospital facilities are not following through with appropriate referrals on a consistent basis. Meanwhile, children with special needs continue to be maltreated
and do not receive services that are designed to identify and prevent maltreatment or deal with maltreatment.

**Children from families of lower socioeconomic status.** Children from families of lower socioeconomic statuses (SES) have also been identified as being at higher risk of experiencing maltreatment (Stith et al., 2009). While child maltreatment prevention and intervention efforts often target low income families, it should be noted that low income itself is not a significant predictor of child maltreatment (Dubowitz et al., 2011). It is often factors associated with lower SES (i.e. low maternal education, young maternal age, single parenthood, parental drug use, large number of children in the family, and low levels of involvement in formal and informal community agencies) that put children from these families at increased risk of experiencing child maltreatment (Connell, Bergeron, Katz, Saunders, & Tebes, 2007; Kotch, Browne, Rignwalt, Stewart, Ruina, Holt et al., 1995; Sedlak er al., 2010; Zhou, Hallisey, & Freymann, 2006).

**The economy and child maltreatment rates in lower SES families.**
Families of lower SES experience more problems that can make it difficult for the children who belong to such families. Specifically, for lower SES families, mental health care may be more difficult to access than for families of higher SES. Recent changes in the economic conditions in the United States may further complicate accessing mental health services for families of lower SES. Even before the downturn in the economy, research demonstrated limited availability, accessibility, and feasibility for lower SES families to access mental health services (US Department of Health and Human Services [DHHS], 1999). However, in the years following this report, child maltreatment rates slowly declined (Sedlak, et al., 2010; U.S. Department of Health, Human Services
There is research that suggests that the improvement in economic conditions in the United States during the 1990s may be responsible for the decrease in child maltreatment rates seen twenty years ago (Finkelhor & Jones, 2006). Currently, however, there is cause for concern that the recession will eliminate the improvement in child maltreatment rates (Millett et al., 2011).

While recent research directly linking economic deprivation to child maltreatment is limited, one study has examined the economic trends associated with child maltreatment (Millett et al., 2011). Preliminary results indicate that, while overall rates of child maltreatment increased with increasing unemployment, the data did not show that the specific factors of unemployment, labor force participation, or food stamp utilization predict child maltreatment during the recent economic recession (Millett et al., 2011). These preliminary findings need to be further examined to determine what specific factors explain the increasing child maltreatment rates associated with increasing unemployment rates in the U.S. Research in the 1980s found a direct relationship between economic recession and child maltreatment (Krugman, Lenherr, Betz, & Fryer, 1986 and Steinberg, Catalano, & Dooley, 1981). If this relationship still holds true, there is concern that the prevalence of child maltreatment could increase under current economic conditions. Anecdotal reports provided by media sources are particularly compelling as they reference theories that empirically linked family poverty to child maltreatment (Belsky, 1980; Drake & Zuravin, 1998). These older theories in addition to more modern theories of maltreatment (Sedlak et al., 2010) all base their explanations of the etiology of child maltreatment on Belsky’s (1980) ecological theory.
That is, child maltreatment is caused by the interaction of multiple risk factors within the levels of child, parent, family, community, and society (Belsky, 1980).

As discussed previously, vulnerabilities exist across these levels for lower SES families (i.e. low maternal education, young maternal age, single parenthood, parental drug use, large number of children in the family, and low levels of involvement in formal and informal community agencies). Moreover, these specific risk factors are more likely to be intensified by the recession in lower SES families than in families of higher SES. For example, finding a job in an economy that presents employment problems for people from all socioeconomic classes is even more difficult for a young, single mother with lower education status and employment experience. The recession, paired with the chronic nature of many of the risk factors determined to be associated with lower SES, is likely adding to the increased risk of child maltreatment in lower SES populations.

**Relationship between corporal punishment and child maltreatment.** Infants, toddlers, children with special needs, and children from lower SES families are not only identified as being at increased risk for experiencing child maltreatment, they are the populations of children often enduring the most frequent use of corporal punishment (Knox, 2009). The definition of corporal punishment varies by state as well as by the professional groups. Corporal punishment is most comprehensively defined as the use of physical force with the intention of causing a child to experience pain, but no injury, for the purpose of correction or control of the child’s behavior (Straus, 1996). This commonly includes spanking, smacking, slapping, but also includes the use of an object such as a rod or stick, hair pulling, and ear twisting (Zolotor, Theodore, Runyan, Chang & Laskey, 2011).
**Prevalence of corporal punishment.** Corporal punishment of children often begins in infancy and peaks when the child reaches age three or four years old (Straus, 2001). Research on the prevalence of corporal punishment began to increase in the 1990s after rates of child maltreatment in the 1980s was found to be unacceptably high (Krugman et al., 1986). The 1995 Gallup survey found that 94% of parents of toddlers admitted to using corporal punishment as a method of discipline during the previous 12 months of the study. Somewhat surprisingly, 35% reported hitting their infants (Gallup New Service Poll, 1995; Straus & Stewart, 1999). Although prevalence rates of corporal punishment have slightly improved in the last 20 years (Zolotor et al., 2011), the incidence is still concerning. In a study by Zolotor and colleagues (2008) results indicated that nearly 67% of all children in the U.S. are disciplined with an object. Another alarming fact about the prevalence of corporal punishment is that while across all age groups incidence rates have declined, little change has been seen for children four years old and younger (Zolotor et al., 2011).

Similar trends in the use of corporal punishment over the last 20 years are widespread internationally (Kelly, 2010; Pinheiro, 2006). However, there are some major differences in the general attitudes and level of acceptability of corporal punishment in the U.S. compared to other countries. In 1989, the UN Convention on the Rights of the Child initiated efforts to end corporal punishment for all children (UNICEF, 1989). Since then many countries have banned the use of corporal punishment in the home and an even higher number of countries have banned corporal punishment in schools (Center for Effective Discipline, 2009). The U.S., however, is not one of these countries. In fact, the U.S. and Somalia remain the only nations that have failed to ratify
the resolution efforts of the Convention (Zolotor et al., 2011). Currently in the U.S., the use of corporal punishment is legal in schools and pervasive in homes (Theodore et al., 2005). To date, “a parent in the U.S. has the right to discipline a child, with their hands or an instrument, provided that the disciplinary measure does not cross the line defining that state’s child abuse statute (Zolotor, 2011, p. 63).”

**Direct link between corporal punishment and child maltreatment.** The problem with allowing a parent to make the decision about where crossing the line might be while simultaneously giving a parent the right to discipline a child with their hands or an object is that parental judgment varies. It has been established that the use of physical discipline loses its effectiveness with increased use, therefore sometimes leading to escalation to abuse (Kadushin & Martin, 1981). In fact, corporal punishment has been identified as a risk factor for child maltreatment (Gershoff, 2002; Straus, 2000; Zolotor, et al., 2008). This is likely because parents may become frustrated and angry while using corporal punishment, crossing the line into maltreatment. Research involving abusive parents clearly depicts the escalation from corporal punishment to abuse by parents who become enraged when using corporal punishment (Kadushin & Martin, 1981). Related to this is research indicating that corporal punishment of very young children carries a high risk for physical injury of the child (American Academy of Pediatrics, 1998). Consequently, young children whose parents use corporal punishment may experience a markedly high risk for physical abuse and related injuries.

**Negative outcomes associated with corporal punishment.** In addition to being clearly associated with child abuse, corporal punishment has been found to be associated with multiple other negative outcomes including the following: lower moral
internalization, aggression, delinquent and antisocial behavior, decreased quality of the parent-child relationship, increased behavioral symptoms, later criminal behavior, more severe mental health problems, and perpetration of spouse and child abuse (Gershoff, 2002; Zolotor, et al., 2008). Perhaps most detrimental of these negative outcomes associated with the use of corporal punishment is the increased risk of later perpetration of spouse and child abuse by those who endured corporal punishment. Although all negative outcomes are concerning, the predisposition for those who have been corporally punished to engage in future child maltreatment is of great concern.

**Primary prevention of child maltreatment**

Fortunately, child maltreatment can be prevented. Research demonstrates that effective prevention of child maltreatment requires early education, support, and guidance for those entrusted with caring for young children (Portwood, 2006). Most parents want to raise their children in effective, healthy, nonviolent ways, but may not have the knowledge, resources, or health to do so. Approximately half of American parents report having difficulty coping in their roles as parents and often do not know of other methods of parenting other than the ones they currently use (Young, Davis, Schoen & Parker, 1998). In a study involving African American mothers from a low income, urban sample, most participants believed that using some form corporal punishment with their children was, at times, necessary and expected as a form of discipline. More specifically, results identified two broad themes as explanations for participants’ use of corporal punishment: 1) the perceived instrumentality and effectiveness of corporal punishment and 2) the perceived normality of corporal punishment as a form of child discipline within the African American culture (Taylor & Hamvas, 2011). Providing
parents with education about child-rearing may allow them to replace ineffective parenting techniques with more effective methods including alternatives to physical discipline. It is also possible that rigorous education efforts may even change the acceptance and perceived normality of using corporal punishment within a culture.

**Effectiveness of prevention programs for caregivers.** High prevalence rates of corporal punishment and the misperception of the effectiveness of using corporal punishment need to be addressed. Both demonstrate the need to amplify effective preventative interventions and education in the U.S. aimed at preventing physical violence against children, and in turn, physical abuse of children. When caregivers are provided support and helped to achieve knowledge and skills in effective, nonviolent disciplining and other parenting techniques, the likelihood of child maltreatment significantly decreases (Lundahl et al., 2006). This is best done before or soon after the child is born, before child maltreatment begins (Anda et al., 2005).

Meta-analyses of parent training programs document medium effect sizes for outcomes such as changes in attitudes toward physical discipline, better child emotional adjustment and child-rearing skills, and decreased child abuse (Lundahl et al., 2006). Home-visitation programs for families with risk factors for maltreatment have demonstrated small to medium effect sizes for similar outcomes (Eckenrode, Ganzel, Henderson, Smith, Olds, Powers et al., 2000). However, there is considerable room for improvement in the delivery of child maltreatment prevention programs.

**Gaps in prevention efforts for parents.** Arguably, the largest gap in child maltreatment prevention programs for parents is the simple fact that they are limited in availability. In fact, there are currently no well-established, evidence-based programs
designed to prevent emotional abuse and exposure to violence. Of the prevention programs that currently exist, there are very few that are shown to be effective. For example, hospital-based educational programs for families of children at risk of physical abuse and neglect show promise, but further research is needed to establish their efficacy (MacMillan, 2010). Additionally, problems with engagement, retention, and attrition from prevention programs for families remain major obstacles even for the very few programs shown to be effective (Connell et al., 2007).

**Secondary and tertiary prevention: Adherence to mandated reporting and case investigations**

When prevention efforts fail and maltreatment occurs, the response by the public and professional communities is frequently ineffective. For example, the majority of children suspected of being maltreated are not even reported into the system (Ibanez, Borrego, Pemberton & Terao, 2006; Warner-Rodgers, Hansen & Parsons, 1996). Research indicates that over half of mental health and health care providers do not report all cases of suspected abuse (Flaherty et al., 2007; Warner-Rodgers et al., 1996). The problem likely occurs because many professionals are poorly prepared to understand and address child maltreatment during their undergraduate and graduate education. Professionals such as teachers, who are in key positions to identify and report abuse, usually do not receive adequate preparation in college to prepare them for the work of being a mandated reporter (Warner-Rodgers et al., 1996). In addition, research indicates that doctoral programs in psychology rarely offer a specific course in child maltreatment (e.g. Champion et al., 2003).
Of the children who are referred into the system, most never have their situations investigated (Turney & Tanner, 2005). The Third National Incidence Study of Child Abuse and Neglect (Sedlak & Broadhurst, 1996) found that only slightly more than one-fourth of the children who were seriously harmed or injured by maltreatment actually had their cases investigated. More recent incidence reports suggest that this statistic has improved only slightly in the past 15 years (Sedlak et al., 2010). Child protective service agencies frequently suffer from strictly limited funding, high staff turnover, and other serious obstacles to making an effective response to reports of child maltreatment (Tanner & Turney, 2003). When cases are investigated and brought to court, the likelihood of positive outcomes is too often significantly diminished by the limited preparation in the field of child maltreatment for law enforcement, forensic professions, attorneys and health care professionals (Tanner & Turney, 2005).

**Low adherence to mandated reporting in the medical field.** Medical professionals are among the largest groups of professionals who show low adherence to mandating reporting of child maltreatment (Sege et al., 2006). Although some researchers and interventionists have invited pediatricians and family practitioners to provide preventive education about nonviolent discipline, several obstacles to successful implementation have been identified. One of the primary problems is that physicians have very little time to conduct examinations and other required aspects of their role, leaving insufficient time to discuss behavioral, disciplinary or preventative issues (Warner-Rodgers et al., 1996). Further, many physicians claim reimbursement issues as obstacles to their involvement in these efforts (Sege et al., 2006). Physicians report that becoming involved in child maltreatment cases is a reimbursement issue because they are
not paid for the time spent gathering information pertaining to the abuse and then making appropriate referrals to child protective services and mental health services (Sege et al., 2006). The time required to complete relevant paperwork when physicians choose to report suspected child maltreatment was another major reason given for low adherence to mandated reporting (Gunn et al., 2005). Regardless of the potential perceived problems or obstacles identified by physicians, it can be asserted that many factors reported by physicians are likely considered in the decision making process to report child maltreatment. It is likely that these factors are also contributing to low adherence to mandated reporting.

**Decision making and low adherence to mandated reporting.** Factors associated with a physician’s decision-making process are important to identify as it is beneficial to know precisely what may prevent a mandated professional from reporting. Prospective study of physicians’ experiences and concerns with reporting of suspected physical child maltreatment can help improve our understanding of the factors that influence a physician’s decision to report to child protective services. Generally speaking for all mandated reporters (e.g. teachers, social workers, clinicians, and physicians), several diversity variables have been studied and shown to be significant in the decision-making process of mandated reporters (Ashton, 2002; Ibanez et al., 2006). For example, research has shown that ethnicity (both of the family and of the reporter), attitude toward the use of corporal punishment, denial that a particular family could be abusing the child, immigrant status and inadequate knowledge all significantly impact whether or not a mandated professional decides to report suspected child maltreatment (Ashton, 2002; Gunn et al., 2005; Ibanez, 2006; Reiniger, 1995). However, specifically for physicians,
research has shown that the decision-making process on reporting suspected child maltreatment seen in the medical setting often includes consideration of additional physician and patient factors (e.g. Flaherty et al., 2008; Flaherty et al., 2006; Warner-Rodgers et al., 1996).

**Physician factors.** In a study with 327 primary care clinicians examining mandated reporting of suspected physical abuse (i.e. physicians, nurse practitioners and physician assistants), only 24% of the children considered possibly abused by caregivers were reported by the clinicians. Even more alarming, only 73% of the children considered to be likely or very likely abused were reported by the clinicians (Flaherty et al., 2008). The clinicians in this study reported several factors to be associated with their decision(s) to report or not to report child maltreatment; however, not all significantly influenced the decision-making process for clinicians. The clinician factors found to be most significant in the decision-making process were whether or not a clinician had previously lost a family as patients after reporting and whether or not they had previously reported all suspected child abuse during their career (Flaherty et al., 2008). Research has also demonstrated that pediatricians who have been threatened with lawsuits or sued for malpractice after reporting suspected maltreatment to child protective services were less likely to report future cases of suspected child maltreatment (Gunn et al., 2005).

Other research identified male physicians to be less likely to report suspected child maltreatment. Additionally, physicians who had been in practice longer were also less likely to report suspected child maltreatment compared to physicians who had been practicing fewer years (Gunn et al., 2005). The researchers speculated that the findings pertaining to physicians’ experience could be explained, in part, to the lack of confidence
many medical professionals hold about child service agencies. This is consistent with findings from other studies examining physicians’ attitudes regarding prior experiences with child protective services (e.g. Flaherty et al., 2006). Another possible explanation provided by Gunn and colleagues (2005) is that physicians also lack confidence in how to provide a competent, prompt referral for suspected maltreatment. This explanation has also been supported by other research with physicians that suggest physicians do not feel prepared to intervene effectively (Flaherty et al., 2006; Gunn et al., 2005; Warner et al., 1996).

While clinician factors have been identified as being integral to the decision-making process of reporting suspected child maltreatment, other factors related to the patient also play a role. These factors are just as important to identify and understand in order to change the low adherence rate to mandated reporting in the medical field.

Patient factors. Consistent with findings regarding the influence of physician factors on the decision-making process to report suspected child maltreatment, many patient factors have been reported to be relevant by physicians, but only a handful appear to be truly significant. The most replicated finding concerning patient factors contributing to the decision not to report suspected child maltreatment is the uncertainty about whether or not abuse or neglect is actually occurring (Flaherty et al., 2008; Flaherty et al., 2006; Gunn et al., 2005; Warner et al., 1996).

In a study examining characteristics of clinicians who did not report a suspicious injury to child protective services, medical clinicians indicated that they were more likely to report suspected child maltreatment when a patient was referred specifically because of suspected child abuse by another party (Flaherty et al., 2008). It is likely that physicians,
in general, are more likely to report when they are explicitly made aware that maltreatment is suspected by other parties because this establishes an initial level of suspicion about the child’s injuries or physical health. In the same study, a majority of medical clinicians indicated that they needed to be very confident (i.e. 90% likelihood of abuse) before reporting suspected child maltreatment. Interestingly, though, physicians retrospectively indicated that had previously reported more cases of child maltreatment that were less severe than cases with more serious injuries likely caused by abuse (Flaherty et al., 2008). This finding is counterintuitive with physicians’ report that they are more likely to report when they are very confident maltreatment is occurring. Although Flaherty and colleagues (2008) were unable to offer explanations for these contradictory findings, the results confirm that the decision to report suspected child maltreatment may be influenced by factors other than the child’s objective health status.

Another patient factor identified as being a significant predictor in whether or not a physician decides to report child maltreatment is whether or not the child’s injury is consistent with the history (Flaherty et al., 2008). For example, of the medical clinicians surveyed in a study, 50% of suspected cases of child maltreatment were reported because medical clinicians did not believe the medical and social history presented was consistent with the child’s injury. However, medical clinicians also admitted that they tended to report more serious injuries in these instances compared to more minor injuries (Flaherty et al., 2008). These findings are consistent with previous literature examining the relationship between the seriousness of injuries and reporting suspected child maltreatment (Ashton, 1999; Sedlak, 1996).
Lack of training and preparation. As the research previously described has demonstrated, medical professionals consistently report that they feel underprepared to identify and make accurate referrals for suspected child maltreatment (Flaherty et al., 2006; Flaherty et al., 2008; Gunn et al., 2005). This may be because physicians and other medical clinicians report having received very little training, if any, on child abuse prevention (Reece et al., 2005), child advocacy, identification of child maltreatment and reporting procedures (Warner-Rodgers et al., 1996). In one study, the following areas of knowledge pertaining to reporting child maltreatment were listed by medical professionals as areas of educational need: knowledge about the actual reporting process, their role in the reporting process, and reporting laws (Gunn et al., 2005). Such findings suggest that clinicians may benefit from education regarding not only the identification of child maltreatment, but also on the reporting process and the providers’ role in that process. In fact, many medical professionals have expressed a desire for more education in the area of child maltreatment, in addition to indicating that they believe it would increase adherence rates to mandated reporting (Flaherty, Sege, Mattson & Binns, 2002). Moreover, research has demonstrated that specific physician education may improve the probability that physicians report suspected maltreatment (Flaherty et al., 2000; Flaherty et al., 2002; Lawrence & Brannen, 2000). With regard to medical training, child protection has explicitly been identified as an area of neglected training in pediatric residency (Ward et al., 2004).

Suggested content for child maltreatment programs for medical students and residents. To provide physicians the most effective base of knowledge about child maltreatment, initial training should be integrated into the early medical school
curriculum. Training would be especially relevant in medical school since child maltreatment issues will likely be a differential diagnoses in the medical conceptualization of many child cases (Flaherty et al., 2008) and this is when medical students begin learning how to conceptualize cases. According to Reece and Jenny (2005, p. 267), “Training for the detection of treatment of medical problems relies on a shared foundation of biomedical knowledge. Similarly, the knowledge of various etiologic theories of child maltreatment is essential for the health care provider to evaluate cases of suspected abuse and neglect. Nowhere in medical practice is knowledge about the social constructs of a medical condition more necessary than in the evaluation of a child and family for the possibility of child maltreatment. The evolution of this understanding has occurred over the last 30 years.”

If medical students learn to identify signs of child maltreatment early in training, it is likely that more cases of child maltreatment will be reported. This is because it is often difficult for physicians to identify child maltreatment when a patient presents with intertwined biomedical and psychosocial factors; the complexity of some cases mask the otherwise obvious signs of maltreatment (Starling & Boos, 2003). Physicians specializing in child maltreatment suggest that students and residents need to learn about the following types of injuries: cutaneous, skeletal, head, and visceral (Starling & Boos, 2003). Munchausen Syndrome by Proxy, a factitious illness, and sexual abuse are also suggested topics of education for medical students and residents (Starling & Boos, 2003).

It is also suggested that medical students be trained to identify a number of risk factors associated with child maltreatment (Reece & Jenny, 2005). Examples of risk factors that medical students should be trained to identify are as follows: at risk
populations, providers’ attitudes regarding corporal punishment, parents’ attitudes regarding corporal punishment, domestic violence, substance abuse, and family stressors. Assessment skills are needed once medical students and residents are taught to identify risk factors and have obtained general knowledge about injuries (Starling & Boos, 2003). Lastly, medical students and residents need to be educated on reporting, documentation, courts/testimony and implementation of all child maltreatment training (Starling & Boos, 2003).

In the last twenty years, there have been efforts to begin implementing training programs and intervention with pediatric residents regarding child maltreatment (e.g. Dubowitz, 1999; Giardino & Alexander, 2005; Jenny, 1997). However, most of the effort was made approximately twenty years ago then, somewhat abruptly diminished. Past efforts followed recommendations of the American Academy of Pediatrics Section on Child Abuse and Neglect (Reece & Jenny. 2005). Interestingly, however, while the general expectation in the medical field is that child maltreatment prevention and treatment should be taught during residency, Reece and Jenny (2005) point out that there are only four questions of hundreds on examinations for Board Certification in Pediatrics that test knowledge of child maltreatment (Accreditation Council for Graduate Medical Education, 2003). In an effort to provide additional training, a provider training program in child abuse was implemented as a fellowship program at Brown University/Hasbro Children’s Hospital in Rhode Island (Jenny, 1997). The program is two years in duration and includes didactic, practical, and research components. While the program has been successful, it reaches only a very few physicians. Reece and Jenny (2005, p. 270) identified the following needs in future professional education and policy:
1. “More consistent and sustained education of medical health professionals. Currently, there is a wide disparity of educational exposure for medical students, house staff, and practicing physicians in specialties seeing children.

2. Improved clinical research funding at the federal level of the generation of new knowledge. Without the nurturing of critical thinking about diagnosis and management of child maltreatment, the understanding of this phenomenon will not grown and thrive.

3. Recognition of the need for higher reimbursement rates from third-party payers for clinical care for maltreated children. Currently, payment for child abuse evaluations is at the same level as child care despite the much greater expenditure of time in the actual evaluation of the child and family, the ancillary work with social service agencies, law enforcement, and in preparation and testimony in depositions and in court. Without support for clinical and ancillary services for maltreated children, there will be too few sites for the education and training of a new cadre of child maltreatment specialists.

4. Board certification for doctors who want to specialize in this field. Recognition that there is a unique body of knowledge about child abuse and neglect and that the need for post-residency fellowship training is essential for attracting young physicians into this developing area of specialization.
Medical licensure requirements for continuing education in child and family violence. It is clear that interpersonal violence, whether it is child maltreatment, intimate partner violence…has become a public health emergency in the United States. Physicians are front line in this battleground and need to be educated to respond to it in the moist efficacious manner. The mission of medicine and public health are to reduce mortality and morbidity. Child maltreatment is the leading cause of both.”

Although some progress in the effort to education medical residents can be demonstrated, many of the needs identified by Reece and Jenny (2005) still exist and could be better addressed. One strategy is to begin education efforts earlier in the training sequence for medical professionals (i.e. in medical school).

In summary, various factors are considered by medical professionals when they are presented with a suspicious situation before they decide whether or not to report to child protective services. Regardless of whether the factors are directly associated with the clinician or the patient, many cases are go unreported. The striking fact is that most of the attitudes, issues and concerns about reporting could be addressed and possibly changed with child maltreatment education for medical professionals, particularly at the medical student level.

**Child Advocacy Studies Training (CAST) program.** The Child Advocacy Studies Training program was developed by the National Child Protection Training Center to educate future professionals to more effectively prevent, identify, and respond to child maltreatment. CAST is based on the notion that the majority of undergraduates
will become involved in professions that in some way involve child advocacy (Vieth, 2006). The program has a strong emphasis on interdisciplinary collaboration. Through CAST, students in psychology, education, social work, nursing, medicine, law, criminal justice, public health, early childhood, computer science, sociology, women’s studies and other fields work together to become skilled at the prevention, identification, and effective response to child abuse and neglect. Students are taught how to implement and improve systems of care for the prevention of and response to child abuse in whatever community they join after graduation (Vieth, 2006). Students are further trained in effective methods of communicating with children using evidence-supported or evidence-based forensic interviewing techniques. Future child protection and criminal justice professionals are instructed in the use of developmentally-appropriate investigative skills (Vieth, 2006).

A key component of CAST involves teaching and consultation by professionals in the field (e.g. physicians, psychologists, law enforcement, child protective service workers, nurses, prosecutors, etc.) to keep the curriculum both current and reality-based. This approach encourages a highly multidisciplinary approach to the problem of maltreatment, both during and after training, and is intended to steer professionals away from the common problem of several discrete systems competing for resources and failing to work together effectively toward community-based solutions (Vieth, 2006).

The CAST program and its specific curriculum directly addresses item number one of five on Reece and Jenny’s (2005) list of needs in future education and policy changes: More consistent and sustained education of medical health professionals.
The CAST program has been implemented in the following universities: Winona State University, Northwest Arkansas Community College, Arkansas State University, Kennesaw State University, University of the District of Columbia, Northern State University, Northern State University, Judson University, Montclair State University, University of South Carolina Upstate, Oklahoma City University, University of Pittsburgh, McKendree University, Northeastern Illinois University, Missouri State University, Wilmington University, Florida Institute of Technology, University of Southern Mississippi, New Mexico State University, Liberty University, Athens State University, University of Wisconsin-Platteville, University of Houston-Downtown, William Mitchell College, Hamline University, Wisconsin Lutheran Seminary, Bethany Lutheran Theological Seminary and the University of Toledo (National Child Protection Training Center; http://www.ncptc.org/index.asp?Type=B_BASIC&SEC={314AD66F-A2B5-4202-A47F-DF0EC8B29E0B}, March, 2013). Each institution followed the goals and key components of the CAST program and implemented a specialized curriculum to address child maltreatment issues within the identified major, minor or college program for which it was intended. To date, the University of Toledo is the first institution to implement the CAST program in its medical school (V. Vieth, personal communication, March 7, 2013).

Although the premises and key components of the CAST program are clearly beneficial for the education of all mandated reporters, no formal efficacy research has been conducted on any of the variations of the program (V. Vieth, personal communication, March 7, 2013). The current study is the first to examine the efficacy of using the CAST program to train medical students. A secondary goal of this research is
to encourage other institutions to collect data on the efficacy of the CAST program in other areas of study (e.g. law enforcement, nursing, teaching, psychology, law).

**Role of integrated mental and medical health care in interdisciplinary efforts.** While the CAST program has been implemented nationally at several universities at the undergraduate and graduate levels, the program has not yet been implemented in a medical school setting. However, the education of future physicians in child abuse prevention, intervention, and advocacy holds significant promise. Some research indicates that physicians can be highly effective educators and leaders in such efforts (Reece & Jenny, 2005; Reiniger, Robinson & McHugh, 1995 and Ward et al., 2004).

In one study, a large majority of parents reported a need for more informational and support of common child-rearing issues such as discipline and methods to encourage children to learn (Young et al., 1998). Most parents were generally satisfied with their pediatric health care provider, but most parents reported needing more help and guidance around such issues. Findings such as these indicate that physicians may have important advantages in implementing child abuse prevention. Although providers such as mental health professionals are able to address child abuse prevention, they see only a small percentage of families with young children. In contrast, most families have contact with a pediatrician or family practitioner; even parents who cannot be reached by any other care provider take their infants for one or more well-child visits during infancy (Flaherty et al., 2007). Thus, pediatricians and family practitioners have contact with a large percentage of parents of infants and young children, including many disenfranchised families who may be at heightened risk for child abuse. Furthermore, pediatricians and
family practitioners are the health care providers that parents most often turn to for advice on parenting. Parents rely heavily on these providers for such information, and, as is suggested by Young et al. (1998), would like more guidance in effective parenting.

**Statement of the problem and purpose of the study**

As discussed, the incidence of child maltreatment in the United States has remained at an alarmingly high rate over the years since child maltreatment was first recognized by the medical community. While some efforts have been made to better understand the prevalence, severity and negative outcomes of child maltreatment, less has been done to prevent the occurrence or to help families access needed services through reporting suspected maltreatment. Several factors influence the identification of child maltreatment and many mandated reporters are not adequately trained on how to identify child maltreatment and the associated risk factors. Furthermore, when they do, many mandated reporters are not actually reporting suspected child maltreatment. Medical professionals are among the mandated reporters that do not always report suspected maltreatment. The present study aimed to examine the effects of training future physicians in child abuse prevention, identification, intervention, and advocacy. Only a few prior attempts to provide residents with specific training in child maltreatment were identified and none with medical students. This study adds to the literature in the area of training medical professionals in child maltreatment as it will examine the effectiveness of training first-year medical students to identify and report child maltreatment using the CAST program.
Hypotheses

1. Relative to the comparison group, students in the CAST elective group will report higher scores (i.e. more prepared) on each of the four items on the Perceived Preparedness Scale at post-training and maintain higher scores at the time of follow up.

2. Relative to the comparison group, students in the CAST elective group will demonstrate higher total scores (i.e. better accuracy at identifying and choosing to report child maltreatment) on the Vignette Scale (analogue vignettes depicting cases of maltreatment as they are likely to present in practice) at post-training and maintain higher scores at the time of follow up.

3. Relative to the comparison group, students in the CAST elective group will demonstrate increased confidence in their responses to the child maltreatment depicted in the Vignette Scale at post-training and maintain higher confidence at the time of follow up.

4. Relative to the comparison group, students in the CAST elective group will demonstrate higher scores (i.e. more positive attitudes) on the commitment and concern scales of the Teacher Reporting Attitude Scale for Child Sexual Abuse – Revised (TRAS-CSA-R; items measuring attitudes toward child maltreatment) measure at post-training and maintain higher scores at the time of follow up.

Exploratory Research Question

1. Will students in the CAST elective group demonstrate confidence ratings that are better calibrated (i.e. confidence ratings will better represent actual accuracy on the Vignette Scale) than students in the comparison group over time?
Chapter Two

Method

Participants

Recruitment. A convenience sample of first-year medical students from the University of Toledo Health Science Campus was invited to participate in the proposed study. The 2011-2012 class of first-year medical students consisted of 177 students, predominantly Caucasian, ranging in age from 19 to 34 years old, with 55% female representation. Of the first-year medical students enrolled at UTMC, 70% are Ohio residents.

It should be noted that a pilot study of the effectiveness of the Child Advocacy Elective course was conducted prior to the current study. For the purposes of the Institutional Review Board, the study was given “exempt” status and did not require written consent for participation. The IRB continued the “exempt” status to include the current study after all measures, procedures and details were submitted. Thus, students participating in the current study did not have to sign a consent form; however, they were explicitly given the opportunity to state their decision whether or not to participate in the current study.

All first-year medical students at the University of Toledo, College of Medicine were contacted by email and invited to participate in a credit/no-credit “Child Advocacy Elective.” Students were told that they would learn about child advocacy and child maltreatment and its consequences, as well as gain knowledge about professional responses to child maltreatment. Students enrolled in the elective course entitled “Child Advocacy Elective” were asked to participate in a study examining the effectiveness and
utility of the course material. It should be noted that all students enrolled were given the opportunity to decline participation. They were informed that participation in the study would require their time and effort to complete a battery of self report questions as well as to read and provide responses to short vignettes three times: prior to completion of the elective course, after completing the course and six months following the completion of the Child Advocacy Elective. Participants were provided with lunch at the time of pre and post-training data collection. Data from students in the elective course who provided verbal consent to participate are used in the experimental group (CAST elective group).

A comparison group of first-year medical students was also included in the current study’s design. These students were recruited using a variety of methods. First-year students involved in various clubs and groups in the medical school were approached and asked to participate in a study examining the effectiveness and utility of course material on child maltreatment. Comparison group participants were informed that study participation would require their time and effort in completing a battery of self report questions as well as reading and providing responses to short vignettes during the fall semester of the 2011-2012 academic year, at the end of spring semester of the 2011-2012 academic year and again six months following the end of the spring semester of 2011-2012. These data collection time points were deliberately set in order to ensure that data was collected in the same time frame as the CAST elective group (i.e. the experimental group). Participants in the comparison group completed the same battery of self report questions and vignettes as the CAST elective group at the same data collection time points. Comparison group participants were also provided with lunch at the time of pre and post-training data collection. It should also be noted that all first year medical
students received a lecture titled, *Consequences of Developmental Trauma*, in their behavioral medicine course that directly pertains to vignettes and information collected on study measures. In order to ensure that this newly acquired information would not confound the study results, post-training data for the comparison group was collected prior to this particular lecture.

**Pre-Post Sample Characteristics.** Eighty nine students from a total class of 177 first year medical students at a large Midwestern college of medicine stated their intentions to participate and were enrolled in the study. Of these, forty chose to enroll in the elective course, and all of these students completed both pre-training and post-training measures. The comparison group consisted of 49 students who did not sign up for the elective but agreed to participate in the study. Fourteen students in the comparison group failed to complete the post-training measure for unknown reasons. A total of 75 students completed pre-training and post-training measures and were included in all pre-post analyses. See Table 1 for demographic characteristics of the pre-post sample.
| Characteristics of sample at follow up. | A total of 57 students completed measures at all three time points (pre-training, post-training and follow-up) and were considered study completers. Students from the CAST elective group and the comparison group who did not complete the study measure at all three time points were considered non-completers and were excluded from the final sample analyses. The students who completed study measures at all three time points were the only students included in the final sample analyses.

Of the 57 full study completers, 35 students were in the CAST elective group and 22 students were in the comparison group. The total sample included 34 females and 23 males. The mean age for the entire sample was 22.98 years (SD = 1.90). Participants ranged in age from 19 to 29 years old. The mean age for the study completers in this |
CAST elective group was 23.06 (SD=1.97). Participants in this group ranged in age from 19-29 years old. The mean age for the study completers in the comparison group was 22.86 (SD=1.83). Participants in this group ranged in age from 20-29 years old. See Table 2 for demographic characteristics of the final sample.

Table 2

Demographic Characteristics of Final Sample by Group

<table>
<thead>
<tr>
<th></th>
<th>CAST Elective</th>
<th>Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>26%</td>
<td>64%</td>
</tr>
<tr>
<td>Female</td>
<td>74%</td>
<td>36%</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian/White</td>
<td>71%</td>
<td>55%</td>
</tr>
<tr>
<td>Asian</td>
<td>20%</td>
<td>27%</td>
</tr>
<tr>
<td>Black/African American</td>
<td>0%</td>
<td>9%</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Other</td>
<td>9%</td>
<td>9%</td>
</tr>
</tbody>
</table>

Note: N=57

Retention. The attrition rate for the CAST elective group was significantly lower than the comparison group. For the CAST elective group, the attrition rate was 0% from pre to post-training and 12.5% from post-training to follow-up. For the comparison group, the attrition rate was 28% from pre to post-training and 55% from post-training to follow up. Further analyses were conducted in order to determine if there were any identifiable patterns of attrition. The non-completers were compared to the study completers on the following demographic variables: gender, age, ethnicity, number of hours of prior training and specialty interest within medicine. No group differences were found. Additionally, non-completers and study completers within the CAST elective group were compared on the same variables. No group differences were found. Non-
completers and study completers within the comparison group were also examined on the same variables and no differences were found. Thus, we were unable to identify specific reasons for such high attrition rates in the comparison group, other than the fact that these students may have felt less invested in the study compared to the students who received a year-long elective course pertaining to the content of the study measure.

**Measures**

Demographic information on all participants was collected at the time of pre-training and was asked prior to all other questions on the measure. All participants were assigned a study identification number prior to pre-training by a third party who did not have access to the data. This individual was also responsible for keeping track of identification numbers throughout the duration of the study. Participants were assigned an identification number and the data was stored in a locked cabinet.

**Perceived Preparedness Scale (Appendix B).** Medical students’ perceived preparedness to identify and report child maltreatment was assessed using a four question scale (Knox, Pelletier, & Vieth, 2013a; Knox, Pelletier, & Vieth, 2013b; See Appendix B). Each item contained a 5-point Likert scale ranging from “Very Unprepared” to “Very Prepared,” with a neutral mid-point. Cronbach’s alpha for the Perceived Preparedness Scale varied over time (pre-training: $\alpha = .59$; post-training: $\alpha = .85$; follow-up: $\alpha = .64$).

**Vignette Scale (Appendix C).** Twelve analog vignettes were written to depict situations likely to occur in a future practical medical setting for the first-year medical students (Appendix B). The vignettes purposely included ambiguous information and/or excluded extensive details from the cases depicted. This was to ensure that participants
would be forced to make a decision without having an abundance of clarifying information that might make it easier for them to determine an appropriate response. For example, in some of the vignettes, a parent verbalizes their intent to resolve the problem, but it is not known whether or not the parent followed through. Therefore, there was no way to know with certainty whether or not the child is safe from being maltreated again (e.g. Vignette 3; Appendix C). The goal was to elicit participants’ decision making processes regarding child maltreatment and when it is reportable despite the fact that most participants are likely to desire more information about the case before making a decision. This dilemma parallels reality in that physicians often do not report suspected or questionable child maltreatment because they believe they do not have enough information to be sure (Flaherty, et al., 2008).

After reading each vignette, participants were asked two dichotomous questions about whether the child depicted in the vignette is being maltreated (Yes/No) and whether or not they would report the case to Children Services (Yes/No). Participants were asked to rate their confidence in their response on a scale of 50%-100%.

Preliminary analysis of the data after pre-training determined that the 12-item Vignette Scale contained too many easy items and too few difficult items. Consequently, all study participants were demonstrating relatively high accuracy on the Vignette Scale at the time of pre-training. It is likely that this dilemma would have caused a ceiling effect in our data, in which the effect of the CAST elective group on the Vignette Scale measure would not be detectable. To correct for this potential problem, two vignettes were added to the scale. These vignettes purposefully contained content that students likely would not have known unless they were specifically educated about the child
maltreatment laws outlined in the Ohio Revised Code. Thus, the Vignette Scale contained 12 analog vignettes at the time of pre-training and 14 at the time of post-training and follow up.

In order to ensure that vignettes were valid and reliable measures of either child maltreatment or not, a panel of three child maltreatment experts was consulted. They were given the 14-item Vignette Scale to determine interrater reliability after the pre-training data collection time point. The panel consisted of a board-certified pediatrician who specializes in child maltreatment, an attorney for the Juvenile Court CASA (Court Appointed Special Advocates) in Lucas County, Ohio who has been practicing law for 29 years and has acted as the CASA training coordinator for 13 years, and an intake/social worker for Lucas County Children’s Services who has worked on child maltreatment cases for over 20 years. The experts were asked to complete the 14-item Vignette Scale by providing Yes/No responses to the two dichotomous questions asked after each vignette: is this child being maltreated and would you report this case to Children’s Services? Interrater reliability was examined. Vignettes were retained if 66.66% of the experts (two out of three) agreed on responses to both of the dichotomous questions asked after each vignette. In cases where there was disagreement, the experts were asked to provide his/her rationale for their decision. Then, the study personnel responsible for writing the vignettes provided the rationale behind the content in the disputed vignette. This unique procedure in determining interrater reliability was to ensure that all experts and study personnel were, in fact, utilizing the current Ohio Revised Code when making decisions on the dichotomous responses. There were only two vignettes that elicited disagreement (i.e. vignettes #3 and #10) and both were discussed. In both cases, the
experts changed their responses to the vignettes. Given this procedure, total interrater reliability was 100% on each of the 14 vignettes on the Vignette Scale; therefore, all vignettes were retained for analyses.

Although reliability analysis of analogue vignettes usually consists of interrater reliability only (Heverly, Fitt & Newman, 1984), Cronbach’s alpha was examined because study analyses combined participants’ performance on all vignettes and treated it as a total scale. It should be noted that this effort was exploratory in nature. Cronbach’s alpha for the Vignette Scale was .63.

**Accuracy.** For each vignette, students’ responses to the questions, “Is this child being maltreated?” and “Would report this case to Children Services” were scored as either correct or incorrect (based on the experts’ opinions). In other words, the dichotomous questions on the Vignette Scale were treated as a quiz in order to examine the accuracy of their knowledge. Scores on all dichotomous items were added together, then divided by the total possible score, producing an accuracy percentage on the Vignette Scale. This was repeated at each of the three time points. Therefore, accuracy scores at the time of pre-training were determined by taking the total number of correct responses divided by 24 (Total possible points; 12 questions related to identification and 12 questions related to reporting child maltreatment). At the time of post-training and follow up, accuracy scores were determined by taking the total number of correct responses divided by 28 (Total possible points; 14 questions related to identification and 14 questions related to reporting child maltreatment). The mean accuracy percentage for each group, at all three time points, was used in study analyses.
Confidence Estimates. Participants’ confidence ratings for responses to the dichotomous items were used to determine an average confidence estimate on the Vignette Scale at each of the three time points, for each participant. All confidence ratings on the Vignette Scale were added together and divided by the total number of possible ratings. At pre-training, all confidence ratings were added and divided by 24. At the time of post-training and follow up, all confidence ratings were added and divided by 28. For participants who did not provide a confidence rating for a Yes/No response(s), confidence ratings were added and divided by the number of ratings provided. The mean confidence estimate for each group, at each of the three time points, was used in study analyses.

Difference Estimates (Calibration). It was possible for participants’ confidence ratings to range from underconfident to overconfident in their dichotomous responses to the vignettes. In order to determine whether a participant was underconfident or overconfident in their responses on the Vignette Scale, a difference estimate for each participant was determined at all three time points. The difference estimate was calculated by taking the average confidence rating minus the accuracy percentage. The difference can be interpreted as overconfidence, or in some cases, under-confidence. For example, if a student is 90% confident and 70% accurate, the difference is 20%. In this example, this student is 20% overconfident in his/her ability to correctly respond to the vignettes that depict child maltreatment on the Vignette Scale. The mean difference estimates for each group were examined to determine whether the overconfidence of students in the CAST Elective group became better calibrated after receiving training in
the Child Advocacy Elective. In other words, did students’ confidence estimates become more accurate at representing reality (i.e. actual performance on the Vignette Scale)?

**Teacher Reporting Attitude Scale for Child Sexual Abuse – Revised (TRAS-CSA-R; Appendix D).** Factors likely to be included in participants’ decision making processes regarding reporting child maltreatment were assessed using an attitude scale. The attitude scale that was used in the current study was based on the *Teachers’ Reporting Attitude Scale for Child Sexual Abuse* (TRAS-CSA). The scale was modified for use with medical students. In other words, all terminology associated with teaching was removed and replaced with terminology relevant to the medical field (e.g. “physician” in place of “teacher”). Additionally, the revised scale was used to examine general attitudes toward child maltreatment, not just attitudes specific to sexual abuse. Therefore, the original wording pertaining to abuse was modified (i.e. “child maltreatment” in place of “sexual abuse”). The TRAS-CSA is a 21-item self-administered scale that was constructed via a systematic literature review and a five-phase validation and preliminary testing process to assess teachers’ attitudes towards reporting suspected child sexual abuse (Walsh et al., 2010). Response choices consist of a 5-point Likert-type format ranging from 1 (strongly agree) to 5 (strongly disagree), with a neutral mid-point. Items are both positively and negatively worded.

The TRAS-CSA has been evaluated using exploratory factor analysis (Walsh, Rassafiani, Mathews, Farrell & Butler, 2011). Three dimensions were identified: commitment to the reporting role; confidence in the system’s response to reports; and concerns about reporting. These three factors accounted for 37.5% of the variance in the 14-item measure. Alpha coefficients for the subscales were .77 (commitment), .62
(confidence), and .66 (concerns). (Walsh et al, 2011). For the purpose of the current study, only two of the three subscales were examined because a large portion of the curriculum for the Child Advocacy Elective focused on addressing the common concerns of medical professionals pertaining to reporting child maltreatment. Additionally, a primary goal of the course was to improve students’ commitment to the reporting role. Since the course did not focus on specific aspects of Children Services or their investigation procedures, it was determined that the confidence subscale of the TRAS-CSA would not be examined. Therefore, the commitment and concerns subscales were examined separately instead of using the full 14-item TRAS-CSA. Cronbach’s alpha for the commitment scale ranged from .64 to .77 over time. For the concerns scale, Cronbach’s alpha ranged from .72 to .77.

Procedures

CAST Elective Group (Experimental). All students received an orientation at the beginning of the Child Advocacy Elective course and attended didactic presentations to learn and discuss a variety of topics concerning child advocacy. Students also met with faculty for informal, small group mentoring sessions. Appendix E lists the educators, teaching methods, and topics covered in each didactic and small group session. The approximate time commitment for each student was as follows:

(1) Two-hour meeting every other month, during which faculty and related professionals presented relevant topics, viewed documentaries, and facilitated discussion (Total of 8 hours).

(2) One to two hours in small group discussions about child maltreatment issues and cases with faculty in child psychiatry and/or related professionals on alternating
months with above (Total of 4 to 8 hours)

(3) Observed one patient on the child and adolescent psychiatric inpatient unit at the Kobacker Center with focus on the impact of adverse life events on children and youth. Students were assigned patients where there was some suspicion or substantiation of current or past child maltreatment. Students interacted with their assigned patients using games and casual discussion only (not clinical interviews). They read the patients’ charts and discussed the cases with inpatient staff members. Students were required to initiate discussion about the cases at the small-group discussion meetings (Total of 9 hours)

(4) Each student studied one de-identified patient case that involved suspected child maltreatment. These were actual patients who were evaluated and treated at the child and adolescent psychiatric mental health facility at the medical college hospital. Students were required to develop and submit a (3 page) paper or give a 20 minute presentation about the case they were assigned (Total of approximately 8 hours). The paper was not evaluated for the purposes of this study.

The pre-training, post-training, and follow up questionnaires were administered by study personnel (not faculty or other educators) immediately prior to and immediately following students’ completion of the elective and then again six months later. Follow up data was collected via email. Students were contacted three separate times to request completion of the follow up measure. For students who did not respond to any of the email reminders, three phone call attempts were made.

Comparison Group. Students in the comparison group were first-year medical students who were not enrolled in the Child Advocacy Elective. Comparison group
participants completed the same battery of self report questions as the CAST elective
group during the same time frame to ensure that all first-year students in the current study
were at the same point in their academic curriculum. Students were contacted three
separate times to request completion of the follow up measure. For students who did not
respond to any of the email reminders, three phone call attempts were made.

Upon conclusion of follow up data collection, students in the comparison group
were emailed a powerpoint training pertaining to identifying and reporting child
maltreatment. The slides included highlights and key components taken from the Child
Advocacy Elective curriculum. The goal was to ensure that students in the comparison
group received relevant training in the area of child maltreatment despite the fact that
they were not enrolled in the Child Advocacy Elective during the course of the current
study.
Chapter Three

Results

Preliminary Analyses

Chi square and t-test analyses were used to compare the CAST elective and comparison groups on the following demographic variables: gender, age, ethnicity, and number of hours of prior training in maltreatment at pre-training and follow-up. At the time of pre-training, the groups differed only on the gender variable $\chi^2 (1, N = 89) = 14.79, p < .001, \Phi = .41$, indicating that there were more males in the comparison group. This analysis demonstrated a medium effect size. At the time of follow-up, the groups still differed only on the gender variable $\chi^2 (1, N = 57) = 8.07, p < .01, \Phi = .37$, indicating that there were more males in the comparison group. This was also a medium effect size.

Due to the imbalanced proportion of males to females between groups, all subsequent analyses examined gender as a covariate in order to determine if there was a main effect of gender on any of the variables. Results indicated that there was not a main effect of gender in any of the analyses; therefore, analyses were conducted without gender as a covariate.

In order to determine if groups were equal at pre-training, t-test analyses were also used to compare the CAST elective and comparison groups on all study variables. Table 3 includes pre-training statistics and Table 4 includes post-training statistics. There were no differences between groups.

To account for the increase in number of vignettes on the post-training and follow-up measures from the pre-training measure, all vignette scores were standardized and transformed into z-scores for all analyses discussed.
Primary Analyses

**Perceived Preparedness Analyses.** The first series of pre-post analyses examined changes in students’ ratings of their own perceived preparedness from pre to post-training. There was a statistically significant time by group interaction for perceived preparedness to identify signs of maltreatment, $F(1,72) = 34.11, p < .001, \eta^2 = .32$. This large effect size favored the CAST elective group, suggesting a significant increase in scores on this item compared to the comparison group from pre to post-training. There was also a significant time by group interaction favoring the CAST elective group for students’ perceived preparedness to report a case of suspected maltreatment with a large effect size, $F(1,72) = 51.65, p < .001, \eta^2 = .41$. There was a statistically significant time by group interaction favoring the CAST elective group for perceived likelihood of reporting maltreatment if they suspected, but did not know for sure, that maltreatment occurred, $F(1,72) = 20.32, p < .001, \eta^2 = .22$. This was a medium effect size. Lastly, there was a significant time by group effect on students’ perceived preparedness to recommend and/or secure services for a maltreated child, $F(1,72) = 34.92, p < .001, \eta^2 = .33$. This effect favored the CAST elective group, suggesting a significant increase in scores on this item compared to the comparison group from pre to post-training and also yielded a large effect size.

**Vignette Analysis (Accuracy).** The next analysis examined changes in student knowledge about maltreatment. There was a statistically significant time by group interaction on vignette accuracy, $F(1,72) = 11.07, p < .001, \eta^2 = .13$. This medium effect size favored the CAST elective group, suggesting a significant increase (indicating greater accuracy) in vignette accuracy compared to the comparison group from pre to
Confidence Estimate Analysis. There was a statistically significant time by group interaction for average confidence estimates from pre to post-training, $F(1,72) = 20.31, p < .001, \eta^2 = .22$. This medium effect size favored the CAST elective group, suggesting a statistical increase in students’ confidence in their responses to vignette questions compared to the comparison group from pre to post-training.

Attitude Scale Analyses. Students’ attitudes on the commitment scale of the TRA-CSA-R were examined from pre to post-training. There was a statistically significant time by group interaction for students’ commitment to their role in reporting child maltreatment from pre to post-training, $F(1,72) = 4.52, p < .05, \eta^2 = .06$. The effect size for this analysis was small and favored the CAST elective group, suggesting a significant increase in students’ commitment to their role in reporting child maltreatment compared to the comparison group from pre to post-training.

Additionally, students’ attitudes on the concern scale of the TRA-CSA-R were examined from pre to post-training. There was a statistically significant time by group interaction for students’ concerns about the consequences associated with reporting child maltreatment from pre to post-training, $F(1,72) = 23.34, p < .001, \eta^2 = .25$. This large effect size favored the CAST elective group, suggesting a significant increase in students’ positive attitudes regarding concerns. In other words, the concerns that are often associated with reporting child maltreatment were less of an issue for students in the CAST elective group compared to the comparison group from pre to post-training. See Table 3 below for means and standard deviations for all pre-post variables.
Table 3

Mean Scores for all Pre-Post Variables by Group (with Standard Deviations in Parentheses)

<table>
<thead>
<tr>
<th></th>
<th>CAST Elective Group</th>
<th></th>
<th>Comparison Group</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-training</td>
<td>Post-training</td>
<td>Pre-training</td>
<td>Post Training</td>
</tr>
<tr>
<td>Perceived Preparedness Scale</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preparedness to Identify</td>
<td>1.25 (.74)</td>
<td>3.35 (.48)***</td>
<td>1.51 (.89)</td>
<td>2.46 (.66)</td>
</tr>
<tr>
<td>Preparedness to Report</td>
<td>1.15 (.95)</td>
<td>3.60 (.50)***</td>
<td>1.80 (1.05)</td>
<td>2.40 (.91)</td>
</tr>
<tr>
<td>Likelihood of Reporting</td>
<td>2.28 (.96)</td>
<td>3.65 (.48)***</td>
<td>2.43 (.98)</td>
<td>2.80 (.72)</td>
</tr>
<tr>
<td>Preparedness to Recommend Services</td>
<td>1.26 (1.12)</td>
<td>3.41 (.55)***</td>
<td>1.97 (.95)</td>
<td>2.46 (.95)</td>
</tr>
<tr>
<td>Vignette Scale</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accuracy</td>
<td>.76 (.11)</td>
<td>.88 (.07)***</td>
<td>.73 (.11)</td>
<td>.76 (.11)</td>
</tr>
<tr>
<td>Confidence</td>
<td>.76 (.07)</td>
<td>.88 (.07)***</td>
<td>.77 (.07)</td>
<td>.80 (.07)</td>
</tr>
<tr>
<td>Attitudes Scale</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commitment to Reporting Role</td>
<td>27.54 (1.65)</td>
<td>29.03 (1.11)*</td>
<td>27.35 (2.24)</td>
<td>27.79 (1.68)</td>
</tr>
<tr>
<td>Concerns About Reporting</td>
<td>16.33 (2.27)</td>
<td>20.73 (2.62)***</td>
<td>15.60 (1.97)</td>
<td>16.63 (3.08)</td>
</tr>
</tbody>
</table>

*Note: N=75; * p < .05, two-tailed. ** p < .01, two-tailed. *** p < .001, two-tailed.
Final Sample Analyses

Perceived Preparedness Analyses. The first series of final sample analyses (conducted only on participants who completed data at all three time points) examined changes in students’ ratings of their own perceived preparedness across all three time points: pre-training, post-training, and follow-up. Mauchly’s test was significant ($p < .05$) for all perceived preparedness items, except students’ perceived likelihood of reporting maltreatment; therefore, we corrected for the violated assumption of sphericity. In order to produce a valid $F$-ratio for these items, the Greenhouse-Geisser correction is reported for all data that violates the assumption of sphericity. There was a statistically significant time by group interaction for perceived preparedness to identify signs of maltreatment with a large effect size, $F(1,54) = 23.56, p < .001, \eta^2 = .31$. This effect favored the CAST elective group, suggesting a significant increase in ratings on this item compared to the comparison group across time.

Trend analysis is used to examine the effects of all subsequent repeated measures analyses. For all figures, 95% confidence intervals were calculated in order to demonstrate the estimated margin of error that exists in each model. The following formula was used: Pooled SD/SqRt(N)* +/- 1.96. Then, standard error bars were customized using these values.

Trend analysis demonstrates that the CAST elective group reported higher ratings on perceived preparedness to identify child maltreatment than the comparison group at the time of post-training and maintained higher ratings at the time of follow up. See Figure 1 below for trend analysis and Table 4 below for means and standard deviations for this variable.
Figure 1. Estimated marginal means for perceived preparedness to identify child maltreatment, with 95% Confidence Intervals

![Graph showing estimated marginal means for perceived preparedness to identify child maltreatment with 95% CIs.](image)

*Figure 1.* Values along the y-axis were deliberately calculated to include +/- 3 SDs around the mean perceived preparedness to identify score for the CAST Elective group. The mean scores at each of the three time points are illustrated above and the 95% CIs are based on the standard error around the grand mean for each group.

Table 4

<table>
<thead>
<tr>
<th></th>
<th>CAST Elective Group (n = 35)</th>
<th>Comparison Group (n = 22)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-training</td>
<td>1.26 (.78)</td>
<td>1.50 (1.00)</td>
</tr>
<tr>
<td>Post-training</td>
<td>3.34 (.48) ***</td>
<td>2.20 (.70)</td>
</tr>
<tr>
<td>Follow-up</td>
<td>3.37 (.49) ***</td>
<td>2.30 (.92)</td>
</tr>
</tbody>
</table>

Note: N = 57. *** p < .001, two-tailed.

There was also a significant time by group interaction, favoring the CAST elective group, for students’ perceived preparedness to report a case of suspected...
maltreatment, $F(1,54) = 18.69$, $p < .001$, $\eta^2 = .26$. This analysis yielded a large effect size. Trend analysis demonstrates that the CAST elective group reported higher ratings on perceived preparedness to report child maltreatment than the comparison group at the time of post-training and maintained higher ratings at the time of follow up. See Figure 2 below for trend analysis and Table 5 below for means and standard deviations for this variable.

*Figure 2.* Estimated marginal means for perceived preparedness to report child maltreatment, with 95% Confidence Intervals

*Figure 2.* Values along the y-axis were deliberately calculated to include +/- 3 SDs around the mean perceived preparedness to report score for the CAST Elective group. The mean scores at each of the three time points are illustrated above and the 95% CIs are based on the standard error around the grand mean for each group.
Table 5

Mean Scores for Perceived Preparedness to Report Child Maltreatment by Group

<table>
<thead>
<tr>
<th></th>
<th>CAST Elective Group (n = 35)</th>
<th>Comparison Group (n = 22)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-training</td>
<td>1.20 (.96)</td>
<td>1.45 (.89)</td>
</tr>
<tr>
<td>Post-training</td>
<td>3.60 (.50) ***</td>
<td>2.30 (.87)</td>
</tr>
<tr>
<td>Follow-up</td>
<td>3.54 (.51) ***</td>
<td>2.30 (1.00)</td>
</tr>
</tbody>
</table>

Note: N = 57. *** p < .001, two-tailed.

There was a statistically significant time by group interaction, favoring the CAST elective group, for perceived likelihood of reporting maltreatment if they suspected, but did not know for sure, that maltreatment occurred, $F(1,54) = 11.45, p =< .001, \eta^2 = .18$. This analysis demonstrated a medium effect size. Trend analysis demonstrates that the CAST elective group reported higher ratings on perceived likelihood to report child maltreatment than the comparison group at the time of post-training and maintained higher ratings at the time of follow up. See Figure 3 below for trend analysis and Table 6 for means and standard deviations for this variable.
Figure 3. Estimated marginal means for perceived likelihood to report child maltreatment, with 95% Confidence Intervals

Figure 3. Values along the y-axis were deliberately calculated to include +/- 3 SDs around the mean perceived likelihood score for the CAST Elective group. The mean scores at each of the three time points are illustrated above and the 95% CIs are based on the standard error around the grand mean for each group.

Table 6

Mean Scores for Likelihood of Reporting Child Maltreatment by Group

<table>
<thead>
<tr>
<th></th>
<th>CAST Elective Group (n = 35)</th>
<th>Comparison Group (n = 22)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-training</td>
<td>2.23 (.97)</td>
<td>2.40 (1.00)</td>
</tr>
<tr>
<td>Post-training</td>
<td>3.63 (.49) ***</td>
<td>2.85 (.81)</td>
</tr>
<tr>
<td>Follow-up</td>
<td>3.69 (.47) ***</td>
<td>2.65 (1.10)</td>
</tr>
</tbody>
</table>

Note: N = 57. *** p < .001, two-tailed.
Lastly, there was a significant time by group effect on students’ perceived preparedness to recommend and/or secure services for a maltreated child, $F(1,54) = 24.20, p < .001, \eta^2 = .31$. This large effect size favored the CAST elective group, suggesting a significant increase in ratings compared to the comparison group from over time. Trend analysis demonstrates that the CAST elective group reported higher ratings on perceived preparedness to recommend services for a maltreated child than the comparison group at the time of post-training and maintained higher ratings at the time of follow up. See Figure 4 below for trend analysis and Table 7 for means and standard deviations for this variable.

*Figure 4.* Estimated marginal means for perceived preparedness to recommend services for a maltreated child, with 95% Confidence Intervals
Table 7

*Mean Scores for Perceived Preparedness to Recommend Services by Group*

<table>
<thead>
<tr>
<th></th>
<th>CAST Elective Group (n = 35)</th>
<th>Comparison Group (n = 22)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-training</td>
<td>1.29 (1.15)</td>
<td>2.00 (.97)</td>
</tr>
<tr>
<td>Post-training</td>
<td>3.50 (.55)</td>
<td>2.40 (1.10)</td>
</tr>
<tr>
<td>Follow-up</td>
<td>3.37 (.55)</td>
<td>2.10 (1.11)</td>
</tr>
</tbody>
</table>

Note: N = 57. *** p < .001, two-tailed.

**Vignette Analysis.** The next analysis examined changes in student knowledge about maltreatment across all three time points. There was a statistically significant time by group interaction on vignette accuracy, $F(1,54) = 10.56, p < .001, \eta^2 = .17$. This medium effect size favored the CAST elective group, suggesting a significant increase in vignette accuracy compared to the comparison group over time. Trend analysis illustrates that the CAST elective group demonstrated greater accuracy on the Vignette Scale at the time of post-training and maintained higher accuracy at the time of follow up compared to the comparison group. See Figure 5 below for trend analysis and Table 8 below for means and standard deviations for this variable.
**Figure 5.** Estimated marginal means of the vignette scale, with 95% Confidence Intervals

Values along the y-axis were deliberately calculated to include +/- 3 SDs around the mean vignette total score for the CAST Elective group. The mean scores at each of the three time points are illustrated above and the 95% CIs are based on the standard error around the grand mean for each group.

**Table 8**

*Mean Scores for Accuracy on the Vignette Scale by Group*

<table>
<thead>
<tr>
<th></th>
<th>CAST Elective Group (n = 35)</th>
<th>Comparison Group (n = 22)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-training</td>
<td>.77 (.10)</td>
<td>.77 (.11)</td>
</tr>
<tr>
<td>Post-training</td>
<td>.88 (.07) ***</td>
<td>.73 (.11)</td>
</tr>
<tr>
<td>Follow-up</td>
<td>.88 (.08) ***</td>
<td>.79 (.10)</td>
</tr>
</tbody>
</table>

Note: N = 57. *** p < .001, two-tailed.
**Confidence Estimate Analysis.** Changes in students’ confidence estimates across all three time points were examined. Mauchly’s test was significant ($p < .05$) for this variable; therefore, we corrected for the violated assumption of sphericity. In order to produce a valid $F$-ratio for this analysis, the Greenhouse-Geisser correction is reported. There was a statistically significant time by group interaction on students’ ratings of confidence in their responses on the Vignette Scale, $F(1,54) = 9.52, p < .001, \eta^2 = .15$. This medium effect size favored the CAST elective group, suggesting a significant increase in confidence compared to the comparison group over time. Trend analysis demonstrates that the CAST elective group reported higher ratings of confidence in their responses to the vignettes than the comparison group at time of post-training and maintained higher accuracy at the time of follow up. See Figure 6 below for trend analysis and Table 9 below for means and standard deviations for this variable.
Figure 6. Estimated marginal means of confidence ratings, with 95% Confidence Intervals

![Estimated Marginal Means of Confidence Ratings with 95% CIs](image)

Values along the y-axis were deliberately calculated to include +/- 3 SDs around the mean confidence rating for the CAST Elective group. The mean scores at each of the three time points are illustrated above and the 95% CIs are based on the standard error around the grand mean for each group. Note. The standard error bars are included, but are too small to see.

Table 9

<table>
<thead>
<tr>
<th>Time Point</th>
<th>CAST Elective Group (n = 35)</th>
<th>Comparison Group (n = 22)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-training</td>
<td>.77 (.07)</td>
<td>.77 (.08)</td>
</tr>
<tr>
<td>Post-training</td>
<td>.88 (.07) ***</td>
<td>.81 (.06)</td>
</tr>
<tr>
<td>Follow-up</td>
<td>.88 (.06) ***</td>
<td>.81 (.07)</td>
</tr>
</tbody>
</table>

Note: N = 57. *** p < .001, two-tailed.
Attitude Scale Analyses. Students’ attitudes on the commitment scale of the TRA-CSA-R were examined over time. There was a significant time by group interaction for students’ commitment to their role in reporting child maltreatment over time, $F(1, 54) = 4.74, p < .01, \eta^2 = .08$. This analysis demonstrated a small effect size. This effect favored the CAST elective group, suggesting a significant increase in students’ commitment to their role in reporting child maltreatment compared to the comparison group over time. Trend analysis demonstrates that the CAST elective group reported more positive attitudes toward their reporting role than the comparison group at time of post-training and maintained higher accuracy at the time of follow up. See Figure 7 below for trend analysis and Table 10 below for means and standard deviations for this variable.

Figure 7. Estimated marginal means for commitment to reporting role, with 95% Confidence Intervals

<table>
<thead>
<tr>
<th>Estimated Marginal Means for Commitment to Reporting with 95% CIs</th>
</tr>
</thead>
<tbody>
<tr>
<td>33</td>
</tr>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

CAST Elective Group
Figure 7. Values along the y-axis were deliberately calculated to include +/− 3 SDs around the mean for commitment to the reporting role for the CAST Elective group. The mean scores at each of the three time points are illustrated above and the 95% CIs are based on the standard error around the grand mean for each group.

Table 10

Mean Scores for Commitment Attitude by Group

<table>
<thead>
<tr>
<th></th>
<th>CAST Elective Group (n = 35)</th>
<th>Comparison Group (n = 22)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-training</td>
<td>27.65 (1.63)</td>
<td>27.57 (2.12)</td>
</tr>
<tr>
<td>Post-training</td>
<td>29.03 (1.11)*</td>
<td>27.95 (1.43)</td>
</tr>
<tr>
<td>Follow-up</td>
<td>29.24 (1.10)**</td>
<td>27.63 (2.22)</td>
</tr>
</tbody>
</table>

Note: N = 57. * p < .05, two-tailed. ** p < .01, two-tailed.

Additionally, students’ attitudes on the concern scale of the TRA-CSA-R were examined over time. There was a statistically significant time by group interaction for students’ concern about the consequences associated with reporting child maltreatment over time, $F(1,54) = 11.13, p < .001, \eta^2 = .17$. This medium effect size favored the CAST elective group, suggesting a significant increase in students’ positive attitudes toward concerns associated with reporting child maltreatment compared to the comparison group over time. Trend analysis demonstrates that the CAST elective group reported more positive attitudes toward their concerns about reporting than the comparison group at time of post-training and maintained higher accuracy at the time of follow up. See Figure 8 below for trend analysis and Table 11 for means and standard deviations for this variable.
Figure 8. Estimated marginal means for commitment to reporting role, with 95% Confidence Intervals

Table 11

Mean Scores for Concerns Attitude by Group

<table>
<thead>
<tr>
<th></th>
<th>CAST Elective Group (n = 35)</th>
<th>Comparison Group (n = 22)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-training</td>
<td>16.03 (2.21)</td>
<td>15.19 (1.89)</td>
</tr>
<tr>
<td>Post-training</td>
<td>20.41 (2.61) ***</td>
<td>16.24 (3.58)</td>
</tr>
<tr>
<td>Follow-up</td>
<td>29.24 (1.10) ***</td>
<td>15.62 (3.66)</td>
</tr>
</tbody>
</table>

Note: N = 57. *** p < .001, two-tailed.
Exploratory Analyses

**Calibration Analysis.** To examine whether or not overconfidence became better calibrated over time, difference scores were examined. There was not a statistically significant time by group interaction on difference scores from pre to post-training, \( F(1,72) = .43, p > .05, \eta^2 = .006 \) or across all three time points, \( F(1,57) = 2.51, p > .05, \eta^2 = .04 \). The results indicate that both groups were fairly well calibrated at pre-training, post-training and also at follow-up. In other words all study participants had confidence scores that realistically represented their actually performance on the Vignette Scale at all three time points. See Figure 9 below for calibration and Table 12 for means and standard deviations for this exploratory variable.

*Figure 9. Calibration of Overconfidence on Vignette Scale Over Time*
Table 12

*Mean Scores for Calibration by Group*

<table>
<thead>
<tr>
<th></th>
<th>CAST (n = 35) M (SD)</th>
<th>Comparison (n = 22) M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-training</td>
<td>.02 (.16)</td>
<td>.03 (.12)</td>
</tr>
<tr>
<td>Post-training</td>
<td>.00 (.09)</td>
<td>.04 (.12)</td>
</tr>
<tr>
<td>Follow-up</td>
<td>.01 (.08)</td>
<td>.02 (.13)</td>
</tr>
</tbody>
</table>

*Note. N = 57*
Chapter Four

Discussion

The CAST program for medical students was developed with the general goals of improving identification skills and decreasing child maltreatment. Specifically, the CAST program strives to help develop medical students into confident, committed and well-trained physicians who advocate for the maltreated children they encounter in practice.

All study hypotheses were confirmed and results demonstrate large effect sizes. The CAST program is highly effective. More specifically, medical students who enrolled in the Child Advocacy Elective that utilized the CAST program demonstrated improved knowledge, confidence and attitudes toward reporting suspected child maltreatment. These results were observable both at the conclusion of the CAST program (post-training) and six months later (follow-up). Although the significant changes at the time of post-training were important, the maintained change still present at the time of follow-up further highlights the value of the CAST program. Students who received the CAST program not only improved their knowledge, confidence and attitudes toward child maltreatment issues compared to students who did not receive the training, they retained these qualities.

The CAST Program: Improving Identification and Reporting

While the comparison group demonstrated slight improvement on all four items measuring Perceived Preparedness from pre to post-training, likely due to information learned at colloquia and lectures in other courses, the CAST elective group exhibited statistically significant increases on all four items and reported even higher ratings of perceived preparedness at the time of post-training and follow-up. In other words, the
students in the CAST program reported that they were more likely to report suspected child maltreatment and endorsed feeling more prepared to identify child maltreatment, to report child maltreatment and to recommend or secure services for a maltreated child than students in the comparison group at the conclusion of the CAST training. These statistically significant changes remained at the time of follow-up. These results are particularly important given that lack of training and preparation in this area is one of the most commonly stated reasons physicians identify as an obstacle for why they often fail to follow through on child maltreatment issues (Flaherty et al., 2007; Warner-Rodgers et al., 1996). The CAST program demonstrates solid evidence that students’ increased perceived preparedness to address child maltreatment may lead to a higher probability of follow-through on the part of physicians.

Research by Montoya and colleagues (2010) found that physicians reported being unprepared to 1) properly identify and evaluate children with special health care needs, 2) provide appropriate referrals for these children and 3) recommend or secure services. Results from the same study found that a majority of physicians failed to follow-through on making recommendations or securing services for children with special needs because they believed that it was more difficult and took more time compared to following-through for children without special needs (Montoya et al., 2010). According to Giardino and colleagues (2003), even physicians who understand that children with special needs are at risk of experiencing maltreatment are still alarmingly unsuccessful at identifying, evaluating and recognizing what services these children could benefit. The findings in the current study suggest that training medical students on how to identify and evaluate at
risk children with special needs may improve physicians’ ability to recognize appropriate services to recommend and secure for these children.

Medical students’ perceived preparedness to professionally and appropriately address child maltreatment issues is important; however, their actual performance in situations that involve maltreated children is most vital. In other words, one’s belief in how they might respond to a clinical case of child maltreatment may be different than how they actually respond to such a case. Since first year medical students are not at a point in their training where they are responsible for clinical practice, it is impossible to evaluate their reactions and decisions about real cases of child maltreatment. Therefore, the current study utilized analog vignettes to evaluate students’ abilities to identify whether or not a child was maltreated and to decide whether or not they would report the case to children services. The goal of the CAST program is to align one’s perceived preparedness to address child maltreatment with appropriate reactions to cases where they need to depend on their knowledge in order to act appropriately and accordingly. Results of the current study indicate that this goal was met in that students who were trained with the CAST program responded more accurately and appropriately to cases of child maltreatment depicted in a variety of analogue vignettes compared to students who were not trained. Ultimately, the hope is that this will translate into actual behavior later on in training.

These results, specifically, are likely to have the most important implications for secondary and tertiary prevention efforts related to child maltreatment. Previous research found that medical professionals are among the largest groups of professionals who show low adherence to mandating reporting of child maltreatment (Sege et al., 2006). The
CAST program seems to have potential for addressing these low rates of adherence as students in the CAST program became better at deciding when it was appropriate to report suspected maltreatment. This seemingly general improvement is actually the result of students acquiring a number of new skill sets and knowledge bases.

The CAST program curriculum focuses on training medical students not only to identify and consider several factors that may put a child at risk for maltreatment, but also to incorporate these risk factors with the Ohio revised code when conceptualizing a case and/or deciding whether or not to report. Research has identified children of lower SES, children with special needs, infants and toddlers to be at greatest risk for child maltreatment (Connell et al., 2007; Montoya et al., 2010; Hindley et al., 2006; Palusci, 2011; Stith et al., 2009 and Wotherspoon et al., 2010). Therefore, students in the CAST program were specifically educated on how to properly identify and evaluate children from each of these at risk groups. Additionally, students were informed of the Ohio revised code and unique clauses that they, as mandated reporters, should be aware of when deciding whether or not it is appropriate to report suspected child maltreatment to children services (http://codes.ohio.gov/orc/2151.421; March, 2013). A large body of research has found that a majority of children suspected of being maltreated are not even reported into the system (Ibanez, Borrego, Pemberton & Terao, 2006; Warner-Rodgers, Hansen & Parsons, 1996). Major improvements in these rates would likely occur if more physicians were properly trained to accurately and appropriately report all suspected child maltreatment. Results of the current study suggest that the CAST program may be an efficacious method of improving these rates nationwide.
Confidence, Attitudes and Concerns. Although it is technically not necessary that a mandated reporter have high confidence in their knowledge about child maltreatment for them to professionally and appropriately respond, the CAST program aimed to increase confidence. This goal was influenced by the belief that higher confidence in one’s ability would lead to greater probability of following through on child maltreatment issues that arise in practice. Results of the current study demonstrate that the students who received the CAST training program reported higher ratings of confidence in their responses to the vignettes depicting child maltreatment compared to the comparison group at the conclusion of the CAST program. In other words, CAST elective students were more confident in their decisions to identify and report child maltreatment on the Vignette Scale at post-training. This suggests that they felt more confident because of the knowledge they had acquired during the CAST program. These statistically significant changes also remained at the time of follow-up.

Research has identified several factors to be associated with a physician’s decision-making process pertaining to reporting suspected child maltreatment. These factors are known to contribute to the development of attitudes toward reporting (Ashton, 2002; Gunn et al., 2005; Ibanez, 2006; Reiniger, 1995). The CAST elective intentionally provided training to medical students that would explicitly target two of the attitudes identified in the literature: physician’s attitude toward their reporting role and concerns associated with reporting child maltreatment.

Although all participants demonstrated moderately high levels of reported commitment to their reporting role at the time of pre-training, this commitment marginally increased for students who received the CAST program at the time of post-
training and remained higher at the time of follow-up. These findings suggest that medical students, generally speaking, possess a dedication to reporting maltreatment early on in their medical training. Perhaps this is simply because they are invested and committed to promoting the health and well-being of people, which is likely one of the main reasons they chose to enter medical school. But, results of the current study, demonstrate that this commitment can be even stronger following specific training. Components of the CAST program’s curriculum intentionally address factors that previous research has associated with weaker levels of commitment to the reporting role of physicians. In a study by Flaherty et al. (2008), physicians reported that they were more likely to report suspected maltreatment if they were aware that other colleagues also suspected maltreatment or if a case was specifically referred to a physician and made explicitly aware that maltreatment was suspected by others. While it is positive that some physicians are reporting the more obvious cases of child maltreatment, it is known that the majority of maltreatment that children suffer is not obvious or observable. It is also possible that, in many cases especially those involving infants and younger children, a physician may be the only professional with the opportunity to evaluate a child for maltreatment (Flaherty et al., 2007 and Starling & Boos, 2003). It is likely that physicians with higher levels of commitment to their reporting role will follow through and report more cases where suspected maltreatment is not as clear. For example, reporting when they are not completely certain that maltreatment is occurring, but suspect it, or even when attending physicians disagree with suspicions of child maltreatment.

Results of the current study also demonstrate an improvement in attitudes pertaining to potential consequences of reporting suspected child maltreatment at the time
of post-training and again at the time of follow-up. In other words, students who were trained with the CAST program demonstrated more positive attitudes (less concern) toward the apprehension often associated with the decision-making process related to reporting suspected maltreatment. Research indicates that many physicians often choose not to report because they were worried that they would lose patients, they would face retaliation, reporting may create difficulty in establishing future patients, they could be sued if the maltreatment was not substantiated, among others (Flaherty et al., 2008 and Gunn et al., 2005). These misconceptions and myths were directly addressed in the CAST program. Students were educated about the probability of each event. For example, students in the CAST program received lectures from pediatricians and other professionals who provided real life examples that challenged the misconception that physicians would face retaliation or lose patients subsequent to reporting suspected child maltreatment. Additionally, students were provided with copies of the section of the Ohio Revised Code that outlines the guidelines for protecting mandated reporters from lawsuits.

**Calibration: Accurately Predicting Performance**

Exploratory analyses examined the reported confidence ratings of each participant relative to their actual performance on the Vignette Scale. The goal was to determine whether or not the students who received the CAST program would demonstrate better calibrated scores on the Vignette Scale over time. Results were not statistically significant. In other words, there were no differences between groups in how well students were able to predict their accuracy on the vignettes. Closer examination of the raw data revealed a consistent pattern across time: regardless of what group students
belonged to, they were fairly good at predicting how accurate they were at identifying the maltreatment depicted in the vignettes. Additionally, they were fairly good at predicting how accurate they were at appropriately deciding whether or not they should report the case to children services. Since calibration was determined by how well students’ confidence matched up with accuracy, analyses were not sensitive to the fact that students in the comparison group could appear to be as well calibrated as students in the CAST elective group despite the fact that their accuracy and confidence ratings were significantly lower than those of the CAST elective group. For example, a student in the comparison group who is 50% confident and 50% accurate is as perfectly calibrated as a student in the CAST group who is 95% confident and 95% accurate on the Vignette Scale. Although clear increases in both knowledge and confidence were found in the current study, results do not support the notion that the CAST program improves calibration. However, previous calibration research appears to explain why results in the current study were not significant (Lichtenstein & Fischhoff, 1977; Moore & Healy, 2008; Pulford & Colman, 1997).

For many years research pertaining to overconfidence has examined calibration to determine whether a person is underconfident, well-calibrated, or overconfident when estimating things like their behavior, performance or ranking relative to others (Lichtenstein & Fischhoff, 1977 and Pulford & Colman, 1997). Consistently, research has found that one’s judgment (i.e. confidence) in their performance is often associated with the difficulty level of a task. This research has determined that more difficult tasks most often yield higher rates of overconfidence (Lichtenstein & Fischhoff, 1977; Moore & Healy, 2008; Pulford & Colman, 1997). In addition to evidence that people
overestimate their actual performance on difficult tasks, there is evidence that underconfidence occurs when tasks are easy and calibration is most associated with tasks that are neither too difficult nor too easy (Pulford & Colman, 1997; Lichtenstein & Fischhoff, 1977; Moore & Healy, 2008). In the current study, all students were generally well-calibrated. Based on previous research, it can be speculated that the near perfect calibration of all participants likely means that the task of responding to items on the Vignette Scale was neither too difficult nor too easy. Research by Klayman and colleagues (1999) provides an additional explanation as to why participants in both groups were generally well-calibrated and could accurately predict their performance. This research found that there is little overconfidence associated with two-choice questions (Klayman et al., 1999). All items on the Vignette Scale required participants to answer “yes” or “no;” therefore, it is possible that the design of the measure itself controlled for overconfidence. In summary, calibration was not found to be related to the efficacy of the CAST program; however, it did provide basic information about the task at hand.

Limitations

Results of the current study should be interpreted in light of certain limitations. Although the use of a comparison group was a strength of the study, there was not random selection from the medical student population nor was there random assignment to groups. Random assignment would have improved the likelihood of true group equivalency and improved the generalizability of the findings. The groups in the present study were not equivalent with respect to the gender of participants, with the comparison group having a higher proportion of males. Lunch was provided for medical students
who agreed to participate in the study comparison group. It appeared as though males may have been more motivated to participate because food was the incentive. This speculation is loosely based on comments and behaviors observed at the time of pre-training data collection by the participating males. Because males have been shown in some studies to be less likely to report maltreatment (Gunn et al., 2005), this may have affected the findings. Further, the lack of random selection increases the likelihood that the students who chose to take the CAST course are not representative of medical students in general. Lastly, there was disproportionate dropout rate in that a larger number of the non-completers were from the comparison group. Future studies should make use of random selection and random assignment to groups.

It is likely that the lack of random assignment is also responsible for unequal groups at the time of pre-training. Although groups did not differ on any of the three study measures, the comparison group demonstrated statistically significant differences from the CAST elective group on two items of the Perceived Preparedness Scale at pre-training. This is particularly interesting given that the majority of students who enrolled in the elective course reported more hours of training in the area of child maltreatment and more students listed reasons for enrolling to be related to fields of interest (i.e. pediatrics, primary care, or family medicine) compared to the comparison group. The general trends found among students in the comparison group were that they reported receiving less training in child maltreatment and that they did not enroll in the course because they believed they “would not need this training” as they planned to enter fields of medicine that were “unrelated to issues of child maltreatment.” The reasons for not enrolling in the elective course, provided by the comparison group, would lead one to
assume that they likely feel under prepared to deal with child maltreatment issues. However, the comparison group endorsed believing that they were more prepared to report child maltreatment and also to recommend services for a maltreated child compared to medical students who had chosen to enroll in the Child Advocacy elective. Furthermore, these reported differences were large ($d=.70$ and $.71$). It should be noted that although the comparison group perceived their preparedness to be higher on these items, their actual knowledge (as measure by the Vignette Scale) was low. Generally speaking, this phenomena could mean that students who do not intend to enter medical fields with frequent child contact, perceive themselves to be adequately trained and prepared to address issues of child maltreatment when, clearly, they are not. It is also very likely that students who plan to enter medical fields where they know they will be engaging in frequent contact with children are better able to determine how well-trained and prepared they are to address issues of child maltreatment. In other words, it seems as though those who chose to enroll in the Child Advocacy elective possess better insight regarding their actual ability to respond accordingly to child maltreatment.

The fact that the sample was restricted to only one medical school also limits generalizability. Future studies should replicate these findings at multiple sites in a variety of geographical regions and from schools with diverse student populations. Subsequent studies on the CAST program also should evaluate whether the effects last beyond medical school training, and improve actual physician practice related to child maltreatment and child advocacy.

Another potential limitation may be the fact that the current study measured students’ attitudes toward child maltreatment issues using items taken from the TRA-
As a reminder, the TRA-CSA scale was designed to measure teacher’s attitudes toward child maltreatment issues and established in Australia. This may also account for the lower Cronbach’s alpha values for this measure. It is possible that factors within the scale (i.e. commitment and concern) might be different with a U.S. sample of medical students. The TRA-CSA was used despite this limitation because the item content closely matched the attitudes the current study aimed to measure. However, future research may benefit from using an attitude scale that was specifically developed for medical students/professions in the U.S. in order to avoid any cultural biases within the measure.

Finally, the lower alpha values for all dependent variables should be considered when interpreting the current study’s results. There are reasonable explanations for these lower reliability values, and a majority of the Cronbach’s alpha values are considered to be “satisfactory.” The current study examined Cronbach’s alpha for the Vignette Scale because performance on all vignettes was combined for analysis. The reported alpha for the Vignette Scale is likely lower than considered desirable because of the variety of content in the vignettes. As noted above, Cronbach’s alpha was lower than expected for the commitment and concerns scales on the attitude measure due to that fact that it was validated with an Australian sample, but used with an American sample in the current study.

**Implications**

The results of the current study have several practical implications. First, present results indicate that the CAST program has the potential to contribute to prevention and intervention efforts within the medical field. This is especially important because
research has found that physicians have more frequent contact with maltreated children than do other mandated professionals (Flaherty et al., 2007). Although research has repeatedly indicated that medical professionals can be highly effective in the prevention and intervention of child maltreatment (Reece & Jenny, 2005; Reiniger, Robinson & McHugh, 1995 and Ward et al., 2004), few attempts to better train physicians in this area exist. The current study has identified the CAST program to be an efficacious approach to begin training future physicians. If the current study’s changes and improvements to students’ perceived preparedness, knowledge about maltreatment issues, confidence in their acquired knowledge, and attitudes pertaining to child maltreatment could also be achieved with medical students across the country, significant positive changes to the chronic nature of child maltreatment in the U.S. could result. The more consistent physicians are in reporting suspected child maltreatment, the more likely it is that these children and families will receive the necessary intervention needed to protect them from the recurring maltreatment. Further, effective prevention and intervention leads to lower rates of child maltreatment. Research has shown that maltreated children are at risk for maltreating children in adulthood (Gershoff, 2002; Zolotor, et al., 2008). If fewer children are being maltreated due to effective prevention and intervention efforts, it is likely that the cyclical nature of maltreatment rates will be reduced.

**Future Directions**

The results of the current study should be used to further research in this area. Perhaps most important is for the CAST program to be implemented in other medical schools in order to replicate findings. While results indicate the current CAST curriculum to be efficacious, some improvements to the program may be beneficial.
Although as expected, the percentage of correct responses to vignette questions did increase for the CAST elective group, relative to the comparison group, it is important to note there was not 100% correct responding in the elective group. This finding suggests that there is room for improvement in teaching the identification and reporting of child maltreatment. For example, one of the vignettes depicted an 18 year old with severe mental retardation who often stays home alone for long periods of time. The majority of the total sample responded incorrectly to questions about this vignette at pre-training. Although most CAST elective students’ responses were more accurate following the CAST program, 12% still got this answer wrong at the time of post-training. This may suggest a need for more thorough training perhaps with case examples about reporting maltreatment of individuals with disabilities, indicators of neglect, and/or age limits stipulated in state reporting laws.

Further, it is important to note that reporting rates should have been consistent with rates of identifying maltreatment. That is, if a case was endorsed as an example of suspected maltreatment, it should also have been endorsed as worthy of reporting, and therefore rates of identifying and reporting should have been identical. However, there was not one-to-one correspondence: some cases judged to be maltreatment were not judged to be reportable. This pattern of findings suggests a need to improve teaching about the concept of mandatory reporting of all cases of suspected abuse. Future training and outcome studies will focus on improving medical students’ responses for identifying and reporting child maltreatment to be more consistent with a one-to-one correspondence rate. Data from the current research will be separated by responses to identify child maltreatment and responses to reporting maltreatment and examined in order to
determine areas where improvements in the curriculum can be made.

It might also be informative to follow up with CAST-trained medical students again during their residency to see if the current effects persist. Additionally, this follow up would provide valuable information as to whether or not higher confidence is, in fact, related to higher probability of follow-through with maltreatment cases in practice. While re-assessing participants’ performance on the Vignette Scale during their residency would be informative, it might make more sense to measure their clinical application pertaining to their child maltreatment knowledge. This could be done using simulated patients. In the past, simulated patients have also been referred to as standardized patients.

As early as 1963, standardized patients were used to appraise and evaluate the clinical work of physicians in training (Barrow & Abrahamson, 1964). The residents and physicians may have been aware that the patient was standardized, but may not have been prepared for the cluster of symptoms the standardized patient would have described. A more modern approach is to use trained actors as simulated patients in order to assess the clinical responses and performance of residents and physicians without them knowing that they are being evaluated (Nestel, Burn, Pritchard, Glastonbury & Tabak, 2011). Research on the efficacy of using simulated patients (even trained child actors) to train medical professionals suggests that this approach successfully identified physicians who needed further training in a specific area (Brown, Doonan, Shellenberger, 2005 and Gerner, Sanci, Cahill, Ukoumunne, Gold, Rogers et al., 2010). Additionally, physicians later reported their experiences with the simulated patients to be authentic secondary to actual patients (Wuendrich, Nissen, Feige, Philipsen & Voderholzer, 2012).
There have been some ethical concerns regarding this approach due to the fact that residents and physicians often do not know that they are being evaluated during their interactions with simulated patients. The ethics of this approach have been examined and it was determined that the use of simulated patients to monitor practice is a naturalistic and scientifically sound experimental design that can answer important policy-relevant questions, with minimal risks to human subjects (Rhodes & Miller, 2012). Therefore, it is suggested that future studies use simulated patients to assess how well physicians who were trained in the CAST program, respond to simulations of child maltreatment in their actual clinical work without knowing that they are being evaluated. This would provide the most valuable information about the long-term efficacy of the CAST program on medical student training.

It is likely that many medical schools may view the implementation of such an involved training course as unfeasible for their already-established curricula and prefer to opt for a more simplistic approach to training. Perhaps some believe that providing medical students with access to informative PowerPoint slides would be enough to improve accuracy in the area of identifying and reporting child maltreatment. Results of the current study suggest that an interactive curriculum in this area is efficacious in training medical students. However, it is not known how students would perform on the Vignette Scale after simply reading slides as the form of training. In order to determine whether or not there are clear advantages to using an interactive course or simply requiring medical students to study informational slides, further efficacy research to compare the two methods is needed.
Finally, it is imperative that the revised attitudes scale used in the current study be further analyzed. Factor and other analysis should be performed in order to determine whether or not this scale is the optimal measure to be used in future CAST research.

Conclusions

The fact that the CAST elective students’ knowledge, perceived preparedness, confidence and attitudes toward child maltreatment all improved relative to a comparison group indicated that the students’ scores on the measures did not increase due to some factor (e.g., other medical didactics, life experience) other than the CAST training. Results suggest that general training in child and adolescent maltreatment and advocacy in the first year of medical school has the potential to improve future physicians’ knowledge and likelihood of effectively identifying and reporting suspected maltreatment.

Overall, the current study provides solid evidence that the CAST program is an efficacious method for training first year medical students to identify and report child maltreatment. Participation in this course increased students’ confidence in their knowledge and ability, and changed attitudes associated with child maltreatment issues. Most importantly, the effects of the CAST program were shown to remain several months later, suggesting that the program provides students with knowledge that should remain accessible throughout the remainder of their medical training.
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factor analysis and psychometric evaluation of the Teachers Reporting Attitude Scale for Child Sexual Abuse. Manuscript submitted for publication.


Appendix A

Child Maltreatment Codes used in the NIS-4

**Sexual Abuse (10 codes):** Intrusion sex without force; Intrusion sex involving use of force; Child’s prostitution or involvement in pornography with intrusion; Molestation with genital contact; Exposure/Voyeurism; Providing sexually explicit materials; Child’s involvement in pornography without intrusion; Failure to supervise child’s voluntary sexual activity; Attempted/threatened sexual abuse with physical contact; Other/unknown sexual abuse

**Physical Neglect (12 codes):** Refusal to allow or provide needed care for diagnosed condition or impairment Unwarranted delay or failure to seek needed care Refusal of custody/abandonment Other refusal of custody Illegal transfers of custody Other or unspecified custody-related maltreatment - unstable custody arrangements Inadequate supervision Inadequate nutrition Inadequate personal hygiene Inadequate clothing Inadequate shelter Other/unspecified disregard of child’s physical needs and physical safety.

**Physical Abuse (6 codes):** Shake, throw, purposefully drop; Hit with hand; Hit with object; Push, grab, drag, pull; Punch, kick; Other physical abuse.

**Educational Neglect (4 codes):** Permitted chronic truancy; Other truancy; Failure to register or enroll; Other refusal to allow or provide needed attention to diagnosed educational needs.

**Emotional Abuse (8 codes):** Close confinement: tying/binding; Close confinement: other; Verbal assaults and emotional abuse; Threats of sexual abuse (without contact); Threats of other maltreatment; Terrorizing the child; Administering unprescribed substances; Other/unknown abuse.

**Emotional Neglect (11 codes):** Inadequate nurturance/affection; Domestic violence; Knowingly permitting drug/alcohol abuse; Knowingly permitting other maladaptive behavior; Refusal to allow or provide needed care for diagnosed emotional or behavioral impairment/problem; Failure to seek needed care for emotional or behavioral impairment/problem; Overprotectiveness; Inadequate structure Inappropriately advanced expectations; Exposure to maladaptive behaviors and environments; Other inattention to development/emotional needs.

**Other Maltreatment (6 codes):** Lack of preventive health care; General neglect—other/unspecified neglect allegations; Custody/child support problems; Behavior control/family conflict issues; Parent problem; General maltreatment—unspecified/other (not coded above).
Appendix B

Perceived Preparedness Scale

1. Right now, how prepared are you to identify signs of child maltreatment (physical or sexual abuse or neglect?)
   - Very Unprepared
   - Unprepared
   - Neutral
   - Prepared
   - Very Prepared

2. Right now, how prepared are you to report a suspected case of child maltreatment?
   - Very Unprepared
   - Unprepared
   - Neutral
   - Prepared
   - Very Prepared

3. Right now, how likely would you be to report child maltreatment if you suspected, but did not for sure, that a child has been maltreated?
   - Very Unlikely
   - Unlikely
   - Neutral
   - Likely
   - Very Likely

4. Right now, how prepared are you to recommend or secure services for a maltreated child?
   - Very Unprepared
   - Unprepared
   - Neutral
   - Prepared
   - Very Prepared
Appendix C

Vignette Scale

Vignettes: Please answer the following questions assuming there is no further information available about the case and that no other services or referrals are possible at this time. Also, keep in mind that reporting child maltreatment requires the release of confidential information pertaining to the family and all patient records that is otherwise protected.

Note: Some vignettes depict reportable child maltreatment and some do not.

1. A 23-month old infant is brought in for a well-child visit by his mother. The child has several visible welts on his lower back and buttocks, but does not appear to be in pain. When the mother is questioned about the welts she says that although she has been working many hours in the past week, she made sure to make child care arrangements with her boyfriend. She indicated that she was sure her child was well-supervised and that he did not have any contact with other children.

   1a). Is this child being maltreated (Please circle one) Yes No
   1b). How confident are you in your response (50%-100%) ______________ 
   1c). Would you report this case to Children’s Services (circle one)? Yes No
   1d). How confident are you in your response (50%-100%) ______________

2. An 18 year old female with developmental disabilities (severe mental retardation) attends her annual physical exam. During the appointment, the girl’s mother talks about how stressed she has been as she struggles to work three jobs in order to make ends meet while trying to tend to the constant special needs of her teenager. She also mentions that finding someone to stay with the girl while she goes to work has been problematic. Mother mentions that the girl often stays home alone while she is at work.

   2a). Is this child being maltreated (Please circle one) Yes No
   2b). How confident are you in your response (50%-100%) ______________
   2c). Would you report this case to Children’s Services (circle one)? Yes No
   2d). How confident are you in your response (50%-100%) ______________

3. During a check-up appointment with a 3 year old, mother says that the boy has been talking about a six year old cousin touching his penis. She has also seen the boy pulling down his pants in front of others and touching his own penis more
frequently. Mother says that she has never seen the cousin touching him. Mother expresses some concern that he has mentioned it on more than once occasion. She states she will no longer allow the children to spend time together without supervision.

3a). Is this child being maltreated (Please circle one)  Yes  No

3b). How confident are you in your response (50%-100%)

3c). Would you report this case to Children’s Services (circle one)? Yes  No

3d). How confident are you in your response (50%-100%)

4. A 15 year old girl comes in for a physical to get medical clearance to play soccer for her high school. During the visit, the teenager asks the physician for advice about a situation that happened at her friend’s house the last two weekends. She explains that her friend’s step-father has been watching pornography and does not allow the girls to leave the room. The teenager says that she feels uncomfortable because her friend’s step-father touches his private parts while watching the pornography.

4a). Is this child being maltreated (Please circle one)  Yes  No

4b). How confident are you in your response (50%-100%)

4c). Would you report this case to Children’s Services (circle one)? Yes  No

4d). How confident are you in your response (50%-100%)

5. An 18-month girl on the oncology unit is seen with a red mark on her right cheek while making rounds with the attending physician. Mother reports that father slapped the girl across the face yesterday after she hit her sister.

5a). Is this child being maltreated (Please circle one)  Yes  No

5b). How confident are you in your response (50%-100%)

5c). Would you report this case to Children’s Services (circle one)? Yes  No

5d). How confident are you in your response (50%-100%)

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6. The nurse who attended to an 8-year-old girl prior to her seeing the physician is told by the girl that her mother and father have been fighting and yelling a lot at home. The nurse informs the physician of the information before she enters the room. When mother is asked by the physician, she confirms that she and her husband have not been getting along and admits to having physical altercations in front of the children on more than one occasion.

6a). Is this child being maltreated (Please circle one) Yes No

6b). How confident are you in your response (50%-100%) __________

6c). Would you report this case to Children’s Services (circle one)? Yes No

6d). How confident are you in your response (50%-100%) __________

7. During an appointment with the family of a 5-year-old boy, mother reports that the boy has been having nightmares 3-4 nights a week for the 6 weeks since returning from a weekend visit with his uncle. He wakes up in the morning telling his mother that in his dreams he is trying to fly away from his uncle who is chasing him because he wants to pull his hair out and throw him against walls. Mother also reported that recently, her son has been struggling in school, with particular difficulty paying attention. While playing, he acts out one action figure hitting and pushing the other into objects. During the examination portion of the appointment, the boy seems jumpy and uneasy with physical touch. Upon questioning, he states that his uncle threw him against a wall, then he recants, saying this did not happen.

7a). Is this child being maltreated (Please circle one) Yes No

7b). How confident are you in your response (50%-100%) __________

7c). Would you report this case to Children’s Services (circle one)? Yes No

7d). How confident are you in your response (50%-100%) __________

8. A 4-year-old girl presents to her well-child visit with several bite marks that are bruised and appear to have teeth marks. The girl complains that they hurt and was observed rubbing her arm where there was a clear bite mark. Her mother reports that the girl’s older sister has been going through a biting phase. She also says that she plans to see a behavioral specialist about her other daughter’s biting habit.

8a). Is this child being maltreated (Please circle one) Yes No

8b). How confident are you in your response (50%-100%) __________

8c). Would you report this case to Children’s Services (circle one)? Yes No
8d). How confident are you in your response (50%-100%)______________

9. A young mother brings her 5-month old infant to her appointment. She has been asked to come in regularly for medication management for her severe postpartum depression. She reports that she has no help with childcare, and feels overwhelmed with her infant’s “constant crying.” She reports that more days than not, she is unable to get out of bed and has difficulty motivating herself to bathe and dress herself, let alone tend to the infant’s needs. When asked whether or not she followed through with the referrals for mental health treatment, she said she did not and has no intention of going.

9a). Is this child being maltreated (Please circle one) Yes No

9b). How confident are you in your response (50%-100%)______________

9c). Would you report this case to Children’s Services (circle one)? Yes No

9d). How confident are you in your response (50%-100%)______________

10. A 20-year old male, with transverse myelitis is seen for a regular check up. The young man relies on a wheelchair for mobility and has to depend on his father’s girlfriend when he wishes to leave the home. His father reports that his son recently admitted to showing his penis to his father’s girlfriend on several occasions. Per father’s report, the young man told his father he did not want to show his penis, but he only does it because father’s girlfriend refuses to take him to the store if he does not follow her sexual requests.

10a). Is this child being maltreated (Please circle one) Yes No

10b). How confident are you in your response (50%-100%)______________

10c). Would you report this case to Children’s Services (circle one)? Yes No

10d). How confident are you in your response (50%-100%)______________

11. The mother of a 12 year old girl and 10 year old boy reports that her ex-husband has been threatening to lock her children in the dark basement for the weekend with no food if they continue to refuse to eat dinner while at his house every other weekend. While mother is explaining her concerns, the girl interjects and says, “He really will do it, too—he did it to Kris before!” Mother reports that Kris is her children’s half sibling.

11a). Is this child being maltreated (Please circle one) Yes No

11b). How confident are you in your response (50%-100%)______________
11c). Would you report this case to Children’s Services (circle one)? Yes No

11d). How confident are you in your response (50%-100%) 

12. A 6 year old child with Attention-Deficit/Hyperactivity Disorder presents to the Emergency Room with a forearm fracture. His grandmother tells you he fell from a tree he was climbing in the courtyard of the housing project where they live. She says she was outside her apartment, supervising but reported, “He moves so fast! I can’t always see him!” The boy refuses to speak to you about the injury or anything else.

12a). Is this child being maltreated (Please circle one) Yes No

12b). How confident are you in your response (50%-100%) 

12c). Would you report this case to Children’s Services (circle one)? Yes No

12d). How confident are you in your response (50%-100%) 

13. You see a 9 year old female in January for a first time check-up. You learn that the family moved to the area approximately 4 months ago. When you ask the girl how she likes her new school, she replies, “I don’t go to school.” The girl’s mother informs you that she has not had a chance to enroll the girl in the new school yet. Mother also tells you that she is not homeschooling the girl, and she is okay with keeping the girl home because the girl has been nervous about starting at a new school.

13a). Is this child being maltreated (Please circle one) Yes No

13b). How confident are you in your response (50%-100%) 

13c). Would you report this case to Children’s Services (circle one)? Yes No

13d). How confident are you in your response (50%-100%) 

14. You are the primary care physician for a family with 4 year old twins. The parents have been divorced for two years and have shared custody of the twins. During an appointment with one of the twins, the boy tells you that his father likes to take pictures of his sister’s private parts when they go to his house. When you ask the boy if his father has ever taken pictures of his private parts too, he says, “no.” You inform your attending physician of the situation during supervision and he tells you that he heard about another physician who was sued for reporting a similar situation despite having no physical evidence of the allegations.

14a). Is this child being maltreated (Please circle one) Yes No
14b). How confident are you in your response (50%-100%) __________

14c). Would you report this case to Children’s Services (circle one)? Yes  No

14d). How confident are you in your response (50%-100%) __________
## Teacher Reporting Attitude Scale for Child Sexual Abuse-Revised (TRAS-CSA-R)

In relation to reporting child maltreatment, to what extent do you agree or disagree with the following statements?

<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I plan to report child maltreatment when I suspect it.</td>
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<td>2</td>
<td>I would be apprehensive to report child maltreatment for fear of family/community retaliation.</td>
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<tr>
<td>3</td>
<td>I would be reluctant to report a case of child maltreatment because of what parents will do to the child if he/she is reported.</td>
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<td>4</td>
<td>The procedures for reporting child maltreatment are familiar to me.</td>
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<td>5</td>
<td>I would like to fulfill my professional responsibility by reporting suspected cases of child sexual abuse.</td>
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<tr>
<td>6</td>
<td>Reporting child maltreatment is necessary for the safety of children.</td>
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<td>7</td>
<td>I feel emotionally overwhelmed by the thought of reporting child maltreatment.</td>
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<td>8</td>
<td>I would not report child maltreatment if I knew the child would be removed from the home/family.</td>
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<tr>
<td>9</td>
<td>Reporting child maltreatment can enable services to be made available to children and families.</td>
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<td>10</td>
<td>I would consider not reporting child maltreatment because of the possibility of being sued.</td>
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<td>11</td>
<td>There is a lot of sensitivity associated with reporting child maltreatment.</td>
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<td>12</td>
<td>Child maltreatment reporting guidelines are necessary for physicians.</td>
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<tr>
<td>13</td>
<td>It is important for physicians to be involved in reporting child maltreatment to prevent long-term consequences for children.</td>
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<td>14</td>
<td>I believe that the current system for reporting child maltreatment is effective in addressing the problem.</td>
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<td>15</td>
<td>Physicians who report child maltreatment that is unsubstantiated can get into trouble.</td>
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<tr>
<td>16</td>
<td>It is a waste of time to report child maltreatment because no one will follow up on the report.</td>
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<tr>
<td></td>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Neutral</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
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<td>17) I would still report child maltreatment even if my supervisors disagreed with me.</td>
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<td>18) I lack confidence in the authorities to respond effectively to reports of child maltreatment.</td>
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<td>19) I will consult with an administrator/supervisor before I report child maltreatment.</td>
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<td>20) I would find it difficult to report child maltreatment because it is difficult to gather enough evidence.</td>
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<td>21) A child maltreatment report can cause a parent to become more abusive toward the child.</td>
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</tbody>
</table>
## September 2011- May 2012 Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Faculty/Invited Speaker</th>
<th>Teaching Methods</th>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>September, 2011</td>
<td>Knox/Pelletier</td>
<td>Orientation</td>
<td>Overview of Child Maltreatment (CM)</td>
</tr>
<tr>
<td>October, 2011</td>
<td>Pelletier</td>
<td>Discussion</td>
<td>Case #1: neglect, Munchausen by proxy—associated and risk factors, possible sexual abuse and how to report. Case #2: Neglect, emotional abuse, parents with a severe mental illness and how/what to report</td>
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<tr>
<td>November, 2011</td>
<td>Leb</td>
<td>Lecture</td>
<td>Domestic violence and sexual abuse</td>
</tr>
<tr>
<td>December, 2011</td>
<td>Knox</td>
<td>Discussion</td>
<td>Case #3: Sexual abuse, internet crimes against children, encopresis/eneuresis, signs and risk factors for sexual abuse, evidence-based treatment for trauma</td>
</tr>
<tr>
<td>January, 2012</td>
<td>Knox</td>
<td>Lecture</td>
<td>Corporal punishment</td>
</tr>
<tr>
<td>February, 2012</td>
<td>Singh</td>
<td>Discussion</td>
<td>Case #4: PTSD—which cases are likely to respond to treatment</td>
</tr>
<tr>
<td>March, 2012</td>
<td>Wroblewski</td>
<td>Video/Q&amp;A</td>
<td>How to medically evaluate a maltreated child; signs of abuse; how to report; provided examples of CM in her practice; discussed implications of reporting; and reported low levels of retaliation, further abuse on children, etc. after reporting</td>
</tr>
</tbody>
</table>
April, 2012 Knox/Pelletier Lecture Reasons for low levels of reporting in medical field—myths and misconceptions; evidence-based treatments and appropriate referrals and services for maltreated children.

May, 2012 Knox/Pelletier Student case presentations

Faculty and Invited Speakers:

Michele Knox, Ph.D., Clinical Psychologist, Associate Professor of Psychiatry, University of Toledo College of Medicine
Ajay Singh, M.D., Child and Adolescent Psychiatry Resident, University of Toledo College of Medicine
Judy Leb, J.D., Recruitment/Training Coordinator, Lucas County CASA
Mary Beth Wroblewki, M.D., Pediatrician, University of Toledo Medical Center

Teaching assistant/lecturer: Heather Pelletier, M.A., Doctoral student in clinical psychology, University of Toledo