

THE ROLE OF SELF-EFFICACY ON CHILD WELFARE WORKERS'
FETAL ALCOHOL SPECTRUM DISORDER (FASD)
TRAINING AND PRACTICE

by

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ABSTRACT

This study is a secondary data analysis of a purposeful sample of frontline child welfare workers (i.e. child protect services, foster care workers). The purpose of this study was to test whether child welfare workers (CWWs) who receive more training in fetal alcohol spectrum disorder (FASD) concepts (i.e. recognizing features; making appropriate treatment referrals) engage in more FASD practices (i.e., recognizing clients with FASD; providing care/services). In addition, this study examines whether CWWs who receive more FASD training report higher levels of FASD self-efficacy (i.e. identifying children with FASD; manage/coordinate FASD treatment). Further, the study tests whether self-efficacy mediates the relation between training and practice. Two path models (recognize FASD; FASD services) were used to observe the relation between the FASD predictor, mediator, outcome, and control variables (gender, age, race and years in job position).

CWWs level of self-efficacy (perceived level of preparedness) was found to be a better predictor of desired FASD practice behavior than FASD training content. Self-efficacy was also found to mediate the relationship between FASD training content and practice in one model and partially mediate the relationship in the second model. Therefore, regardless of how much FASD training a worker reports, those reporting a higher level of self-efficacy are more likely to engage in desired practice behaviors. Finally CWWs who reported having more years in their job

position were significantly more likely to have an increased level of FASD self-efficacy to perform desired FASD practice behaviors.

These findings support previous findings that child welfare training alone does not increase training transfer. Additionally these findings provide further support for literature that suggests that workers' level of self-efficacy mediates practice behaviors. Finally, this study demonstrates that the development of FASD trainings for CWWs should be tailored to incorporate techniques that build a worker's sense of self-efficacy if training transfer is going to occur successfully.

DEDICATION

This dissertation is unequivocally dedicated to my husband, Daniel W. Durkin. He has provided me with tremendous support over the past eight years. Without his support I could never have made it through the trials and tribulations of creating this manuscript. Further, without his superior expertise in statistical data analyses and willingness to share his knowledge with me, there is no way I would have been able to conceptualize the statistical world that once was a foreign language to me. This work is also dedicated to our precious daughter, Ellory Kathleen Durkin, who was born mid-way through this work. As she has grown older, she has also become one of my strongest sources of inspiration. It is our hope for her that by having two parents with doctoral degrees that she will someday be inspired to reach for her highest academic dreams, whatever they may be. Finally, this work is further dedicated to my family, friends and dissertation committee who stood by me throughout the time taken to complete this manuscript.

LIST OF ABBREVIATIONS AND SYMBOLS

a	Cronbach's index of internal consistency
n	Number
p	Percentage
\bar{M}	Mean: the sum of a set of measurements divided by the number of measurements in the set
p	Probability associated with the occurrence under the null hypothesis of a value as extreme as or more extreme than the observed value
r	Pearson product-moment correlation
t	Computed value of t test
$<$	Less than
$>$	Less than
$=$	Equal to
CI	Confidence Interval

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CHAPTER 1

RESEARCH PROBLEM

Background

Where would our nation be today without our child welfare system and to whom else but a child welfare worker (CWW) could so many turn for the authority and expertise to investigate and provide services to needy children, youth and families? There are approximately 415,000 children and youth currently placed in foster care (Adoption and Foster Care Analysis and Reporting System [AFCARS], 2014), which is 5% of the 74 million children in the U.S. (U.S. Census Bureau, 2014). Those first to respond to their needs are frontline CWWs (i.e. child protective services and foster care). Society has traditionally referred to CWWs as “social workers” even without the knowledge that some do not have a social work degree (Whitaker, Reich, Reid, Williams, & Woodside, 2004). Yet, more and more state agencies now prefer a social work degree because their training aligns most closely with child welfare job responsibilities (Whitaker et al., 2004). Therefore, social workers are a primary profession in the child welfare system (National Association of Social Workers [NASW], 2006).

Screening and assessment. The first techniques applied by CWWs when a case is opened are screening and assessment (Leslie et al., 2005). Particularly in cases of child neglect or abuse, everything from the child’s overall physical health to any emotional or behavioral problems is identified through assessment (Burns et al., 2004; Leslie et al., 2005). From a good

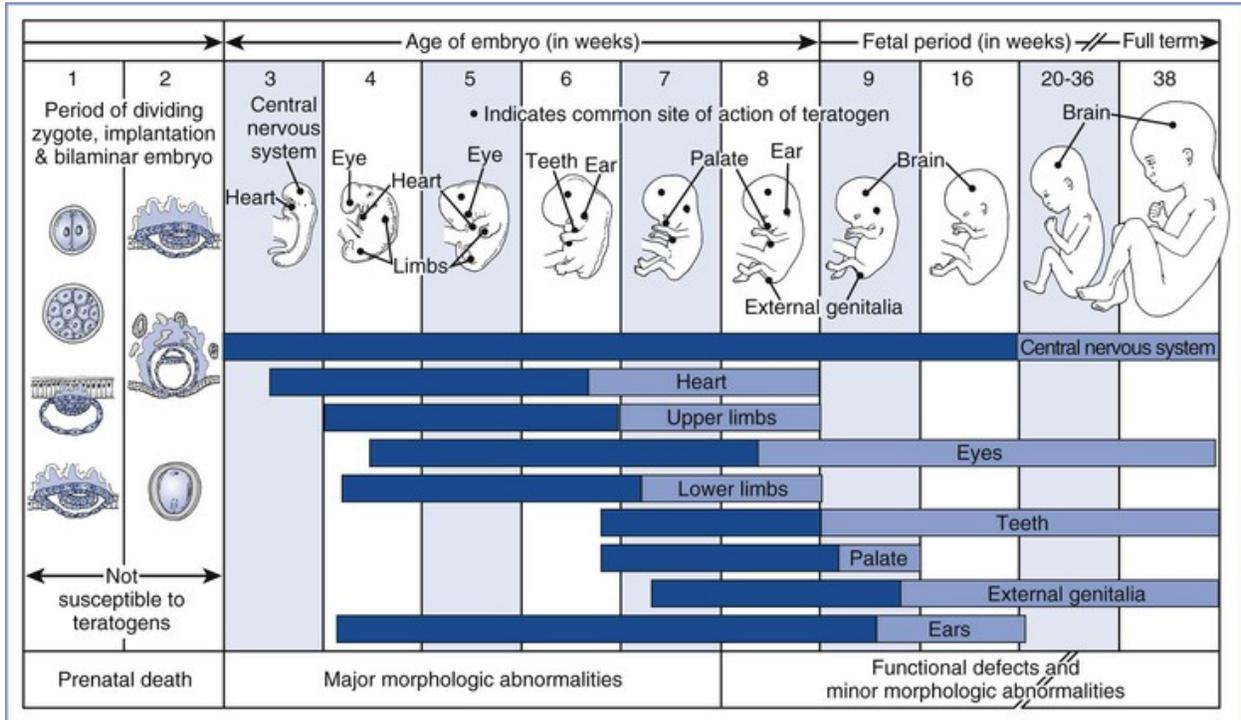
baseline assessment, CWWs are better able to assess the child's needs, progress, and/or regression while these children are involved with the child welfare system (Burns et al., 2004; Leslie et al., 2005). Further, a CWW who is also trained in risk assessment can estimate the probability that a child could be abused or neglected in the future (Baird & Wagner, 2000; Cash, 2001). In fact, for the CWW, risk assessments can weigh heavily on them because, for some children, it can mean the difference between life and death (Nelson-Gardell & Harris, 2003).

Substance misuse and child welfare. Considering the importance of making a good assessment, a CWW's job orientation and training is fundamental to having the necessary skills needed to make appropriate decisions on what services will best meet the needs of children and their families assigned to their caseload (Collins, Amodeo, & Clay, 2007). Approximately 78% of social workers working in the child welfare system report they are provided regular, ongoing professional development and continuing educational opportunities (Whitaker, Reich, Reid, Williams, & Woodside, 2004). Among the many training topics relevant to the job is the high risk that many children and youth they may encounter are currently living or have lived in homes where alcohol and/or drugs are abused (Burd, Cohen, Shah, & Norries, 2011; Smith, Johnson, Pears, Fisher, & DeGarmo, 2007). Children with parents who abuse alcohol and/or drugs are more likely to experience abuse or neglect (Dube et al., 2001; Hanson et al., 2006), a frequent factor for report investigations (Dubowitz et al., 2011). Therefore, parental alcohol and/or drug abuse is a major contributor to foster care placement (Barth, Gibbons, & Guo, 2006; Burd et al., 2011; Smith et al., 2007). Approximately 61% of infants and 41% of children placed in foster care are from families with active alcohol and/or drug abuse (Wulczyn, Ernst, & Fisher, 2011). Moreover, 80% of parents who have had their children placed in foster care as a result of their

misuse have substantiated substance use disorders (Ostering & Austin, 2008; Young, Boles, & Otero, 2007).

Prenatal alcohol exposure and maternal risk factors. Involvement in the child welfare system is not just the result of children living in homes where parents abuse alcohol and/or drugs. Approximately 10% of infants born each year in the U.S. are prenatally exposed to teratogenic substances in the womb (Young et al., 2009). In regards to teratogenic substances (i.e. substances that can disturb fetal development) consumed during pregnancy, alcohol (i.e., ethanol) results in the most damaging effects to fetal development (Creeley & Olney, 2013; Hanningan & Armant, 2000; Little & Vanbeveren, 1996; Jing & Li, 2004; Meinties et al., 2014; Tavares, 2015; Tranmer, 1985). Yet, perhaps due to lack of awareness, public attention appears to be focused on illicit drugs such as cocaine. This lack of focus hinders the public's awareness that the physical properties of alcohol (i.e., ethanol) is easily passed from the maternal blood to the fetal blood through the placenta (Little & Vanbeveren, 1996). Further, when a pregnant woman consumes alcohol, the fetus reaches the same blood alcohol content as the mother and will actually sustain it for a longer period of time (Rudien, 1996; Tranmer, 1985). This is because the fetus, unlike the mother, has limited ability to metabolize alcohol because their liver and the enzymes responsible for metabolism are not yet fully developed (Pikkarainen & R ih a, 1967; Tranmer, 1985). Additionally, once alcohol is absorbed into the fetus, it is then distributed throughout the fetal tissues through the fetal blood (Akesson, 1974). (See Illustration 1.1)

Illustration 1.1
Critical Periods for Prenatal Alcohol Exposure



Source: Coles, (1994) pg. 23

Some of the first studies on what factors predicted the severity of alcohol damage to the fetus found that it was dependent upon frequency of exposure, gestational timing and dosage consumed during a drinking episode (Abel, 1985; Bonthius & West, 1990; Chernoff, 1980; Goodlett & West, 1992; Majewski, 1981; Raymond, 1987). Later studies found additional predictors such as the mother's age, nutritional status, metabolism, and socioeconomic status (Able, 1995; Esper & Furtado, 2014; Denny, Tsai, Floyd, & Green 2009; Jacobson, Jacobson, Sokol, Chido, & Corobana, 2004; May et al., 2008; May & Gossage, 2011; Khoale, Ramchandani, Viljoen, & Li, 2004). Recent studies have found that a woman's genetics (i.e., DNA) can also act as either a risk or protective factor to increase or impede fetal damage (Gilbert-Barness, 2010; Dodge, Jacobson et al., 2006; Downing, Balderrama-Durbin, Broncucia, Gilliam, & Johnson, 2009). Post-birth variables such as the infant and child's nutrition

(Fuglestad et al., 2013; Thomas, Garrison, & O'Neill, 2004), socioeconomic conditions, and environmental enrichment (Day & Richardson, 2004; Hannigan, O'Leary-Moore, & Bermant, 2007), can further contribute to the long-term outcomes of prenatal alcohol exposure. In summary, all these studies findings confer that there is no known amount of alcohol found safe to consume during pregnancy (Day & Richardson, 2004; Food and Drug Administration [FDA] 1981; 2005).

Fetal alcohol spectrum disorder and child welfare. Beginning in 2004, all forms of prenatal alcohol exposure were officially defined internationally under one clinical term, fetal alcohol spectrum disorder (FASD; Bertrand et al., 2004). More specifically, FASD represents all conditions associated with any degree of alcohol exposure that can range from mild to severe effects (Bertrand et al., 2004; Riley, Infante, & Warren, 2011; Riley & McGee, 2005). The term FASD represents fetal alcohol syndrome (FAS) which includes features of facial, physical, and central nervous system deformities (Jones & Smith, 1973; Riley et al., 2011). FASD also encompasses the harder to distinguish characteristics of cognitive, behavioral and social impairments referred to as neurobehavioral disorder associated with prenatal alcohol exposure (ND-PAE; American Psychiatric Association [APA], 2013). The combined prevalence of FASD (including both FAS and ND-PAE) in the U.S. is estimated to range from 2% to 5% of children depending on the state (May et al., 2014). As of yet, estimates for FASD prevalence in the U.S. child welfare system are difficult to assess because FASD is not currently identified as a reportable health surveillance condition and therefore prevalence is not known (Badry & Choate, 2015). Other reasons that further limit data collection include a lack of state-wide standardized definitions for disabilities in the U.S. (Bruhn, 2004) and training for CCWs on how to identify and differentiate disabilities in children is less abundant, (Shannon & Agorastou, 2006; Bruhn,

2004; Lightfoot & LaLiberte, 2005). Canadian researchers have been able to roughly estimate that 11% of children involved in their child welfare system have FASD (Fuchs, Burnside, Marchenski, & Mudry, 2005). This finding helps to support researchers who predict that children in care in the U.S. are at higher at risk for FASD (Burd et al., 2011; Chasnoff, Wells, & King, 2015). Internationally, FASD is estimated to range between 6% to 17% of children living in orphanages, placed in foster care, and involved with the child welfare system (Lange, Shield, Rehm, & Popova, 2013). An international study specifically focused on foster children from North America, Europe and South Africa found the overall prevalence rate to range from 31% to 52% (Ospina & Dennett, 2013). Ironically, and perhaps most likely unknown, is that FASD prevalence in the general U.S. population is nearly equal to the estimated percentage of children (5%) who have Attention Deficit Hyperactivity Disorder (ADHD) in the U.S. (Pastor & Reuben, 2008). Nevertheless, prevalence of ADHD among U.S. foster children is highly diagnosed and has been estimated to be as much as 26% (Danielson, 2015). Therefore, it could be reasoned that, since both neurodevelopment disorders having similar prevalence rates in the general U.S. population, FASD may also be as high, if not higher, in the foster care population.

FASD treatment is complex, especially in child welfare. Children living with FASD need treatment services that support both the child and the caregivers (Jirikowic, Kartin, & Olson, 2008). More specifically, these children have deficits in adaptive functioning, so activities should center around improving communication, socialization, and personal living skills (Jirikowic et al., 2008). These children also have varying degrees of learning deficits, self-regulation difficulties, and emotional problems. These issues require that treatment strategies be individualized to promote personal strengths and define areas in need of improvement (Coggins, 2011). Many children living with FASD will require the need for special education services to

address their learning and cognitive impairments (Popova, Lang, Burd, Nam & Rehm, 2016). Unfortunately, a recent study found that their unique educational needs place a heavy burden on special education programs in schools (Popova et al., 2016). Moreover, FASD has been found to be highly underdiagnosed in school systems (Painter, Williams, & Burd, 2012). According to Bredbreg (2011), this under-diagnosis is related to teacher education programs and university faculties of education having not yet developed courses on FASD. CCWs who step into the role of advocating for their clients' educational needs are in a unique position to educate classroom and special education teachers about FASD; however, they themselves have to be knowledgeable about FASD recognition and service provision. Despite education issues, children living with FASD and placed in foster care tend to have complex behaviors which can lead to multiple placements (Brown, Sigvaldason, & Bednar, 2005). Thus, as a result of multifaceted educational, behavior and social skills, children with FASD, their families, and/or temporary care providers undoubtedly have considerable resource needs (Autti-Rämö et al., 2006; Koponen, Kalland, & Autti-Rämö, 2009; Brown et al., 2005; Mukherjee, Wray, Commers, Hollins, & Curfs, 2013). These needs are sometimes so great that some foster parents stop fostering (Brown et al., 2005). Further, FASD is a lifelong disorder. Children become adolescents and adults. As the children and caregivers grow older, families and guardians will continue to need support (Mukherjee et al., 2013).

Child welfare worker FASD training and practice. The vast amount of studies on parental alcohol use being a predictor of foster care placement suggests that it is likely that prenatal alcohol use is a greater occurrence among those involved with child welfare. In fact, alcohol (13%) is more often implicated than drug abuse (10%) in child maltreatment cases (Sedlak et al., 2010). This further implies that children involved in child welfare have perhaps

the highest risk for prenatal alcohol exposure (Burd et al., 2011; Chasnoff et al., 2015). In view of the high probability that a CCW will encounter children, youth and families impacted by FASD, child welfare systems should be making FASD a high training priority for CCWs, their supervisors and administrators. In regards to what specific FASD concepts should be addressed, the literature seems to point most to recognizing FASD characteristics and providing appropriate services. Chasnoff et al. (2015), found that 80% of foster children who met criteria for FASD had never been previously diagnosed before entering the child welfare system. This finding further supports the need for CWWs to be able to recognize FASD characteristics. In regards to what is known about CWW training in FASD concepts, Caley et al. (2008), reports that just under half (43%) of workers in New York report receiving formal training on how to recognize features associated with prenatal alcohol exposure and 17% on how to make referrals for children suspected of having prenatal alcohol exposure. Although their study demonstrates that some CWWs do receive some FASD on-the-job training, there are no other state or national studies which provide additional support for these findings.

Training transfer (training and practice) is the degree to which trainees use knowledge, skills, and attitudes from the training curriculum in their daily work (Baldwin & Ford, 1988; Antle, Barbee, Sullivan & Christensen, 2009). According to child welfare literature, only approximately 10% to 13% of learning actually transfers into practice (Curry, McCarragher, & Dellman-Jenkins, 2004). This finding is further supported by Caley et al. (2008), who found that, although 43% of CWWs reported training on recognizing features associated with prenatal alcohol exposure, only 20% reported having actually recognized any clients with alcohol-related effects in a year period. In addition, although 17% reported having training on how to make referrals for children suspected of having prenatal alcohol exposure, only 10% reported

providing any care over a year period (Caley et al. 2008). Predictors of training transfer among CWWs have been found to be individual learning readiness, supervisor support of learning and knowledge gain (Antle, Barbee, & van Zyl, 2008). Administrators strengthening support for supervisors and promoting more positive work environments has been found to improve training transfer (Liu, & Smith, 2011). According to Liu and Smith (2011), positive work climates lead to greater discussion of training concepts which results in a higher collective effort to apply training concepts into practice. A recent study suggests that, although we have learned about the importance of facilitating better training transfer in child welfare, we should also consider barriers to training transfer (Allen, Hyde, & Leslie, 2012).

Improving FASD training transfer. A study by Ellett (2009) suggests that CCWs need a strong belief in their abilities in order to affect change. Ellett's (2009) conclusion also supports Bandura's (1977) theory of behavioral change (also referred to as self-efficacy). Bandura's theory proposes that knowledge and skills are important, but not sufficient to produce action (Bandura, 1977). These inferences suggest that a CCW's level of self-efficacy could play an important role in improving training transfer. Previous studies on the role of self-efficacy on CWWs have found that it predicts retention and job performance (Chen, & Scannapieco, 2010; Cherry, Dalton, & Dugan, 2014; Collins-Camargo, 2007). Recent child welfare literature suggests that CWW self-efficacy is a factor worth exploring, particularly in the domains of practice and training (Cherry et al., 2014). The business literature has been exploring self-efficacy as a predictor of performance behaviors for over two decades (Appelbaum, & Hare, 1996; Barling, & Beattie, 1983; Gist, 1989; Gist, & Mitchell, 1992; Gist, Schwoerer, & Rosen, 1989; Hill, Smith, & Mann, 1987; Staples, Hulland, & Higgins, 1999). One study found that self-efficacy mediates the training transfer relationship (Holladay & Quiñones, 2003). More

specifically self-efficacy was found to influence training, which changed the outcome of practice (Holladay & Quiñones, 2003). A better understanding of self-efficacy among CWWs is needed to see if it plays a role in mediating the relation between FASD training and practice behaviors. This knowledge would then provide educators, trainers, and researchers in the areas of FASD and child welfare with valuable evidence to explore self-efficacy building techniques that may facilitate and improve training transfer.

Gaps in Literature

Most of the literature published on FASD training transfer has come from the Centers for Disease Control and Prevention's (CDC) FASD Regional Training Centers (RTCs). The FASD-RTCs were created in 2002 and funded until 2014 to develop, implement, and evaluate educational curricula for medical and allied health students and practitioners (CDC, 2009; 2015). Subsequent CDC and/or RTC associated publications have focused primarily on those in the medical and allied health professions (Anderson et al., 2010; Birch, Carpenter, Marsh, McClung, & Doll, 2015; Caley, 2006; Evans, Tenkku, Kennedy, Zoorob, & Rudeen, 2014; Gahagan et al., 2006; Senturias, Durkin, Nagle, & Zoorob, 2012; Zoorob, Aliyu, & Hayes, 2010). Only a handful of RTC publications have reported on social workers' FASD training and practice behaviors (Brems et al., 2010; Brimacombe, Nayeem, Adubato, De-Joseph, & Zimmerman-Bier, 2008; Johnson et al., 2010). Although these publications included social workers in their studies, these studies did not identify the specific areas of social work practice represented; therefore, little is known about social workers working in the child welfare system, particularly those who may be employed as frontline CWWs. Yet, it is these workers who may have a greater opportunity to identify and provide services for these children than members of any other profession (Caley et al., 2008). Further, other than the Caley et al. (2008) study, little is known

about CWWs specifically, in regards to how much training these workers have received on FASD concepts, and about how FASD training affects actual practice.

Purpose

The purpose of this study is to address the aforementioned gaps in the child welfare literature regarding FASD training and practice behaviors by conducting a secondary analysis of a sample of 250 CWWs who participated in a needs assessment survey conducted in 2011 by the FASD Southeast Regional Training Center (SRTC). The SRTC's needs assessment study was funded by a FASD cooperative agreement grant from the CDC's National Center on Birth Defects and Developmental Disabilities (NCBDD). Using the SRTC's data the goals of the study are: (1) increase the state of knowledge about CWWs who come into contact with children living with FASD; (2) utilize self-efficacy theory to examine whether the level of self-reported perceived preparedness (self-efficacy) to identify and work with children with FASD is a better predictor of desired practice behavior than FASD training; and (3) examine whether self-reported preparedness (self-efficacy) mediates the relationship between training and practice when controlling for age, race/ethnicity and years on the job.

Study Aim

The primary aims of this study are:

- (1) to test whether FASD training is significantly associated with practice behaviors;
- (2) to test whether FASD training is associated with self-efficacy (defined as perceived preparedness to practice), when controlling for age, race/ethnicity and years on the job; and,
- (3) to examine whether self-efficacy mediates the relationship between FASD training and practice.

These aims are addressed through secondary data analyses of data collected by the CDC’s SRTC for a needs assessment of CWWs. The SRTC’s data is especially well suited for this purpose in that these controls are significantly correlated with self-efficacy, training, and practice.

Variables Used in Study

Variables selected for use in this study were informed by the Human Service Professional Survey (HSPS) (Caley et al., 2008). The HSPS was the survey instrument used to collect data for the CDC’s SRTC needs assessment. The HSPS measures FASD knowledge, beliefs, practice behaviors, training and level of preparedness (self-efficacy) of professionals working in human services/child welfare. (See Table 1.1).

Table 1.1
Study Variables Informed by Human Service Professional Survey (HSPS) (Caley et al., 2008)

Control Variables	Independent Variables <i>FASD Training Concepts</i>	Dependent Variables <i>Practice Outcomes</i>	Mediator Variables <i>Self-efficacy</i>
Gender	Recognizing features associated with FASD and other alcohol related effects	Recognized a client as having FASD	Identify children with possible FASD symptoms
Age Range		Provided care/services for someone with FASD	
Race/Ethnicity	Making referrals for children suspected of having prenatal alcohol exposure		Manage/coordinate the treatment of children with FASD
How many years in job position/title			

Child welfare worker context. Several demographic and contextual variables (controls) have been found to play a role in CWWs practice behaviors (Caley et al., 2008) and were included in this study: CWW’s gender, age, race, and years in the job position. The years a worker may have been on the job may be especially relevant as it is possible that CWWs might feel “prepared” because of their years of experience despite receiving little training and are included as part of the CWW worker context.

Formal FASD training concepts. In the original HSPS study conducted in New York, close to half (43%) of the CWWs reported having received training on recognizing features associated with alcohol-related effects (Caley et al., 2008). In addition, 17% of CWWs from the original study reported having received training on how to make referrals for children suspected of having prenatal alcohol exposure (Caley et al., 2008). Preliminary analyses of this data found that a much lower percentage of CWWs (9%) compared to the Caley et al. (2008) study reported having received formal on the job training in recognizing FASD. Although these percentages are not equal they are still in close range and provide more understanding of approximately how much training on recognition in FASD is provided to CWWs. Of more interest, is that an equal percentage of CWWs (17%) in the SRTC and Caley et al. (2008) needs assessment reported training on how to make referrals for children with FASD. This also suggest that at least according to two CDC-supported state needs assessments using the same survey instrument, that instructional training for CWWs on how to address the needs of children and families impacted by FASD is relatively low. Among this data of 250 CWWs, 23 were trained in recognizing FASD and 41 on how to make appropriate referrals for services. These frequencies are high enough to include in a mediation analysis, therefore both of these two independent/predictor variables were included in this study.

FASD practice outcomes. Despite that almost half of the CWWs in the original HSPS study reporting receiving training on recognizing features associated with alcohol-related effects, only 20% reported having recognized at least one or more clients as having symptoms associated with prenatal alcohol exposure over the past 12 months (Caley et al., 2008). This low percentage is likely to be statistically improbable since international studies estimate that 60 to 169 per 1000 children involved in the child welfare system have FASD (Lange et al., 2013). Along with

examination of the training FASD recognition variable, the practice recognition variable will be included in this study. Another reason for inclusion is that preliminary analyses of this data found that 21% of the CWWs surveyed reported having recognized at least one or more clients as having FASD over the past 12 months. Also in the Caley et al. (2008) study 10% of the workers reported providing care/services to someone with FASD. Similar preliminary analyses of this data found that 15% of the workers provided FASD services.

FASD self-efficacy (*level preparedness*). In the original HPS study only 29% reported feeling very to somewhat prepared to identify FASD in children and 15% reported feeling very to somewhat prepared to manage/coordinate the treatment of children with FASD (Caley et al., 2008). In this study, the level of preparedness was similar to the original study: 17% and 13% respectively. Frequency distributions are such that strength of preparedness can be examined in order to answer aim two. Further, by selecting specific training variables which are consistent with coinciding practice variables and how prepared they may feel to perform that practice, aim 3 should be answered.

Research Questions

The study addressed the following research questions:

1. Do child welfare workers who receive training in FASD concepts engage in more FASD practices?
2. Do child welfare workers who receive training in FASD concepts report higher levels of self-efficacy?
3. Does self-efficacy mediate the relation between FASD training and practice?

Significance of Study to Research

This study will add to the research on CWWs FASD training and practice in several ways. First, this study will demonstrate, using the Human Service Professional Survey (HSPS; Caley et al., 2008), how much formal training in FASD concepts is being received by CWWs (i.e., child protective services and foster care) in the state of Tennessee. Preliminary findings suggest that there has been no increase in the amount of FASD training received by CWWs (between New York and Tennessee) across several years. Further analyses will examine the levels of training received and if there is a relationship between the reception of FASD training and increased FASD practice behaviors.

Second, this study will also use statistical analyses to demonstrate whether FASD training is associated with workers' self-reported level of preparedness (self-efficacy). If it is found that there is a relationship between training and self-reported level of preparedness then this study could further support the training transfer phenomenon (Antle et al., 2009; Baldwin & Ford, 1988) particularly in the field of child welfare.

Third, this study seeks to demonstrate whether self-efficacy (worker's perceived level of preparedness) acts as a mediator of the relationship between training and practice. That is, it seeks to assess whether the level of caseworker self-efficacy accounts for the relationship between training and practice.

Fourth, this study can also potentially rule in or out "years on the job" (experience) as a possible control for desirable FASD practice. Therefore, this study can additionally clarify if there is a difference in level of perceived level of preparedness among those workers with more or less experience and whether or not those who engage in more practice behaviors also have more job experience.

Finally, findings from this study will identify the specific practices of those in child welfare and how they are currently utilizing and meeting the needs of children/youth with FASD. Since only 33% of state agencies require CWWs to identify and document specific developmental disabilities (Shannon & Agorastou, 2006), findings from this study may bring attention not only to the need to identify and document FASD, but also other disabilities so that these disabilities might receive services. Should documentation of FASDs become more frequent as a result of these findings, researchers may be able to better estimate the number of children in child welfare with FASD. This is important. Because the mother's drinking during pregnancy causes FASD, there is a significant stigma attached to the diagnosis. CWWs may be reluctant to make this diagnosis because of this stigma. Further, this study may provide researchers with more opportunities to introduce interventions and thus improve outcomes for these children/youth.

Significance to Social Work Practice and Policy

The aims of this study are congruent with social work ethical standards regarding competent practice and the rights of vulnerable populations, specifically children and families affected by FASD who are involved with the child welfare system. Since most of the literature on FASD training and practice has been conducted among medical professionals, this study will add to the research on the training and practice behaviors of CWWs, thus contributing to a stronger base of FASD knowledge pertaining to the social work profession in general. This information could be used to assist in the enhancement of required information and skill sets needed for better FASD recognition, referral, and provision of services. This would be valuable to the social work profession, healthcare providers, and other parties interested in FASD training modules. Identifying self-efficacy as a significant mediator would help trainers develop FASD

trainings that focus on building the level of self-efficacy of CWWs, which may lead to better practice. Further, the primary mission of social work includes a focus on both the well-being of the individual in a social context and the well-being of society. Programs, policies, and interventions that address the needs and improve the well-being of CWWs may enable these workers to provide better services for not only FASD-impacted children and families in the child welfare system, but to demonstrate a training model for other social service agencies serving FASD clients. More effective models that lead to better outcomes for these children will contribute to the well-being of society by reducing the long-term costs of FASD.

CHAPTER 2

LITERATURE REVIEW

Discovering the Effects of Prenatal Alcohol Use

In 1968, a French pediatrician was the first to discover that children with similar facial dysmorphism (e.g., smooth groove between nose and lip, thin upper lip, small eyes widely spaced) had all been exposed to excessive amounts of alcohol during pregnancy (Lemoine, Harousseau, Borteyru & Menuet, 2003). It was not until 1971 that an American pediatric resident studying infants with “failure to thrive” at a hospital in Seattle, Washington noticed that the infants born to alcoholic mothers also had common dysmorphic facial features. A dysmorphologist (study of birth defects affecting anatomy) followed up on the resident’s research and brought in another dysmorphologist. In 1972, a clinical psychologist joined the team to provide behavioral and mental processes expertise. Together they identified several more unrelated children born to alcoholic mothers from three different racial backgrounds who shared growth deficiencies, central nervous system dysfunction, similar dysmorphic facial features and severe learning and behavior problems (Jones, Smith, Ulleland & Streissguth, 1973). Following these significant findings, fetal alcohol syndrome (FAS) was introduced to serve as a medical diagnosis to describe this condition (Jones & Smith, 1973). As awareness of FAS grew, researchers from around the world added their expertise to either support or disprove Jones et al. (1973). After the discovery of FAS, researchers began to search for an alcohol consumption threshold, which might pinpoint when birth defects began. Studies to find a threshold quickly emerged from countries (e.g., Germany, France, and Australia), where the drinking culture

among women is commonly known to be higher (Mau, 1980; Kaminski, Franc, Lebouvier, Mazaubrun, & Rumeau-Rouquette, 1981; Walpole, Zubrick, & Pontré, 1990). These studies published findings suggesting that moderate or low alcohol consumption was not harmful (Kaminski et al., 1981; Mau, 1980; Walpole, 1990). A three-year study in Germany followed children from birth to three whose mothers all reported regular moderate alcohol consumption (defined as 3.5-10g of beer and/or 10-25g of wine) throughout pregnancy (Mau, 1980). The study reported that these children had no neurological problems, growth deficiencies, psychomotor development issues or speech impediments by age three (Mau, 1980). Yet, what the researcher did not examine was impairments in learning, behavior and social skills (Mau, 1980), which at the time was not known to be characteristics of prenatal alcohol exposure (EPA, 2013; Hoyme et al., 2005). An Australian study examined newborns born to mothers reporting moderate alcohol consumption and they too reported that the infants had no features associated with FAS (Walpole et al., 1990). A survey of infants born in hospitals in France also reported that moderate alcohol consumption was not detrimental (Kaminski, 1981). These studies and others publishing similar findings that moderate drinking during pregnancy was not harmful did not help, but more likely confused, the medical community and society as a whole. What these scientists did not know then was that not all effects of prenatal alcohol exposure are immediately apparent in children until they begin school (Paley & O'Connor, 2009). For example, children born to mothers who report drinking moderately, particularly in the first trimester, have been found to have their intellectual performance and attention level compromised; however, at birth they seemed unaffected by their mother's drinking (Jacobson et al., 2004). In fact, the confusion about drinking during pregnancy still exists among some obstetrician-gynecologists (OB/GYNs).

A recent study of OB/GYNs found that 28% reported that an occasional glass of wine would not cause harm during pregnancy (Senturias et al., 2012).

Despite the controversy that began to mount on whether or not it was safe for a women to drink alcohol during pregnancy, researchers from fields of teratology (study of human congenital abnormalities), biochemistry, genetics, cognitive neuroscience, and other scientific disciplines joined efforts and continue researching this topic. Scientists have discovered that the amount, frequency, and the gestational timing of alcohol consumption has a significant influence on severity, which demonstrates that conditions fall on a continuum, ranging from mild to severe (Abel, 1985; Bonthius & West, 1990; Chernoff, 1980; Goodlett & West, 1992; Little, Stressguth, Barr, & Herman, 1980; Kuzma & Sokol, 1982; Majewski, 1981; Raymond, 1987; Rostand et al., 1990). These findings led to the introduction of the clinical term alcohol-related neurodevelopmental disorder (ARND) by the Institute of Medicine (IOM) (Stratton, Howe, & Battaglia, 1996; Sampson et al., 1997). The term ARND represents children with confirmed alcohol exposure but no dysmorphic facial features, but these children do have other features which before had been referred to as partial-FAS (PFAS) (Sampson et al., 1997; Stratton et al., 1996). In 2013, a new term was proposed to replace ARND - neurobehavioral disorder associated with prenatal alcohol exposure (ND-PAE) in the *Diagnostic and Statistical Manual of Mental Disorders-5* (APA, 2013).

The inclusion of more disciplines studying prenatal alcohol exposure has provided even more understanding. For example, researchers have discovered that there is actually no threshold or safe limit of alcohol that a woman can consume during pregnancy and it not possibly have an adverse effect (Food and Drug Administration [FDA], 1981). Rather, differences in women's bodies and environmental risk factors are what uniquely influence the severity of effects. These

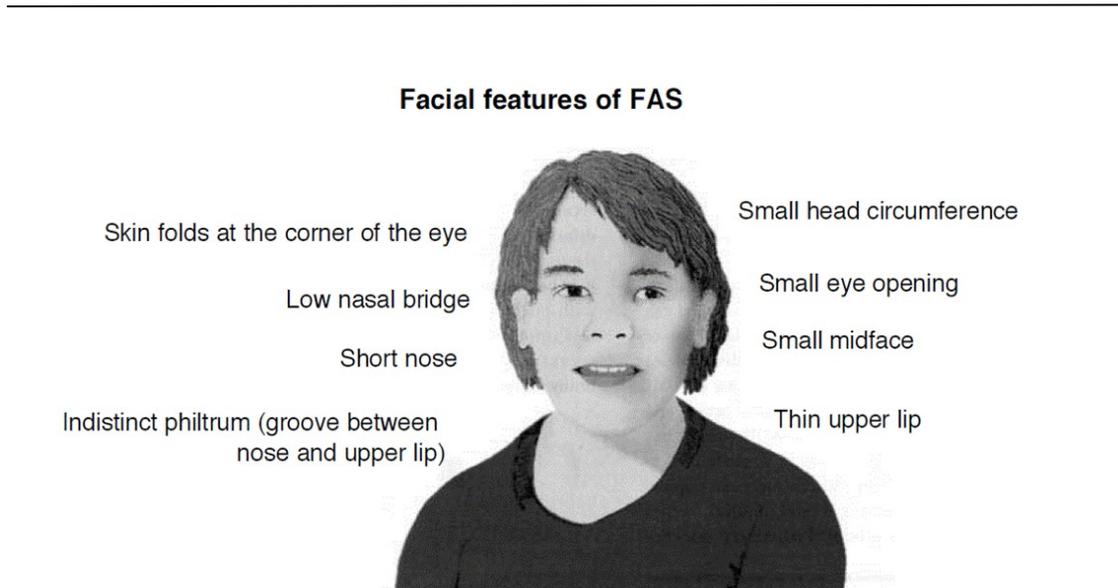
maternal risk factors are: nutritional status (May et al., 2004; May et al., 2008), maternal age (Denny et al., 2009; Jacobson et al., 2004; Kvigne et al., 2003; Tsai & Floyd, 2004), drinking culture, tolerance level and metabolism (Blume & Resor, 2007; May et al., 2000; Vilgoen et al., 2005). Genetics have been found to act as a risk or protective factor (Dodge et al., 2014; Downing et al., 2009; Gilbert-Barness, 2010; Jacobson et al., 2006; Khaole et al., 2004; Viljoen et al., 2001). Other external environmental factors such as socioeconomic status (Able, 1995), lower education status, relatives with alcohol abuse, having other children with FASD and little prenatal care are also significant risk factors (Esper & Furtado, 2014). As a result of these studies it is now believed that there is no critical level of alcohol or minimum threshold that uniformly produces the degree of variability of these effects, but that the most substantial contributor is a combination of maternal drinking patterns, personal body differences and environment risk factors (May & Gossage, 2011).

Fetal Alcohol Spectrum Disorder (FASD)

In 2004, fetal alcohol spectrum disorder (FASD) was established by the National Task Force on FAS and Fetal Alcohol Effect (FAE) as the official clinical term to be used internationally to describe the full range of conditions (including FAS; ND-PAE) caused by prenatal alcohol exposure (Bertrand et al., 2004 Riley & McGee, 2005; Riley et al., 2011). FASD functions as an umbrella term similarly to how autism spectrum disorder (ASD) refers to levels of severity along a continuum (O'Malley, 2013). The prevalence of FASD in the U.S. ranges from 24 to 48 per 1000 children, or 2% to 5% (May et al., 2014). Within the FASD continuum are two conditions: FAS and ND-PAE (O'Malley, 2013). These next two sections will discuss FAS and ND-PAE in more detail and then the full characteristics of FASD will be discussed in greater length following the introduction to FAS and ND-PAE.

Fetal alcohol syndrome (FAS). FAS is the most severe form of FASD and is classified by the IOM as a dysmorphic medical condition (Stratton et al., 1996). The prevalence rate of FAS has been found to vary among U.S. communities: from 6 to 9 per 1000 (May et al., 2014) to 2.9 to 7.5 per 1000 children (May et al., 2015). FAS is the largest known cause of birth defects in the U.S. with as many as 6,000 cases per year (Barry et al., 2009). More children are born with FAS than with Down syndrome (1.8 per 1000 live births) (Irving, Basu, Richmond, Burn, & Wren, 2008). The lifetime cost of FAS per birth in the U.S., which includes medical treatment, home and residential care, education services and productivity losses is estimated to be \$5 million (Lupton, Burd, & Harwood, 2004; Ramagila, 2013). Annual costs associated with FAS are estimated to be approximately \$5 billion (Lupton et al., 2004; Ramaglia, 2013). FAS diagnostic criteria include: three specific dysmorphic facial features, growth deficiencies (weight/length) at or below the 10th percentile, and structural, neurological or central nervous system (CNS) dysfunction (Bertrand et al., 2004; Bertrand, Floyd & Weber, 2005; Chudley et al., 2005; Hoyme et al., 2005; Jones & Smith, 2006; Sokol, Delaney-Black, & Nordstrom, 2003). A report of maternal alcohol use in pregnancy is also desired for diagnosis, but if the other diagnostic criteria are met, the report is not necessary since the maternal drinking history is not always available (Astley, 2004). (See Illustration 2.1; Table 2.1)

Illustration 2.1
Craniofacial Facial Features Associated with FAS



Source: Warren & Foudin, (2001) pg. 154

Table 2.1
Fetal Alcohol Syndrome: Guidelines for Referral and Diagnosis

Facial Dysmorphic	Growth Problems	Central Nervous System Abnormalities
Must have all 3 features	Confirmed prenatal height, weight, or both, at or below the 10 th percentile, documented at any 1 point in time	Must have 1 of the following:
Smooth philtrum (<i>smooth groove between nose and lip</i>) University of Washington Lip to Philtrum Guide rank 4 or 5		I. Structural
Thin vermillion (<i>thin upper lip</i>) University of Washington Lip to Philtrum Guide rank 4 or 5		1) Head circumference at or below 10 th percentile adjusted for age and sex
Small palpebral fissures (<i>small eyes widely spaced</i>) at or below the 10 th percentile		2) Clinically significant brain abnormalities observable through imaging
		II. Neurological
		Neurological problems not due to a postnatal insult or fever, or other soft neurological signs outside normal limits.
		III. Functional
		Performance substantially below that expected for an individual's age, schooling, or circumstance, as evidenced by:
		1) Global cognitive or intellectual deficits representing multiple domains of deficit with performance below the 3 rd percentile
		2) Functional deficits below the 16 th percentile in at least three of the following domains:
		• Cognitive or developmental deficits
		• Executive functioning deficits
		• Motor functioning delays
		• Problems with attention and hyperactivity
		• Social skills
		• Sensory and pragmatic language problems, memory deficits

Source: Bertrand et al., (2004) pg. 13-14

FAS is generally discovered at birth when the serious facial abnormalities are immediately apparent (Astley, 2004). As children age, the dysmorphic facial features of FAS become less distinctive in adolescents and adults and may be missed if FAS is not diagnosed at birth or at a young age (Majewski, 1981; Streissguth, Aasem, Clarren, Randels, LaRue & Smith, 1991). Physicians and clinicians may make a claim for reimbursement for FAS evaluation and treatment using the World Health Organization's (WHO) International Classification of Diseases ICD-10 code Q86.0.

Most individuals do not meet the criteria for FAS (Howell, Lynch, Platzman, Smith & Coles, 2006; Mattson, Riley, Gramling, Delis & Jones, 1998). In fact, most prenatal alcohol-exposed individuals do not have significant intellectual disability or mental retardation; rather, they generally exhibit lower overall intellectual functioning compared with the general population (Howell et al., 2006; Mattson, Riley, Gramling, Delis & Jones, 1997, Mattson et al., 1998; Stressguth et al., 2004). Persons with FAS have been found to have a mean IQ of 80 and those not meeting FAS diagnostic criteria had a mean IQ of 88 (Stressguth et al., 2004). An earlier study found persons with FAS had a mean IQ of 74 and those not meeting FAS diagnostic criteria had a mean IQ of 83 (Mattson et al., 1997). Either way, people who fall on the FASD spectrum demonstrate below average IQs,

Neurobehavioral disorder associated with prenatal alcohol exposure (ND-PAE).

ND-PAE (previously known as ARND) is a non-dysmorphic condition, classified in the DSM-5 as a neurodevelopmental disorder (APA, 2013). It is used to describe cases of children/youth with known prenatal alcohol exposure that share similar behaviors but do not meet the FAS diagnostic criteria (Hoyme et al., 2005). ND-PAE is not yet an official diagnosis like FAS, but is a proposed condition under further study by the APA (2013). According to the DSM-5 a

diagnosis may still be made for ND-PAE using “other specified neurodevelopmental disorder, associated with prenatal alcohol exposure,” if the ND-PAE proposed criteria listed in the DSM-5 are met (APA, 2013, pp. 798-800). Physicians and clinicians may now make a claim for reimbursement for ND-PAE evaluation and treatment using the WHO ICD-10 code F88. The DSM-5’s proposed diagnostic criteria for ND-PAE includes confirmation of more than minimal exposure to alcohol during gestation, onset in childhood and clinically significant distress or impairment in each of the following three domains: cognition, self-regulation and adaptive functioning (APA, 2013) (See Table 2.2)

Table 2.2
Diagnostic Criteria for Neurobehavioral Disorder Associated with Prenatal Alcohol Exposure

Cognition	Self-regulation	Adaptive functioning
<p>Must have impairment in 1 or more of the following:</p> <p>I. Intelligence</p> <ul style="list-style-type: none"> • IQ of 70 or below • Standard score of 70 or below on a comprehensive developmental assessment <p>II. Executive functioning</p> <ul style="list-style-type: none"> • Poor planning and organization • Inflexibility • Difficulty with behavioral inhibition <p>III. Learning</p> <ul style="list-style-type: none"> • Lower academic achievement than expected for intellectual level • Specific learning disability <p>IV. Memory</p> <ul style="list-style-type: none"> • Problems remembering information learned recently • Repeatedly makes same mistakes • Difficult remember lengthy verbal instructions <p>V. Visual-spatial reasoning</p> <ul style="list-style-type: none"> • Disorganized or poorly planned drawings or constructions • Problems differentiating left from right 	<p>Must have impairment in 1 or more of the following:</p> <p>I. Mood and behavioral regulation</p> <ul style="list-style-type: none"> • Mood lability • Negative affect or irritability • Frequent behavior outburst <p>II. Attention</p> <ul style="list-style-type: none"> • Difficulty shifting attention • Sustaining mental effort <p>III. Impulse control</p> <ul style="list-style-type: none"> • Difficulty waiting turn • Difficulty complying with rules 	<p>Must have impairment in 2 or more of the following:</p> <p>I. Communication</p> <ul style="list-style-type: none"> • Delayed acquisition of language • Difficulty understanding spoken language <p>II. Social interaction</p> <ul style="list-style-type: none"> • overly friendly with strangers • difficulty reading social cues • difficulty understanding consequences <p>III. Daily living skills</p> <ul style="list-style-type: none"> • delayed toileting, feeding, or bathing • difficult managing daily schedule <p>IV. Motor skills</p> <ul style="list-style-type: none"> • poor fine motor development • deficits in gross motor function • deficits in coordination and balance

Source: The American Psychiatric Association DSM-5, (2013) pg. 798-799

Recent studies on ND-PAE and these three domains (i.e., cognition, self-regulation, adaptive function) support the DSM-5's proposed criteria (Aragón, et al. 2008; Dörrie, Föcker, Freunsch, & Hebebrand, 2014; Kerns, Siklos, Baker, & Müller, 2016; Kodituwakku & Kodituwakku, 2014; Mattson, Crocker, & Nguyen, 2011; Steven, Dudek, Nash, Koren, & Rovet, 2015; Stevens et al., 2012).

FASD Characteristics and Potential Outcomes

FASD and the “physical invisible” conditions which are associated with cognitive, behavioral (self-regulation) and social characteristics (adaptive functioning) categorize FASD as a neurodevelopmental disorder (NDD) in the DSM-5 because its symptoms and characteristics have an onset in the developmental period (APA, 2013). NDDs, also known as “developmental disabilities” (Boyle et al., 2011), are primarily associated with the functioning of the neurological system and brain (U.S. Environmental Protection Agency [EPA], 2013). Neurological effects of may include impairments in language and speech, motor skills, behavior, memory and learning (EPA, 2013; Hoyme et al., 2005). These conditions, if not treated, may lead to lifelong personal, social, academic, and/or occupational problems (APA, 2013; Riley et al., 2011; Riley & McGee, 2005).

NDD/developmental disabilities are very common in the U.S. (Boyle et al., 2011). Approximately 1 in 6 children in the U.S. have documented NDD (Boyle et al., 2011) This can make diagnosis and treatment of FASD very difficult because it often co-occurs with other NDDs, therefore children with FASD symptoms may go unnoticed (Andrew, 2011; Liebson, Neuman, Chudley, & Koren, 2014). Along with FASD, other examples of NDDs include intellectual disabilities (e.g., mental retardation), communication disorders, autism spectrum disorder (ASD), attention-deficit/hyperactivity disorder (ADHD), specific learning disorder (e.g.,

dyslexia, reading and/or math disorder) and motor disorders (e.g., Tourette's disorder) (APA, 2013). Because FASD characteristics often mimic other NDDs, making an accurate diagnosis of FASD is problematic, particularly when maternal prenatal alcohol consumption use is unknown (Peadon & Elliott, 2010). ADHD has been found to be highly common among children with FASD and much less common among children who do not have FASD. In fact, among children who meet FAS criteria, approximately 73% also have ADHD and, among children who have the characteristics of ND-PAE, 72% also have ADHD. However, among children who do not have any of the characteristics of FASD, only 36% have ADHD (Burd, Klug, Martsolf, & Kerbeshian, 2003). The differences between FASD and ADHD are either not known or not well understood (Greenbaum, Stevens, Nash, Koren, & Rovet, 2009; Lane et al., 2014; Miller et al., 2014; Raldiris, Bowers, & Towsey, 2014). Teachers and parents often assume that if an intervention is not working completely the problem is more an act of defiance rather than an incorrect or incomplete diagnosis (Miller et al., 2014). For example, ADHD disrupts one's ability to sustain focus and attention, whereas FASD makes shifting attention from one thing to another (i.e., activity, subject) more difficult (Lane et al., 2014). Another distinct difference is that FASD results in greater impairments in processing information, problem-solving and regulating emotions than ADHD (Greenbaum, et al., 2009; Raldiris, et al., 2014).

In infancy, parents of a prenatally alcohol exposed child may assume the child is just difficult or irritable and thus not seek any help (Paley & O'Connor, 2009). Further, simply obtaining the history of alcohol use during pregnancy, which could help identify if a child may need early intervention services, is a complex issue (Bertrand, 2009; Parkes, Poole, Salmon, Greaves, & Urguhart, 2008; Poole, Greaves, Jategaonkar, McCullough & Chabot, 2008; Tough, Clarke & Cook, 2007). Biological families may be hesitant to report a history of alcohol use for

fear of social stigma and, for others, use may only be suspected and direct information is unavailable (Bertrand, 2009). Moreover, some families may fear that disclosing the information could result in losing the child to state custody (Parkes et al., 2008; Poole et al., 2008; Tough et al., 2007).

Behavior problems may become more obvious when the child enters preschool or kindergarten (Paley & O'Connor, 2009). For example, the child may have difficulty keeping friends, difficulty following directions, impulsive behavior, difficulty switching from one activity to the next, and/or have a low tolerance for frustration (Burd, 2001). By early and middle childhood the focus of the child's issues may be on learning and academic problems (Paley & O'Connor, 2009). Problems at this age may include poor grades, difficulty completing assignments/homework, disruptive behavior and social issues (Paley & O'Connor, 2009).

When children with FASD reach adolescence, their inhibited socialization skills may increase their likelihood of problematic behaviors (i.e., delinquency, sexual activity) (Frankel, Paley, Marquardt & O'Connor, 2006; Mattson & Riley, 2000; Popova, Lang, Bekmuradov, Mihic, & Rehm, 2011). This is because they have poor social judgment, and often fail to consider the consequences of their actions more so than other adolescents (Frankel et al., 2006). Studies on the prevalence of youth with FASD and the likelihood of juvenal incarcerations is limited; however, Canadian data suggests that youth with FASD are 19 times more likely to be incarcerated than youth without FASD (Popova et al., 2011).

In adulthood, longitudinal studies have found that adults with FASD have substantially greater health and social service utilization than those in the general population, including those with chronic illness (Brownell et al., 2013). Moreover, adults with greater FASD deficits are at higher risk for unemployment and psychological problems (Rangmar et al., 2015). Lastly, as

youth and adults, their neuropsychological deficits (e.g., mental health disorders, substance abuse disorders, history of trauma or abuse, financial stress, and unstable social support) may contribute to increased risk for suicide (Huggins, Grant, O'Malley, & Stressguth, 2008).

Congressional FASD Awareness and Prevention Efforts

In 1981, the U.S. Surgeon General issued a public health advisory warning that alcohol use during pregnancy could cause birth defects (FDA, 1981). In 1988, Congress passed the Alcoholic Beverage Labeling Act (ABLA; 1988) to require that alcoholic beverages manufactured, imported or bottled for sale in the U.S. bear a label warning of the risks of accidents, FAS and other health problems associated with its use (Deaver, 1997, Hankin, 2002); however, the label was found to only have a modest impact on drinking during pregnancy (Hankin, 2002; MacKinnon, 1995). In particular, several studies found that the warning labels were found to have no impact on individuals who were frequent and heavier drinkers (Andrews, 1995; Deaver, 1997; Hankin, 2002). Deaver (1997) proposed that the label actually only served to protect the alcoholic beverage industry from liability claims. Another major FAS prevention effort was the Centers for Disease Control and Prevention's (CDC) Project CHOICES, which studied changing high-risk alcohol use and increasing contraception effectiveness (Floyd, Ebrahim, & Boyle, 2004). However, despite Congressional attempts to increase public awareness of the risks involved in drinking while pregnant, the National Institute on Alcohol Abuse and Alcoholism (NIAAA) reported that the number of women drinking during pregnancy had increased (NIAAA, 2000). NIAAA's report included research findings that the prevalence of binge drinking among pregnant women had increased significantly from .7% in 1991 to 3% in 1995 (Ebrahim, Diekman, Floyd, & Decoufle, 1999). Binge drinking for women is defined as four or more drinks within a 2-3 hour period (NIAAA, 2004). In 1999, Congress then directed

The CDC's National Center on Birth Defects and Development Disabilities (NCBDDD) to coordinate and manage a FAS Prevention Team (CDC, 2009). The Task Force enhanced prevention, identification, and treatment efforts through the development of programs to educate health care professionals about prenatal alcohol-related disorders (CDC, 2009). In 2000, Congress recognized the need for federal funding for more study of prenatal alcohol-related disorders and to begin collaboration efforts needed between government agencies, professional organizations, researchers, and FASD-impacted families (Carmichael-Olson et al., 2009). Armed with more studies about the dangers of drinking during pregnancy, the U.S. Congress mandated the CDC to coordinate with other federally-funded FAS programs in 2002 to: (a) develop diagnostic guidelines for FAS and other prenatal exposure to alcohol effects; (b) incorporate the guidelines into curricula and seek to have the curricula recognized by professional organizations and accrediting boards; and (c) provide training regarding these guidelines (CDC 2009; 2015). As research continued to mount that prenatal alcohol exposure resulted in varying degrees of disrupted attention, learning and memory, visual perception and visual motor skills, language, and executive functioning, and that not all effects were as severe as FAS, the CDC's FAS Task Force realized the need to establish a consensus term to describe the full range of effects (Bertrand et al., 2004). Therefore, in 2004 the CDC officially established FASD as the official clinical term to be used to describe the full range of conditions (including FAS) caused by prenatal alcohol exposure (Bertrand et al., 2004). Following the CDC establishment of FASD the U.S. Surgeon General re-issued the public health advisory in 2005 as a warning against alcohol use during pregnancy (Office of the Surgeon General, 2005). As part of the Congressional initiative the CDC originally funded four FASD Regional Training Centers (RTC) (i.e., Northeastern, Southeastern, Midwestern, and Western) which expanded to seven (i.e., Arctic,

Frontier, and Great Lakes) by 2014 (CDC, 2015). In 2010, the CDC awarded a 4-year cooperative agreement to the National Organization on Fetal Alcohol Syndrome (NOFAS) to create a national and state resource directory, develop the *K-12 FASD Education and Prevention Curriculum Guide* for teachers, and the *FASD Public Awareness Guide* for families, community members, service systems, and the media, etc. (CDC, 2015). In 2011, NIAAA and the American Academy of Pediatrics (AAP) officially recognized the need for screening, diagnosis and referral for treatment not only for FAS, but also for ND-PAE in primary care settings that treat children (NIAAA 2011; Prock & Weitzman, 2012). The AAP also developed a web-based *FASD Toolkit* to assist physicians with proper screening and diagnosis (Matthias et al., 2012). The Toolkit is an especially helpful resource for family physicians who may not have received FASD training during their pre-doctoral or residency programs. According to Zoorob, Aliyu & Hayes (2010), approximately 66% of pre-doctoral directors and 39% of residency directors of family medicine programs report that FASD content is not included in their teaching curriculum. To help with this need, in 2014 the CDC funded a national partnership with AAP and the American College of Obstetricians and Gynecologists and shifted the focus from individual training to systems-level training (i.e., primary care settings, student health centers, maternal health care clinics, etc.) with an emphasis on FASD prevention (CDC 2015). The CDC also renamed the FASD RTC's to FASD Practice and Implementation Centers (PICs).

Alcohol Affected Births Remain a Problem

Alcohol use during pregnancy continues to be a national and worldwide public health concern despite close to thirty years of Congressional prevention efforts (Adusi-Poku, Bonny, & Antwi, 2013; Floyd, Weber, Denny, & O'Connor, 2009; Marchetta, Denny, Floyd, Cheal, & Sniezek, 2012; Substance Abuse and Mental Health Services Administration [SAMHSA], 2013;

Tan, Denny, Cheal, Sniezek, & Kanny, 2015). Although most women stop alcohol use upon learning they are pregnant, some continue to drink (Crozier et al., 2009; Floyd et al., 2009). Despite negative consequences, alcohol releases pleasurable feelings more quickly and at a higher rate than physical and physiological activities, which can result in a compulsion of continued use (Nutt & McLellan, 2014). Trauma has also been found to be associated with a higher risk of problem drinking (Ullman, Filipas, Townsend & Starzynski, 2005). Women who have been exposed to trauma drink to cope with distress and tension (Ullman et al., 2005). In a study which focused on birth mothers who had at least one child with FASD, 94% reported they did not want to reduce their use because it helped them cope and 79% reported that they were too depressed to do anything about it (Astley, Stachowiak, Clarren & Clausen, 2000). Therefore, a woman who becomes pregnant and has used drinking as a way of coping may not be able to minimize her distress and tension other than to drink. The study also found that 95% of these women reported having experienced physical or sexual abuse, 90% reported having mental health problems, 77% reported having a diagnosis of Post-Traumatic Stress Disorder (PTSD), and 60% were living below the poverty line (Astley et al., 2000).

When congressional prevention efforts began, the prevalence rate of consumption of any alcohol by pregnant women from 1991 to 2005 was 12% (Floyd et al., 2009). A few years later it was 13% (Denny, Tsai, Floyd, & Green, 2009). Longitudinal data from 2006 to 2010 shows that prenatal alcohol consumption appears to have decreased to 8% (Marchetta et al., 2012); however, from 2011 to 2012, the prevalence rate rose to 9% (SAMHSA, 2013). Currently, the prevalence rate of women who consume any alcohol during pregnancy has risen again to 10% (Tan, et al., 2015). Further, approximately 0.3% of pregnant women report drinking heavily (SAMHSA, 2013). Heavy drinking is defined by NIAAA (2005) as an average of one standard drink per day

(e.g. 12 oz. of beer, 5 oz. wine, 2.5 oz. liqueur, 1.5 oz. vodka/gin/whiskey). Binge drinking (four or more drinks within a 2-3 hour period) (NIAAA, 2004) among pregnant women was 2% between 1991 and 2005 (Floyd et al., 2009). A longitudinal study from 2006 to 2010 found binge drinking to be 1.4% (Marchetta et al., 2012); however, by 2012 it had risen to 3% (SAMHSA, 2013). Currently the prevalence rate of pregnant women who report binge drinking is still at 3% (Tan et al., 2015). Actual prevalence rates are difficult to obtain due to social stigma and methodological issues such as response bias due to social desirability. Still, these findings do suggest that either alcohol use among pregnant women is rising and/or that they are more likely to report use. Nevertheless, the risk for more children to be born with FASD does not appear to be on the decline.

Nearly 40% of women are unaware they are pregnant until four to seven weeks into pregnancy (Denny et al., 2009). This is concerning because the recent prevalence rates of non-pregnant women of childbearing age (18-44) who report consuming any alcohol has been estimated to be between 55% (Tan et al., 2015) and 56% (SAMHSA, 2013). Additionally, single, college-age women who report drinking alcohol when they last had sex often do not use effective forms of contraception. This increases their risk of pregnancy and thus prenatal alcohol exposure (Walker, Darling-Fisher, Sherman, Wybrecht, & Kyndely, 2005). Further, over half of pregnancies in the U.S. are unplanned (Finer & Henshaw, 2006; Tsai & Floyd, 2004). Therefore, according to these prevalence rates the risks are substantial for a woman of childbearing age to unknowingly expose a fetus to alcohol during the early stages of fetal development (Floyd et al., 2007; Tsai & Floyd, 2004). Even low amounts of alcohol (2 to 3 ½ drinks per week) consumed during the first trimester (first 12 weeks) have been found to increase the risk of a spontaneous abortion (Andersen, Andersen, Olsen, Grønþák, & Strandberg-Larsen, 2012). The risk of

spontaneous abortion is twice the normal rate in women who drink 1oz of alcohol twice a week (Shepard, 1992). Additionally, alcohol use early in pregnancy as well as throughout the pregnancy may result in low birth weight (Feldman et al., 2012; Murphy, Mullally, Clearly, Fahey, & Barry 2013). The critical period for FAS-like facial characteristics (i.e., thin upper lip, smooth groove between lip and nose, small eyes widely space), including growth deficiencies has been found to occur as early as the second half of the first trimester (6 weeks post conception) through to the end of the second trimester (Feldman et al., 2012). By the third trimester, the fetal growth rate is affected the most by alcohol consumption (Feldman et al., 2012). A woman's Obstetrician-Gynecologist (OB-GYN) may have the best opportunity to explain the risk of alcohol consumption during pregnancy. Despite this, 85% of OB-GYNs report that it is not easy to identify women who might be at risk for having a FASD-exposed birth (Senturias, Durkin, Nagle & Zoorob, 2012). This has been found to be based on data that shows that the majority (80%) of OB-GYNs believe that women are dishonest about their alcohol use during pregnancy (Senturias et al., 2012).

FASD and Child Welfare

In the U.S. FASD is estimated to range as high as 5% in children (May et al., 2014). However, FASD is likely much higher in the child welfare system because it is not identified as a reportable health surveillance condition and is therefore difficult to assess (Badry & Choate, 2015). Canadian researchers have been able to estimate that FASD prevalence in their child welfare system is 11% (Fuchs et al., 2005). Worldwide FASD prevalence in child welfare systems, orphanages and foster care is as high as 17% (Lange, Shield, Rehm, & Popova, 2013) and in foster children alone as many as half (52%) (Ospina & Dennett, 2013). FAS, the most extreme form of FASD, is estimated to be close to 1% among U.S. children (May et al, 2014)

and affects 2% of children involved in the U.S. child welfare system (Astley et al., 2002).

Worldwide FAS has been estimated to affect 21% of foster children (Ospina & Dennett, 2013).

Without in-depth knowledge of how FASD affects children one may assume that after birth the damage is done due to prenatal alcohol exposure (Stratton et al. 1996). Subsequent developmental difficulty has been found not only to be due to organic injury during gestation, but also to chaotic home environments, a common situation for children involved in child welfare (Badry & Choate, 2015; Stratton et al. 1996). Aside from these infants and toddlers having neurodevelopmental impairments, the unstable family systems they may be living in can put them at higher risk for psychosocial and environmental hazards (Fuchs et al., 2009). Further, children with FASD have been found to come into state care earlier and spend more of their life in placement than children without FASD (Fuchs et al., 2009). Children with FASD also have a higher number of placements than their counterparts (Brown et al., 2005), an important issue for CWWs, supervisors and administrators.

FASD Recognition and Services in Child Welfare

Having CWWs who are trained in FASD recognition and confident enough to identifying these children is essential for early intervention. Adequate care received by children without FASD is not enough for children with FASD, because impulsivity and attention-related problems associated with FASD will require additional services (Slinning, 2004). Additionally, because of the stressors that may lie ahead of them, these children and their families need resources that are tailored to their complex and unique needs (Fuchs et al., 2009). Desirable practice behaviors will not occur unless the CWW first recognizes the child may have FASD and second if they have a good understanding of what kind of services these children need. Research suggests that most CWWs are not well prepared to identify developmental disabilities and/or NDDs (which includes

FASD) and lack practice skills, knowledge of appropriate services and agency policies to assess these children appropriately (Diaz et al., 2004; Leslie et al., 2003; Lightfoot & LaLiberte, 2006; Shannon & Agorastou, 2006). Less is known about how much collective training is received on FASD concepts, and what concepts are covered more frequently than others. However, one study found that roughly half (49%) of CWWs report receiving formal training on the effects of fetal alcohol exposure on the developing fetus (Caley et al., 2008). Studies on social workers in general have found that they have a good understanding of the biomedical basis of FAS (Brems et al., 2010; Brimacombe et al., 2008; Johnson, et al., 2010); however, they have less understanding of the distinction between FAS and FASD (Brems et al., 2010). Since social workers are often the primary profession in child welfare (NASW, 2006), this may also be likely for all CCWs as well, regardless of professional background. According to Kotrla and Martin (2009), training concepts for social workers in general on how to identify FASD in children are not adequate. Caley et al. (2008) reports that just under half (43%) of CWWs report receiving any formal training on how to recognize features associated with FAS and other alcohol-related effects (FASD). Caley et al. (2008) also found that only 17% of CWWs report receiving training on how to make a referrals for children suspected of having prenatal alcohol exposure and 12% on how to assist clients in assessing local resources. Kotrla and Martin (2009) suggest that social workers need a deeper understanding of the range of developmental, behavioral, and emotional problems associated with FASD, so that they are better able to help not only the children, but also help the families and caregivers. Additionally, social workers, over other professionals, have also been found to report a need for more extensive training in legal, ethical and policy issues affecting FASD-impacted families (Brems et al., 2010).

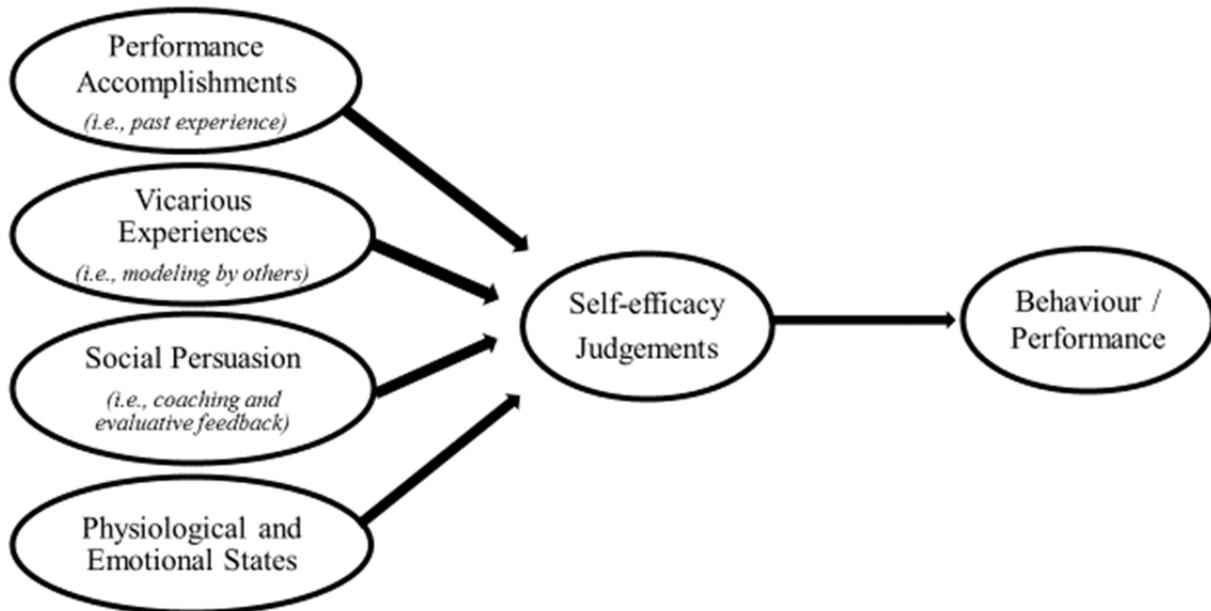
Among CWWs who report having had some training in FASD concepts, it is possible that at least most of them would be identifying and providing services for children with FASD. However, Caley et al. (2008) found that the majority (80%) of CWWs surveyed reported that they had not recognized any clients as having even the most severe form of FASD, FAS. Further, most (90%) of the workers reported that they had not provided any care for a client who had FASD (Caley et al., 2008). The findings from the Caley et al. (2008) study strongly suggest that whether the workers had received training or not, most were not identifying or providing care for clients with FASD. These findings raise the question that there is another factor which might affect the relation between training and practice. In any case, it is a serious concern considering the multitude of needs the children with FASD have, especially ones involved in the child welfare system. Therefore, it is imperative that they be identified and provided with appropriate care for their complex needs.

Theoretical Framework

Theory of behavioral change. Albert Bandura, a Canadian/American psychologist was the first to expand the term efficacy into self-efficacy and introduce it as a theory of behavioral change (Bandura, 1977; Maddux & Gosselin, 2012). Efficacy is defined in *The Social Work Dictionary* (4th ed.) as the degree to which a desired goal is achieved (Barker, 1999) and in the *Merriam-Webster Dictionary* (11th ed; 2004) as the power to produce a desired result or effect. According to Bandura (1977; 1982), self-efficacy is how a person judges how well they can execute a course of action, and this judgment affects one's motivation and behavior to perform a task. Therefore, according to self-efficacy theory, self-judgment (i.e., perceived level of preparedness) is what leads to practice (Bandura, 1977; 1982). Self-efficacy theory suggest that there are four major sources of information (e.g., performance accomplishments; vicarious

experience; social persuasion; psychological and emotional states) which are used when individuals form self-efficacy judgments (Bandura, 1977; Staples, Hukkand & Higgins, 1999) (See Figure 1.1).

Figure 2.1
Conceptual Framework – Theory of Behavioral Change



Source: Bandura, (1977) pg. 195

Early studies suggest that self-efficacy is a factor in facilitating the transfer of the learning process (Holladay & Quiñones, 2003; Ford, Quiñones, Seago, & Sorra, 1992; Tannenbaum, Mathieu, Salas, & Cannon-Bowers, 1991). Further, several studies on the theory of self-efficacy have demonstrated that it predicts practice behaviors (Chernack, 2001; Danis, Pil Yoon & Anderson, 2007; Staples et al., 1999). For example, medical social workers' knowledge and experience has been found to be significantly associated with confidence in performing hospital tasks (Chernack, 2001). In one study on social workers who work with crime victims, those with higher self-efficacy had a better chance of engaging in more effective practice than those with lower self-efficacy (Danis et al., 2007). Even employees working for virtual

organizations (void of human interaction) have been found to have their self-efficacy influenced by their perceived productivity, job satisfaction and ability to cope (Staples et al., 1999). An individual's self-efficacy level is influenced by experience, learning, and persuasion, and the resulting level is what influences how prepared a worker is to make task changes through initiation of behavior, persistence, and effort (Schyns, 2004). Given these studies' supportive findings on self-efficacy's powerful role to mediate relationships, it could be hypothesized that training alone will not improve practice behaviors, but that self-efficacy could act as a mediator to increase FASD practice behaviors.

Summary and Conclusions

Self-efficacy theory suggests that knowledge and skills are essential, but not sufficient to produce an individual's execution of desired behaviors (Bandura, 1977; 1982). Research suggests CWWs report a lack of confidence (feeling lower levels of preparedness) in their ability to identify NDDs (inclusive of FASD), which affects provision of services (Shannon & Tappan, 2011). In regards to FASD specifically, most CWWs report lower levels of self-efficacy (71% vs. 29%) to identify features associated with FAS and other alcohol-related effects (i.e., 36% feel very unprepared; 35% feel somewhat unprepared) in children (Caley et al., 2008). Further, the majority of CWWs report lower levels of self-efficacy (85% vs. 15%) to manage and/or coordinate treatment (i.e., 52% feel very unprepared; 33% feel somewhat unprepared) (Caley et al., 2008). Caley et al. (2008) found that despite 43% of CWWs receiving training on recognition, only 20% recognized at least one client; additionally, the study reported that 17% received training on how to make referrals, yet only 10% provided service for at least one client (Caley et al., 2008). This suggests issues exist with CWW FASD training transfer. Given the overall low levels of self-efficacy in regards to FASD training and practice, these findings raise

the question that CCWs' level of self-efficacy may mediate the relation between FASD training and practice.

FASD prevalence is higher in the child welfare system compared to the general population (Fuchs et al., 2005; Lange et al, 2013; Ospina & Dennett, 2013); therefore, the ability of CWWs to recognize FASD and manage these cases through the provision of appropriate services is vital. This is especially true because once they are out of care they are likely to experience adverse outcomes as they age into adulthood (Brownell et al., 2013; Huggins et al., 2008; Rangmar et al., 2015). CWWs may also have higher contact than other professionals with not only children, but with women who are at high risk for having an alcohol-exposed pregnancy (Vanderploeg et al., 2007), which puts them in a position to prevent or at least decrease the chance for harmful effects. The social stigma placed on children and families impacted by FASD makes meeting their needs an even greater service challenge; however, a social work education may be the best preparation for future CWWs who need the skills for dealing with those type of challenges (Whitaker et al., 2004). Ellett (2009) suggests the most difficult field in social work is child welfare. Additionally, although social work graduates may enter the field of child welfare prepared to do the work, it is their own personal histories of trauma, which often leads many social work graduates to specifically choose child welfare, which in turn makes them vulnerable to handle the difficulties of the work required of the job (Pryce, Shackelford, & Pryce, 2007). Research suggests social work education curriculum and agencies fall short of including enough information about the emotional and psychological risks associated with providing services to vulnerable populations (Newell & MacNeil, 2010). According to Pryce et al. (2007), the traumatic experiences of clients may draw to the surface the CCW's own unresolved trauma, which can possibly result in secondary traumatic stress (STS; Figley, 1995). Symptoms of STS

include: intrusive images, physiological arousal, functional impairment, and compulsive behaviors (Figley 1995; Herman, 1992; McCann & Pearlman, 1990). However, higher levels of worker self-efficacy have been found to buffer the impact of perceived stressful encounters (Prati, Pietrantonio & Cicognani, 2009). These studies support a conceptual framework of self-efficacy because of the close relation that the phenomenon of STS has on CWWs outcomes. A wealth of literature exists that STS can be addressed through a multitude of techniques, therefore it seems probable to hypothesize that if self-efficacy mediates the relation between FASD training and practice, that techniques that increase self-efficacy can be applied to improve training and practice outcomes.

This study aims to make this work easier for child workers by demonstrating that a worker's self-efficacy (workers perceived level of preparedness) mediates the relation between FASD training and practice behaviors. If trainers can add self-efficacy building techniques and methods to FASD trainings, the identification of and outcomes for children with FASD involved in the child welfare system could be improved. The intent of this study was to test whether a relationship could be found between FASD training, self-efficacy and practice. If so, then the usefulness of the application of self-efficacy theory (Bandura, 1982) to FASD training would be suggested. The SRTC data is especially well-suited for this purpose in that the controls were significantly correlated with level of preparedness (self-efficacy), training and practice. Therefore, it would be possible to demonstrate whether or not self-efficacy mediates this relationship.

CHAPTER 3

RESEARCH METHODS

Research Design

Secondary data analyses were conducted on a purposeful sample of CWWs (n=250) employed by the Tennessee Department of Children's Services (TN-DCS) in the fields of child protective services and foster care (also known as front-line CWWs). A purposeful sample selects participants who work with a particular population (Rubin & Babbie, 2008). Front-line CWWs have the highest probability of encountering a child with FASD over other job titles in child welfare agencies, including those in other professions (Caley et al., 2008; Fuchs et al., 2005; Lange et al, 2013). Secondary data analysis is a form of research where data is collected and processed by one researcher then reanalyzed for a different purpose by another researcher (Rubin & Babbie, 2008).

The data used for this secondary data analyses were collected by the CDC's FASD Southeast Regional Training Center (SRTC), located at the Meharry Medical College (MMC) in the Department of Family and Community Medicine, in Nashville, Tennessee. The purpose of the data collection was for the SRTC to provide the CDC with a needs assessment of front-line CWWs' (i.e., child protective services, foster care) FASD knowledge, practice behaviors, FASD trainings received and level of preparedness (self-efficacy). A needs assessment targets a population in order to enhance program planning (Rubin & Babbie, 2008). Information gathered from the needs assessment would assist the CDC in their efforts to improve FASD training to CWWs. A needs assessment can also assess a problem's extent, and localize it so it may be

improved, as well as target a population's characteristics, expressed needs and desires and then use that information to guide program planning (Rubin & Babbie, 2008). Support and funding for the needs assessment project was through a cooperative agreement grant (U84DD0004433, P.I. Roger Zoorob) with the CDC's National Center on Birth Defects and Developmental Disabilities (NCBDD), located in Atlanta, Georgia. At the time, the CDC's NCBDD was funding four RTC's in the U.S. for the purposes of promoting FASD prevention, identification and care through the development, implementation, and evaluation of FASD curricula (CDC, 2009; 2015). The CDC's FASD grant stipulates that funding to RTC's is only for "training" purposes and not "research." However, the CDC's federal funding policies allow and encourage RTCs to reanalyze needs assessment data and FASD training data for secondary data analysis research studies.

The research design used for collecting the data used for this study is a cross-sectional data design. A cross-sectional study examines a phenomenon by taking a cross section of responses at one point-in-time and then the conclusions of the study are based only on observations made at that one time (Rubin & Babbie, 2008). The mode of inquiry was conducted through a quantitative research approach using an anonymous online survey via list-serve to eligible participants only. Mode of inquiry is the approach taken to find the answer to the question(s) (Creswell, 2003).

The SRTC project evaluator was given the responsibility of choosing the research design and procedures for the SRTC's need assessment. The project evaluator sought first to find a survey which had already been used on CWWs to assess their FASD knowledge, training, and practice behaviors rather than to modify or create a new a survey. Finding a survey with established validity and reliability would give the study's design and procedures more empirical

support (Rubin & Babbie, 2008). A study has validity when it has been demonstrated to measure accurately the concepts that it is intended to measure and reliability refers to the ability of a measure to produce consistent results (Rudestam & Newton, 2007; Rubin & Babbie, 2008). An advanced search on the topic lead to the article titled “What Human Service Professionals Know and Want to Know about Fetal Alcohol Syndrome” (Caley et al., 2008). The Caley et al. (2008) study was a needs assessment conducted with New York CWWs in 2005. The project evaluator was given approval by the SRTC P.I. and the CDC’s NCBDD to replicate the design and procedures of the Caley et al. (2008) study. A replication of a previous study’s design duplicates the design and procedures (i.e., survey instrument, data collection procedures, etc.) which can reduce error and increase the internal validity (credibility) of the replicated study (Rudestam & Newton, 2007; Rubin & Babbie, 2008). The SRTC project evaluator also believed that by replicating the Caley et al. (2008) needs assessment the SRTC would provide the CDC’s NCBDD with the first state-to-state comparison done by one of their RTCs. Additionally, the SRTC would be the first RTC to make a state-to-state comparison on CWWs between a time span of approximately six years (2005-2011). By comparing the responses of the CWWs in Tennessee to those from New York using the same survey instrument, it would demonstrate if the introduction of the term FASD to include FAS (Bertrand et al., 2004), and subsequent congressional efforts to increase FASD awareness and prevention (Carmichael-Olson et al., 2009; CDC, 2009; Office of the Surgeon General, 2005) had any effect on workers’ responses from 2005 to 2011. The survey instrument content used by Caley et al. (2008) was modified to include the clinical term FASD in order to update the instrument with terminology that was currently being used by the CDC to describe the full range of effects associated with prenatal alcohol exposure (Bertrand et al., 2004). According to Rudestam and Newton (2007), it is not

uncommon to modify questions or add questions to a validated instrument to facilitate its use. Further, the modification was a suggestion Dr. Caley made to the SRTC project evaluator during the study design and procedures replication process of the New York needs assessment.

Approval for the data used for this study was obtained from the MMC Institutional Review Board (IRB) in July 2010 and the TN-DCS in September 2010. The terms of the TN-DCS approval were to follow all previously agreed upon conditions (full disclosure, releases, etc.) and that this protocol must be strictly adhered to. This included that the SRTC submit a copy of the results and/or reports prior to their publication or dissemination and that the TN-DCS state administrators be allowed to have the first opportunity to review and comment on the results.

Following data collection and analyses, the SRTC project evaluator reported the frequencies and distributions and compared them to the results of the New York needs assessment in order to show state-to-state comparisons. The results were first reported to the TN-DCS (per stipulation of the protocol) in April 2011 and then included in the SCRT's annual review report in June 2011. The data were then no longer in active use by the SRTC. During this time, the project evaluator (also a Ph.D. student at the University of Alabama, School of Social Work) was working on completing her Integrative Paper as part of the dissertation process. The prospective research goals of the paper were to determine CWWs training needs related to FASD and explore additional factors that may influence practice behaviors regarding children with FASD involved with the child welfare system. Through discussions with her dissertation chair, the inactive needs assessment data appeared to be a perfect data set to match the research goals of the Integrative Paper and, with more rigorous statistical data analyses, could potentially contribute significantly to the field of social work, especially in the areas of child welfare and

FASD research. Therefore, acting in the a role of a Ph.D. student, and not as an employee of the SRTC, a formal request was made to the CDC's FASD SRTC cooperative agreement grant P. I., who was also the Chair of the Department of Family and Community Medicine Department, to use the child welfare needs assessment data for a secondary data analysis. Permission was granted.

Sampling Strategies

Specific sampling was the sampling strategy process selected for the data used for this study. As mentioned previously, the participants had to be TN-DCS CWWs who worked in either the departments of child protective service or foster care. The specific sampling technique allows the researcher to determine or control the likelihood of specific individuals being selected for study (Rubin & Babbie, 2008). Access to the sample was obtained through the TN-DCS Research and Grant Review Committee (RGRC). The SRTC project evaluator and SRTC project coordinator worked directly with the RGRC Chair and the Executive Director of Learning and Development to coordinate the best sampling strategies to gain access to the sample.

In the first stage, access to the sample was obtained through gaining the support of the TN-DCS's 12 regional directors and county agency directors within these regions. The SRTC originally requested to survey the CWWs via paper survey, the sampling strategy used by Caley et al. (2008), so that response rates could be more accurately determined from the regions. However, the RGRC would only permit the survey to be conducted online to minimize any responsibility on the participants, contact persons and/or department supervisors to return surveys to the SRTC. Online surveying is a sampling strategy that is conducted via the Internet either by e-mail or through a website (Rubin & Babbie, 2008). For reasons of anonymity, the RGRC could not allow the SRTC access to the 12 regional directors and county agency

directors' administrative list-serve. Anonymity is provided when a participant's given response cannot be identified by the researcher (Rubin & Babbie, 2008; Rudestam & Newton, 2007). As an alternative to the SRTC contacting the directors on their own, the RGRC recommended that the survey be distributed directly from the office of Tom Riche, the TN-DCS Deputy Commissioner at the time (2004-2011), so that the survey would be viewed and understood as important from the state's highest administrative level. The RGRC also believed that demonstrating administrative support for the SRTC survey would have a better chance of influencing the 12 regional directors and county agency directors to forward the survey on to their child protective service and foster care departments. Just prior to survey administration, the RGRC Chair also mentioned the SRTC survey in the January 2011 Regional and County Agency Directors monthly meeting to help increase response rates. It is often common in survey research to use techniques which might increase the response rate (Creswell, 2003; Rubin & Babbie, 2008). At the meeting, the directors were notified that they would be e-mailed more information about the purpose of the survey the following month, along with an attachment of a participant letter and link to the survey. The RGRC chair and the Executive Director of Learning and Development wanted to garner awareness and initial support for the SRTC survey and allow any regional or county agency director time to contact the SRTC with any questions or concerns prior to receiving the survey. Four of the 12 regional directors contacted the SRTC project evaluator with questions about the survey.

Data Collection

In the first week of February 2011, the 12 regional directors and county agency directors were contacted by the RGRC Chair via administrative email list-serve. The e-mail informed the directors that the SRTC had permission from the TN-DCS Deputy Commissioner to conduct the

survey with their employees on a voluntary basis. Although researchers have the right to use procedures that have been demonstrated to improve response rates, potential research participants should not be subtly pressured to participate (Rudestam & Newton, 2007) in order to avoid response bias (Fowler, 2002). The directors were informed that the CWWs eligible for participation in the study had to work in either child protective services or foster care. The committee chair attached the STRC participant (respondent) letter to the email, which assured the directors, supervisors and CWW participants that data questions would not ask for any information that could link an employee to their responses. The participant letter also briefly explained the purpose and procedures of the survey. Contact information was provided to the SRTC project evaluator and project investigator (P.I.) if the potential participant had any questions or concerns about participating and to the MMC IRB Human Protections Administrator if they had any concerns about their rights as a participant. The directors could then decide for themselves if they wanted their agency to participate. If so, they were asked to forward the attached participant letter to child protective service and foster care department employees, which included the link to the survey.

The modified Human Service Professional Survey (HSPS) (Caley et al., 2008) survey was administered by the SRTC with the assistance of the TN-DCS from the first week of February through to the first week of the March 2011. Implied consent was obtained by the TN-DCS employee if they clicked on the survey link and completed the survey. Implied consent is an assumption of permission to do something that is inferred from an individual's actions (Rubin & Babbie, 2008). All data collected were anonymous and de-identifiable through use of a protected server link managed by Vanderbilt University called Research Electronic Data Capture (RedCap) (Harris et al., 2009). RedCap is a secure, web-based application for building and

managing online surveys and databases. MMC has an on-going cooperative agreement with Vanderbilt for access to this resource. RedCap provided an automated export download of the survey data into an Excel file immediately when the respondent clicked “submit survey.” Once the surveys were received through the RedCap server, data were imported into a statistical software package (SPSS, version 19) to create a data file for analysis. The RedCap server allowed the SRTC to view and report to the TN-DCS approximately how many CWWs were responding. Responses began to slow down by around the second week of administration. The RGRC Chair sent out a reminder email to the 12 regional and county agency directors along with the participant letter and link to the survey on week three. By the fourth week, responses had ceased and the RGRC Chair and the Executive Director of Learning and Development along with the SRTC decided it was time to close the survey.

Due to the nature of the agreement with TN-DCS, a response rate could not be accurately determined. The 12 regional directors and county agency directors were only asked to forward the survey to supervisors and workers in the departments of child protective services and foster care; whether or not directors followed these specific instructions cannot be confirmed. Therefore, how many actual front-line CWWs received the survey and decided to participate is not known. This is a limitation of this study. However, the number of front-line CWWs (i.e., child protective services and foster care) working at TN-DCS in 2013 (approximately two years later) was 1,195 (Cull, Hengelbrok, & Modell, 2014). The Cull et al. (2014) study was conducted by the TN-DCS Deputy Commissioners of Child Safety and Child Health, which allowed them access to the entire TN-DCS employee list-serve. Based on the numbers from the Cull et al. (2014) study, and two hundred and fifty (250) surveys returned, a response rate of 20% could be estimated. According to Visser, Krosnick, Marquette & Curtin (1996) surveys with lower

response rates (near 20%) yield equivalent information to higher response rates. More recently, a study compared results of a 5-day survey (with a 25% response rate) with results from a more rigorous survey conducted over a much longer period achieving a higher response rate of 50% and found that the two surveys yielded results that were statistically indistinguishable (Keet, Kennedy, Dimock, Best & Craghill, 2006). These research studies provide support that the estimated response rate is good. Moreover, they support that this data should be generalizable to CWWs in general. Generalizability is when the findings from a sample of a population would apply to populations beyond the study conditions (Rubin & Babbie, 2008).

Measures Used in Study

Human Service Professional Survey. A modified version of The Human Service Professional Survey (HSPS) (Caley et al., 2008) was the survey instrument used to collect the data (See Appendix A). The HSPS was developed as part of a project funded by the Center for Development of Human Services and the FAS Diagnostic Center at New Jersey Medical School. The original HSPS measured the FAS knowledge, practice behaviors, training and level of preparedness of professionals working in the fields of child welfare (i.e., child protective services, foster care, and Medicaid enrollment staff). Questions used to create the HSPS survey were modified by Caley et al. (2008) primarily from a survey used to assess psychiatrist FASD knowledge, training, practice and preparedness (Tough, Clarke & Hicks, 2003). Two other surveys were used as models (Diekman et al, 2000; Hicks, Sauve, Lyon, Clarke & Tough, 2003) that demonstrated reliability and validity in previous studies (Gahagan et al., 2006). The Diekman et al. (2000), Hicks et al. (2003), and Tough et al. (2003) content areas were developed collaboratively by the APA, CDC and representatives from the CDC's RTCs following a review of the scientific literature and existing FAS surveys (Gahagan et al., 2006). The validity or the

reliability of any of the questions used by the Caley et al. (2008) study was not reported in the publication.

The original HSPS (Caley et al., 2008) was pilot-tested with staff from the Center for Development of Human Services and students at The University of New York, at Buffalo. The final survey consisted of 20 questions, and takes approximately five to 10 minutes to complete. There were four demographic questions, two questions specific to FAS knowledge, and one on attitudes and beliefs about FAS and socioeconomic status. In addition, four open-ended questions asked how many clients the CWWs had suspected of having FAS, recognized as having FAS, referred to FAS services or provided FAS care. There were seven yes/no questions which asked whether or not they had received formal training on concepts associated with FAS and other alcohol-related effects. Two Likert-type scale questions asked the participant to rate how prepared they felt to identify children with FAS and other alcohol related effects and manage/coordinate their treatment. In this study, the survey was modified by changing FAS to FASD.

Control variables. The socio-demographic variables include asking the participant gender (coded 0 = male and 1 = female), age range (coded 1 = 20-29, 2 = 30-39, 3 = 40-49, 4 = 50-59, 5 = 60-69), race/ethnicity (coded 1 = White non-Hispanic, 2 = African American, 3 = Hispanic, 4 = Asian, 5 = American Indian/Alaska Native, Native Hawaiian/Pacific Islander, 7 = Other). This variable was recoded 1 = White non-Hispanic, 2 = African American, 3 = Other. This variable was recoded because there were not enough respondents in categories 4-7. Categories 4-7 were combined into one category (3 = Other). The context variable ask the participant “how many years in job position/title” (coded 1 = 1 year or less, 2 = > 1-5 years, 3 = > 5-10 years, 4 = >10-15 years, 5 = >15-20 years, 6 = >20-25 years, 7 = >25 years).

Independent (predictor) variables - FASD training. These include asking the participant “Have you received formal training in any of the following?”; (a) recognizing features associated with FASD and other alcohol related effects; and (b) making referrals for children suspected of having prenatal alcohol exposure (coded 0 = No, 1 = Yes).

Dependent (outcome) variables - FASD practice. These include asking the participant “During the last 12 months how many clients have you...?” (a) recognized clients as having FASD? (coded 0 = None, 1 = 0-15, 2 = 15-30, 3 = 30-45, 4 = greater than 45); and (b) provided care/services for someone with FASD? (coded 0 = None, 1 = 0-30, 2 = 30-60, 3 = 60-90, 4 = greater than 90). For the analyses conducted for this study, these variables were dichotomized to 0 = None, 1 = Any. There were several reasons to dichotomize these variables: (1) a CWW who worked for a short period of time would not be expected to report a high number of clients who they recognized with FASD and/or provided services to these clients; (2) the response choices were categorical and naturally fell into two clear groupings; (3) according to Hayes (2013) how the variables are coded does not make a difference in the analysis; and (4) the dichotomization into None and Any made it easier to interpret the results.

Mediator variables - self-efficacy. These include asking the participant “In general, how prepared do you feel to...?” (a) Identify children with possible FAS or FASD symptoms?; and (b) Manage/coordinate the treatment of children with FAS or FASD? (coded 0 = Very unprepared, 1 = Somewhat unprepared, 2 = somewhat prepared, 3 = very prepared). There is a chronological order error on the survey instrument that list “prepared” below “very prepared” on the survey; however, no CWW participants checked “prepared.” Regardless, this error is noted as a limitation.

IRB Approval

The data used in this study are from a completed research study and do not identify the respondents. Use of the data has been approved by The University of Alabama IRB and the original study entitled “Fetal Alcohol Spectrum Disorders: Knowledge, Attitudes, and Beliefs of Child Protective and Foster Care Workers” obtained IRB approval from Meharry Medical College.

Analysis Plan

Descriptive analyses. Descriptive statistics describe patterns of behavior (Rudestam & Newton, 2007) and are used as a method for presenting quantitative descriptions in a manageable form (Cronk, 2004; Rubin & Babbie, 2008). Data were analyzed using the Statistical Package for Social Sciences (SPSS 21.0). The book *How to Use SPSS: A Step-by-Step Guide to Analysis and Interpretation* was the tool used to explain how to select the appropriate statistics in SPSS and state the results (Cronk, 2004). In the first step, descriptive analyses were conducted to describe the profile of the overall sample and report on the frequencies and distributions of all the study variables (Rubin & Babbie, 2008; Creswell, 2003). To separate findings that were not deemed significant from those that were, the level of significance cutoff point was set at alpha level .05, signified by the expression $p \leq .05$ and used to determine statistical significance across the study (Rubin & Babbie, 2008).

Correlation analyses. In the second step, correlation analyses were run between predictor, mediator, and outcome variables to see if any significant associations existed using Pearson r and Spearman correlations tests (Cronk, 2004). These tests determine the strength of the linear relationship between the predictor variables, control variables, mediator variables, and the outcome variables (Cronk, 2004). The Pearson r correlation is computed using z-scores when

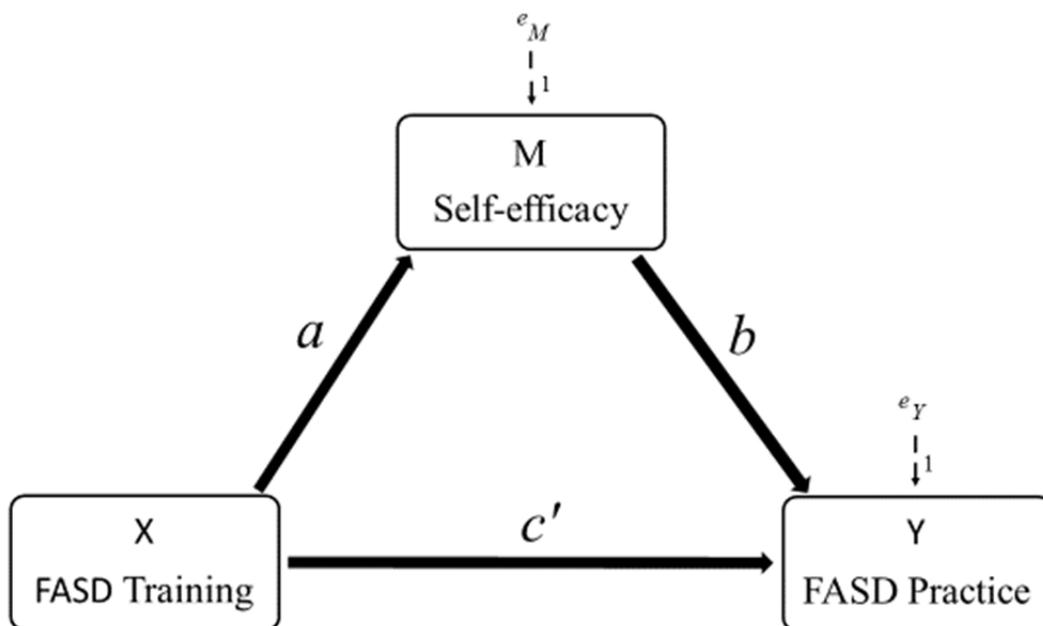
variables are normally distributed (Cronk, 2004). However, if the variables do not meet these assumptions, then the Spearman correlation is more appropriate (Cronk, 2004). Correlation tests included: (1) the two independent variables on training (in recognizing FASD features; making FASD referrals); (2) the two dependent variables on practice (recognized clients with FASD; provided FASD services); (3) the two mediator variables on the level of self-efficacy to (identify FASD in children; coordinate FASD treatment services); and (4) the control variables (gender, age, race/ethnicity, and years in the job). Correlations were considered significant at $p \leq .05$.

Logistic regression analyses. Step three involved regression analysis which is a statistical process for analyzing the relationships among variables (Rubin & Babbie, 2008). The type of regression analysis used to answer research question 1 “*Do child welfare workers who receive more types of training in FASD concepts engage in more FASD practices?*” is logistic regression. Logistic regression (Cox, 1958) measures the relationship between the categorical dependent variable (FASD Practice) and one or more independent variables (FASD Training) by estimating probabilities using a logistic command function in SPSS, which can calculate distribution (Cronk, 2004). Logistic regression deals with situations in which the observed outcome for the dependent variable (FASD Practice) is dichotomous, meaning it can have only two possible outcomes (for example, the child welfare worker either recognized *none* or *any* cases of FASD; or provided *none* or *any* FASD services) (Cronk, 2004). Further, logistic regression predicts the odds based on the values of the independent variables (predictors) of the probability that a particular outcome is the case or not and whether or not this relationship is statistically significant (Cronk, 2004; Rubin & Babbie, 2008; Rudestam & Newton, 2007).

Logistic regression using the PROCESS macro will test whether there is an indirect effect of self-efficacy level of preparedness to “identify FASD in children” on the relation between the

training variable “recognizing FASD features” and the practice variable “recognized clients with FASD.” Logistic regression using the PROCESS macro will also test whether there is an indirect effect of self-efficacy level of preparedness to “coordinate FASD services” on the relation between the training variable “FASD referral services” and the practice variable “provided FASD services” The conceptual model is presented in Figure 3.1.

Figure 3.1
Conceptual Mediation Model



Source: Hayes, (2013) pg. 91; Adapted from Baron & Kenny, (1986) pg. 1176

Mediation analyses. Step four involved the use of a basic mediation model with a single mediator variable M causally located between X and Y. Using the mediation analysis model in the SPSS PROCESS command developed by Hayes and colleagues (Hayes, 2013; Preacher & Hayes, 2004), this study will determine whether self-efficacy (self-reported level of preparedness) (Bandura, 1977; 1982) mediates the relation between FASD training concepts and FASD practice behaviors when controlling for gender, age, race/ethnicity and years on the job. The Preacher and Hayes (2004) method is available in SPSS through the PROCESS macro

(Hayes & Matthes, 2009) and has been recently updated and improved (Hayes, 2013). The methods developed by Preacher, Hayes, and colleagues improve upon the Baron and Kenny (1986) method by using bootstrap confidence intervals for inference about direct and indirect effects rather than p-values in determining statistical significance (Hayes, 2013). A recent statement from the American Statistical Association questioning the use of p-values and suggesting that other indicators (such as confidence intervals) are better at determining significance (Wasserstein, 2016; Wasserstein & Lazar, 2016) further supports this. Bootstrapping is useful when the sample size is insufficient for straightforward statistical inference. For example, over half of sample have the lowest level of self-efficacy to identify FASD (61.2%) and manage FASD treatment (65%.2%) and roughly only 1% (.8%;1.2%) have the highest level of self-efficacy (Adér, Mellenbergh, & Hand, 2008). Bootstrapping provides a way to account for the distortions caused by the specific sample that may not fully be representative of the population (Adér et al., 2008) and helps to overcome potential issues that are the result of unmet assumptions in older mediation tests (Hayes, 2013; Preacher & Hayes, 2008). PROCESS generates the standard errors, p-values, and confidence intervals for direct effects associated with the Baron and Kenny (1986) method, and the bootstrap confidence intervals for indirect effects (Hayes, 2013) in one analysis (rather than using a causal step approach). This helps avoid the potential errors associated with multiple hypothesis testing. If a zero is not included in the 95% confidence interval of the estimate, the indirect effect is considered statistically significant (Hayes, 2013). The control variables included in the analyses were: gender, race/ethnicity and years on the job. Age was not included as a control variable because it was conceptually and statistically correlated with years on the job.

Calculation of the total indirect effects involved four steps (Hayes, 2013): (1) From the original data set of 250 cases, 5,000 bootstrap samples were randomly generated using random sampling with replacement; (2) the regression coefficients and the indirect effect estimates were calculated based on this bootstrap sample; (3) by repeating this process 5,000 times, 5,000 estimates of the indirect effect of interest were obtained; and (4) the mean of the 5,000 indirect effect estimates was calculated. The PROCESS macro also mean centers variables included in the model in order to aide in interpretation.

CHAPTER 4

RESULTS

Introduction

This chapter presents the results of the analyses followed by a brief discussion. First, descriptive information (frequencies and distributions) were conducted to describe the profile of the overall sample. Second, bivariate analyses were used to compare control, predictor, mediator and outcome variables. The correlations between the study variables are presented. Because the variables used in the study are not continuous, bivariate analyses were conducted using Chi-square tests. An alpha level of .05 was used to determine statistical significance across the study except when the use of confidence intervals was indicated (Hayes, 2013). Finally, using the procedures described in the data analysis section, mediation analyses were used to answer the following research questions:

1. Do child welfare workers who receive more types of training in FASD concepts engage in more FASD practices?
2. Do child welfare workers who receive more types of training in FASD concepts report higher levels of self-efficacy?
3. Does self-efficacy mediate the relationship between FASD training and practice?

Descriptive Analyses

Sample demographic characteristics. Table 4.1 presents the characteristics of the overall sample of the CWWs working in Tennessee child protective services and foster care. The majority of the workers were female (90.8%). Over half (62.5%) of the CWWs were between 30

to 49 years of age. Although a large percentage of the sample was White non-Hispanic (67.7%), African Americans made up approximately 29.8% of the sample. Just under half (46.8%) of the CWWs had 5-15 years of experience in their job position/title and 37.2% had less than five years of experience. Roughly, 16% of the CWWs had 15 or more years in their job position/title.

Table 4.1
Descriptive Statistics of Demographic Variables

Demographic Variables	Number <i>n</i>	Percent %
Gender		
Female	227	90.8%
Male	23	9.2%
Age Range		
20-29	37	14.9%
30-39	91	36.7%
40-49	64	25.8%
50-59	47	19%
60-69	9	3.6%
Race/Ethnicity		
White non-Hispanic	168	67.7%
African American	74	29.8%
Hispanic	0	0%
Asian	1	.4%
American Indian/Alaska Native	0	0%
Native Hawaiian/Pacific Islander	0	0%
Other	5	2%
Years in job position/title		
1 year or less	25	10%
1-5 years	68	27.2%
5-10 years	84	33.6%
10-15 years	33	13.2%
15-20 years	15	6%
20-25 years	11	4.4%
25+ years	14	5.6%

Demographic characteristics by age range. Table 4.2 shows the results of the characteristics by age range. Although females made up the majority of the sample, the percentage of males and females were relatively equally dispersed according to age range. Young workers (20-29) were more likely to be White non-Hispanic (18.1%). Whites compared

to African Americans were more equally distributed from age 30 to 49; however, African Americans constituted a higher percentage of CWWs age 50 and up (28.4% vs. 20.5%). Among workers 30-39, over half (56%) had been in their job position/title between five and ten years. Three CWWs did not report their age.

Table 4.2
Descriptive Statistics of Demographic Variables by Age Range

Age Range	20-29 <i>n</i> (%)	30-39 <i>n</i> (%)	40-49 <i>n</i> (%)	50-59 <i>n</i> (%)	60-69 <i>n</i> (%)
Overall	37(14.8%)	91(36.4%)	64(25.6%)	47(18.8%)	8(3.2%)
Gender					
Female	34(15.1%)	84(37.3%)	58(25.8%)	42(18.7%)	7(3.1%)
Male	3(13%)	7(30.4%)	6(21.1%)	5(21.7%)	2(8.7%)
Race/Ethnicity					
White non-Hispanic	30(18.1%)	64(38.6%)	38(22.9%)	28(16.9%)	6(3.6%)
African American	5(6.8%)	24(32.4%)	24(32.4%)	18(24.3%)	3(4.1%)
Other	2(33.3%)	1(16.7%)	2(33.3%)	1(16.7%)	0(0%)
Years in job position/title					
1 year or less	6(26.1%)	5(21.7%)	9(39.1%)	2(8.7%)	1(4.3%)
1-5 years	25(36.8%)	25(36.8%)	11(16.2%)	7(10.3%)	0(0%)
5-10 years	6(7.1%)	47(56%)	19(22.6%)	11(13.1%)	1(1.2%)
10-15 years	0(0%)	14(42.4%)	10(30.3%)	7(21.2%)	2(6.1%)
15-20 years	0(0%)	0(0%)	8(53.3%)	6(40%)	1(6.7%)
20-25 years	0(0%)	0(0%)	5(45.5%)	6(54.5%)	0(0%)
25+ years	0(0%)	0(0%)	2(14.3%)	8(57.1%)	4(28.6%)

Demographic characteristics by race/ethnicity. Table 4.3 presents the characteristics by race/ethnicity. The percentage of White non-Hispanic male and females was roughly equally distributed as were as African Americans according to gender. Young (20-29) African Americans (13.5%) was the least represented compared to young Whites (81.1%). Two CWWs did not report their race/ethnicity.

Table 4.3
Descriptive Statistics of Demographic Variables by Race/Ethnicity

Race/Ethnicity	White non-Hispanic <i>n</i> (%)	African American <i>n</i> (%)	Other <i>n</i> (%)
Overall	168(67.2%)	74(29.6%)	6(2.4%)
Gender			
Female	156(67.6%)	68(30.2%)	5(2.2%)
Male	16(69.6%)	6(26.1%)	1(4.3%)
Age Range			
20-29	30(81.1%)	5(13.5%)	2(5.4%)
30-39	64(71.9%)	24(27%)	1(1.1%)
40-49	38(59.4%)	24(37.5%)	2(3.1%)
50-59	28(59.6%)	18(38.3%)	1(2.1%)
60-69	6(66.7%)	3(33.3%)	0(0%)
Years in job position/title			
1 year or less	17(68%)	8(32%)	0(0%)
1-5 years	53(79.1%)	10(14.9%)	4(6%)
5-10 years	52(61.9%)	30(35.7%)	2(2.4%)
10-15 years	19(59.4%)	13(40.6%)	0(0%)
15-20 years	10(66.7%)	5(33.3%)	0(0%)
20-25 years	7(63.6%)	4(36.4%)	0(0%)
25+ years	10(71.4%)	4(28.6%)	0(0%)

Demographic characteristics by years in job position/title. Table 4.4 presents the characteristics by years in job position/tile. The highest length of time on the job was over 25 years; however, the percentage of CWWs who were in the position longer than 10-15 years (16%) was low compared to the rest of the sample. A majority of the sample (34%) reported being in their job 5-10 years followed by 1-5 years (27%).

Table 4.4*Descriptive Statistics of Demographic Variables by Years in Job Position/Title*

Years on job position/title	1 year or less <i>n</i> (%)	1-5 Years <i>n</i> (%)	5-10 Years <i>n</i> (%)	10-15 Years <i>n</i> (%)	15-20 Years <i>n</i> (%)	20-25 Years <i>n</i> (%)	25+ Years <i>n</i> (%)
Overall	25(10.0%)	68(27.2%)	84(33.6%)	33(13.2%)	15(6.0%)	11(4.4%)	14(5.6%)
Gender							
Female	24(10.6%)	61(26.9%)	76(33.5%)	29(12.8%)	15(6.6%)	10(4.4%)	12(5.3%)
Male	1(4.3%)	7(30.4%)	8(34.8%)	4(17.4%)	0(0%)	1(4.3%)	2(8.7%)
Age Range							
20-29	6(16.2%)	25(67.6%)	6(16.2%)	0(0%)	0(0%)	0(0%)	0(0%)
30-39	5(5.5%)	25(27.5%)	47(51.6%)	14(15.4%)	0(0%)	0(0%)	0(0%)
40-49	9(14.1%)	11(17.2%)	19(29.7%)	10(15.6%)	8(12.5%)	5(7.8%)	2(3.1%)
50-59	2(4.3%)	7(14.9%)	11(23.4%)	7(14.9%)	6(12.8%)	6(12.8%)	8(17%)
60-69	1(11.1%)	0(0%)	1(11.1%)	2(22.2%)	1(11.1%)	0(0%)	4(44.4%)
Race/Ethnicity							
White non-Hispanic	17(10.1%)	53(31.5%)	52(31%)	19(11.3%)	10(6%)	7(4.2%)	10(6%)
African American	8(10.8%)	10(13.5%)	30(40.5%)	13(17.6%)	5(6.8%)	4(5.4%)	4(5.4%)
Other	0(0%)	4(66.7%)	2(33.3%)	0(0%)	0(0%)	0(0%)	0(0%)

Descriptive results of predictor, mediator and outcome variables. Table 4.5 shows the results of predictor, mediator and outcome variables.

Table 4.5*Descriptive Statistics of Predictor, Mediator and Outcome Variables*

Predictors - FASD Training	<i>n</i>	% Yes
Recognizing features associated with FASD and other alcohol related effects	23	9.2%
Making referrals for children suspected of having prenatal alcohol exposure	41	16.5%
Mediators – Self-efficacy		
Identify children with possible FAS or FASD symptoms	<i>n</i>	%
Very unprepared	153	61.2%
Somewhat unprepared	58	23.2%
Somewhat prepared	37	14.8%
Very prepared	2	.8%
Manage/coordinate the treatment of children with FASD		
Very unprepared	163	56.2%
Somewhat unprepared	55	22%
Somewhat prepared	29	11.6%
Very prepared	3	1.2%
Outcomes – FASD Practice		
Recognized a client as having FASD	<i>n</i>	%
Provided care/services for someone with FASD	53	21.2%
	38	15.2%

Correlation Analyses

Table 4.6 presents the results of the Pearson *r* and Spearman correlations of the predictor, mediator and outcome variables.

Table 4.6
Correlations of Predictor, Mediator and Outcome Variables

	Gender	Race	Age	Years	Training Recognize FASD	Training Making Referrals	Self-efficacy Identify	Self-efficacy Manage	Practice Recognized	Practice Provided Services
Gender	1.000	.008	-.062	-.024	-.090	.067	.005	.002	-.004	.058
Race		1.000	.146*	.080	.069	.051	.017	.058	-.018	.002
Age			1.000	.510** ^a	.073	.081	.079	.029	.238**	.122
Years				1.000	-.041	.045	.177**	.058	.268**	.172**
Training Recognize					1.000	.307**	.432**	.320**	.072	.135*
Training Referrals						1.000	.242**	.318**	.245**	.233**
Self-efficacy Identify							1.000	.684**	.200**	.275**
Self-efficacy Manage								1.000	.175**	.267**
Practice Recognizes									1.000	.653**
Practice Provided										1.000

Note. ** Correlation is significant at the .01 level (2-tailed). * Correlation is significant at the .05 level (2-tailed).
^a denotes results of Pearson correlation tests.

Controls. CWW race/ethnicity was significantly related to age range ($r = .146, p < .05$) such that older CWWs were less likely to be white. As expected, CWW age range was significantly related to years in job position/title ($r = .510, p < .01$) such that older CWWs reported significantly more years of work experience. CWW age range was also significantly related to one of the outcome variables. Older CWWs were more likely to report recognizing clients with FASD ($r = .238, p < .01$).

CWWs years in job position/title was significantly related to one of the mediator variables. CWWs who reported more years in their job position were more likely to report higher

self-efficacy (i.e. feeling prepared) to identify FASD in children under their care ($r = .177$, $p < .01$). Years in job position/title was also significantly related to both outcome variables. CWWs who reported more years in their job position reported being more likely to recognize a client as having FASD ($r = .268$, $p < .01$) and to provided care/services for a client with FASD ($r = .172$, $p < .01$). Although these correlations were significantly correlated, the relation was weak.

FASD training. Training in recognizing features associated with FASD was significantly related to training in providing services (making referrals) for children suspected of having prenatal alcohol exposure ($r = .307$, $p < .01$) such that CWWs who reported training in recognizing FASD children were significantly more likely to report having a client with FASD that they referred for services. CWWs who reported training in recognizing features associated with FASD were more likely to report higher self-efficacy (i.e. feeling prepared) to identify FASD in children under their care ($r = .432$, $p < .01$) and higher self-efficacy (i.e. feeling prepared) in managing FASD in children under their care ($r = .320$, $p < .01$). Training in recognizing features associated with FASD and other alcohol related effects was significantly related to one of the outcome variables, provided care/services for someone with FASD ($r = .135$, $p < .05$) such that CWWs who reported training in recognizing features associated with FASD were more likely to report providing services for at least one client with FASD.

Training in making referrals for children suspected of having prenatal alcohol exposure was significantly related to having a higher level of self-efficacy to both identify children with possible FASD symptoms ($r = .242$, $p < .01$) and manage care of children with FASD ($r = .318$, $p < .01$). CWWs who reported training in making referrals for children suspected of having prenatal alcohol exposure were more likely to report higher levels of self-efficacy in identifying children with FASD symptoms and managing/coordinating care of children with FASD. Training

in making referrals for children suspected of having prenatal alcohol exposure was also significantly related to both outcome variables. CWWs who reported training in making referrals for children suspected of having prenatal alcohol exposure were more likely to report recognizing a client with FASD ($r = .245, p < .01$) and providing services for at least one client with FASD ($r = .233, p < .01$). As with the control variables, although these correlations were significantly correlated, the relation was weak.

Self-efficacy. Self-efficacy in identifying children with FASD was significantly related to years in job position/title ($r = .177, p < .01$). CWWs who reported more years in their job position were more likely to report higher levels of self-efficacy in identifying children with FASD. Self-efficacy in identifying children with FASD was also significantly related to both the training variables and both the outcome variables. CWWs who reported higher self-efficacy in identifying children with FASD were more likely to report training in recognizing FASD ($r = .432, p < .01$) and making referrals ($r = .242, p < .01$). As for the outcome variables, CWWs who reported higher self-efficacy in identifying children with FASD were more likely to report recognizing a client with FASD ($r = .200, p < .01$) and providing services for at least one client with FASD ($r = .275, p < .01$).

Self-efficacy in managing treatment of children with FASD was significantly related to both the training variables and both the outcome variables. CWWs who reported higher self-efficacy in managing treatment of children with FASD were more likely to report training in recognizing FASD ($r = .320, p < .01$) and making referrals ($r = .318, p < .01$). As for the outcome variables, CWWs who reported higher self-efficacy in identifying children with FASD were more likely to report recognizing a client with FASD ($r = .175, p < .01$) and providing services for

at least one client with FASD ($r = .267, p < .01$). As with the FASD Training, although these correlations were significantly correlated, the relation was weak.

FASD practice. Recognizing a client as having FASD was significantly related to years in job position/title ($r = .268, p < .01$). CWWs who reported more years in their job position were more likely to report recognizing a client with FASD. Recognizing a client as having FASD was significantly related with age ($r = .238, p < .01$). CWWs who were older were more likely to report recognizing clients with FASD. Interestingly, training in recognizing clients with FASD was not significantly correlated with recognizing a client as having FASD but was significantly related to training in referrals ($r = .245, p < .01$). Recognizing a client as having FASD was positively correlated with both self-efficacy variables: identifying children with FASD ($r = .200, p < .01$); and managing treatment of children with FASD ($r = .175, p < .01$). CWWs who reported recognizing a client as having FASD were more likely to report higher levels of the self-efficacy variables. Recognizing a client as having FASD was also significantly related to the other outcome variable, providing services for clients with FASD ($r = .653, p < .01$). CWWs who reported recognizing a client as having FASD were more likely to report providing services for at least one client with FASD. Although these correlations were significantly correlated, the relations were weak with one exception. The relation between recognizing a client as having FASD and providing services for clients with FASD had a moderate strength.

Providing services for clients with FASD was significantly related to years in job position/title ($r = .172, p < .01$). CWWs who reported more years in their job position were more likely to report providing services to at least one client with FASD. Providing services for clients with FASD was positively correlated with both training variables: recognizing clients with FASD ($r = .135, p < .01$); and making referrals for clients with FASD ($r = .233, p < .01$). CWWs

who reported providing services for at least one client with FASD were more likely to report training in recognizing clients with FASD and training in making referrals for clients with FASD. Providing services for clients with FASD was positively correlated with both self-efficacy variables: identifying children with FASD ($r = .275, p < .01$); and managing treatment of children with FASD ($r = .267, p < .01$). CWWs who reported providing services for at least one client with FASD were more likely to report higher levels of the self-efficacy variables. Providing services for clients with FASD was also significantly related to the other outcome variable, recognizing a client as having FASD ($r = .653, p < .01$). CWWs who reported providing services for at least one client with FASD were more likely to report recognizing a client as having FASD. Although these correlations were significantly correlated, the relations were weak with one exception. The relation between providing services for clients with FASD and recognizing a client as having FASD had a moderate strength.

Logistic Regression/Mediation Analyses

Table 4.7 presents the results of bootstrapped estimates, confidence intervals, and explained variances for tests of the indirect effects of self-efficacy when controlling for gender, race/ethnicity and years in position using the SPSS command PROCESS (Hayes, 2013).

Table 4.7
Bootstrapped Estimates, Confidence Intervals, and Explained Variances for Tests of Indirect Effects of Self-Efficacy When Controlling for Gender, Race/Ethnicity and Years in Job

Model	IV	DV	Effect of IV on M (a)	Effect of M on DV (b)	Direct Effects (c')	Indirect Effect (a x b) Confidence Intervals	
1	Training Variable 1	Practice Variable 1* $R^2 = .27^1$	1.30 (.16) ¹	.50 (.23) ²	.05 (.59)	Low .01	Up .138
2	Training Variable 2	Practice Variable 2* $R^2 = .13^1$.69 (.16) ¹	.78 (.24) ¹	2.69 (.27) ¹	Low .17	Up 1.09

Notes. Values within parentheses indicate standard error. Confident intervals that contain 0 are considered insignificant. $R^2 =$ Adjusted R^2 . *significant point estimate.¹ $p < .01$.² $p < .05$.

Table 4.8 presents bootstrapped estimates and confidence intervals for control variables in Model 1, using the SPSS command PROCESS (Hayes, 2013).

Table 4.8
Bootstrapped Estimates and Confidence Intervals for Control Variables in Model 1

Control	Coefficient	Confidence Intervals	
Gender	.10 (.56)	Low -.10	Up 1.21
Race/Ethnicity	-.08 (.32)	Low -.70	Up .55
Years in Position	.43 (.10) ¹	Low .23	Up .63

Notes. Values within parentheses indicate standard error. Confident intervals that contain 0 are considered insignificant. ¹ $p < .01$.

Table 4.9 presents bootstrapped estimates and confidence intervals for control variables in Model 2, using the SPSS command PROCESS (Hayes, 2013).

Table 4.9
Bootstrapped Estimates and Confidence Intervals for Control Variables in Model 2

Control	Coefficient	Confidence Intervals	
Gender	.81 (.83)	Low -.81	Up 2.43
Race/Ethnicity	-.17 (.37)	Low -.91	Up .56
Years in Position	.27 (.11) ¹	Low .05	Up .50

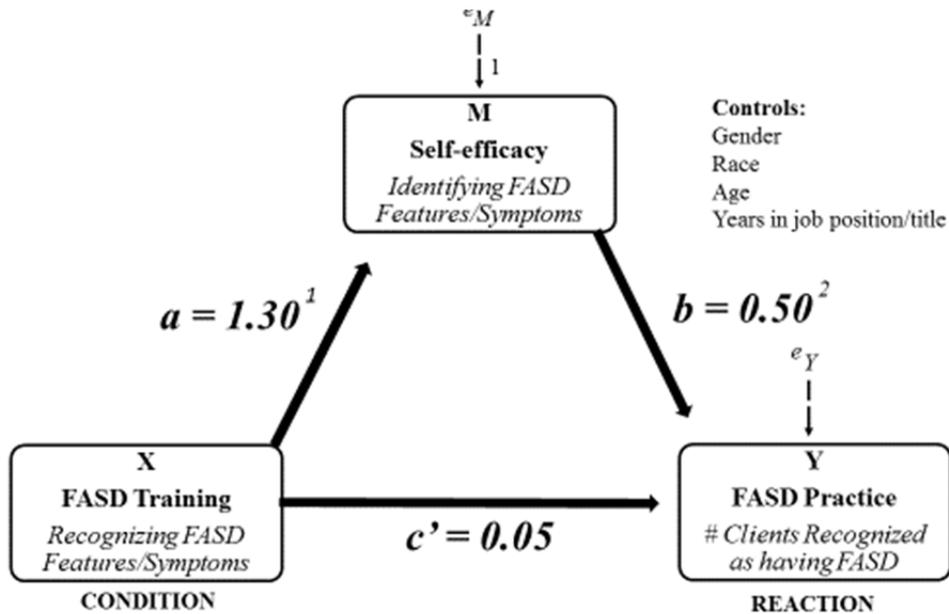
Notes. Values within parentheses indicate standard error. Confident intervals that contain 0 are considered insignificant. ¹ $p < .05$.

Model 1. FASD Recognition. Logistic regression using the PROCESS macro tested whether there is an indirect effect of self-efficacy level of preparedness to “identify FASD in children” on the relation between the training variable “recognizing FASD features” and the practice variable “recognized clients with FASD.” Although the direct effect between X and Y was not significant (path c’), the path from X to M is significant (path a) and from M to Y (path

b)(See Figure 4.2). The indirect effect of the mediator on the relation between X and Y (paths a*b) was significant (see Table 4,7) suggesting a full mediation effect.

Figure 4.1

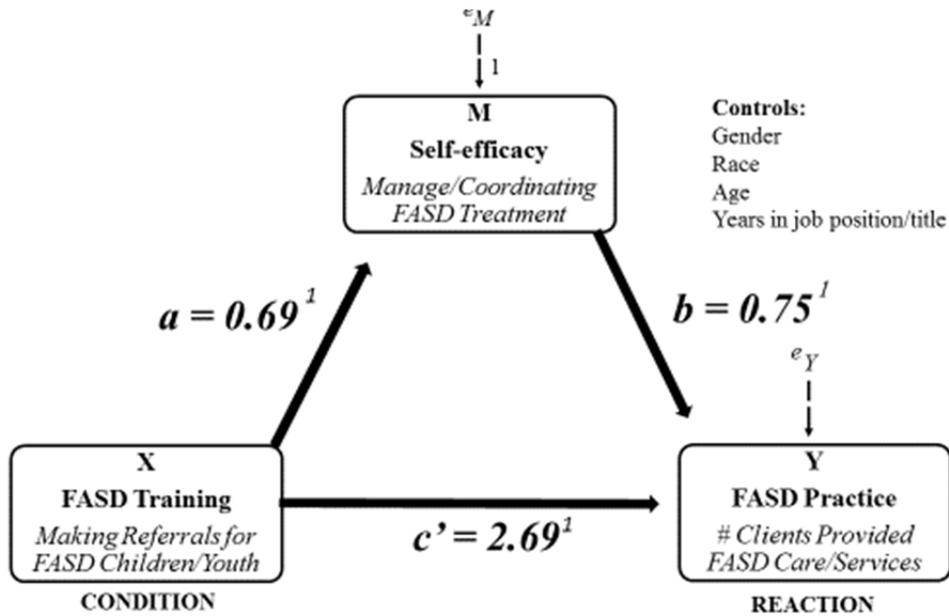
Mediation Model 1. Self-efficacy Influence on FASD Recognition



Source: Hayes, (2013) pg. 96; Adapted from Baron & Kenny, (1986) pg. 1176
¹= $p < .01$. ²= $p < .05$.

Model 2. Provide FASD Services. Logistic regression using the PROCESS macro tested whether there is an indirect effect of self-efficacy level of preparedness to “coordinate FASD services” on the relation between the training variable “FASD referral services” and the practice variable “provided FASD services” The direct effect between X and Y was significant (path c’), the path from X to M is significant (path a) and from M to Y (path b) is significant (See Figure 4.2). The indirect effect of the mediator on the relation between X and Y (paths a*b) was also significant (see Table 4,7) suggesting a partial mediation effect.

Figure 4.2
Mediation Model 2. Self-efficacy Influence on Providing FASD Services



Source: Hayes, (2013) pg. 96; Adapted from Baron & Kenny, (1986) pg. 1176
¹ = $p < .01$. ² = $p < .05$.

Summary of Findings by Research Question

Question 1: Do child welfare workers who receive training in FASD concepts engage in more FASD practices?

CWWs who reported training on recognizing features associated with FASD were not more likely to report recognizing a client as having FASD. CWWs who reported training on making referrals for children suspected of FASD were more likely to report providing care/services for these clients.

Question 2: Do child welfare workers who receive training in FASD concepts report higher levels of self-efficacy?

CWWs who reported training on recognizing features associated with FASD report higher levels of self-efficacy in identifying children with possible FASD symptoms. CWWs who

reported training in making referrals for children suspected FASD report higher levels of self-efficacy in managing/coordinating the treatment of children with FASD.

Question 3: Does self-efficacy mediate the relation between FASD training and practice?

A CWWs level of self-efficacy to identify children with possible FASD symptoms mediates the relation between training on recognizing features associated with FASD and the practice of recognizing a client as having FASD. A CWWs level of self-efficacy to manage/coordinate the treatment of children with FASD partially mediates the relation between training on making referrals children suspected FASD and providing care/services for someone with FASD. While there is a direct effect between training on making referrals and providing care, the analysis demonstrates that there is a significant indirect effect of self-efficacy on the relation.

Moderation analyses were also conducted using PROCESS (Hayes, 2013); however, an interaction between FASD training and self-efficacy was not significant. The moderation model and tables are presented in Appendix B.

CHAPTER 5

INTERPRETATION AND CONCLUSION

Findings from this study suggest that the role of self-efficacy acts as a mediator between CCW FASD training and practice. Statistical analyses demonstrated that self-efficacy mediates the relation between training and practice behavior in both models. This suggests that the effect of training on practice operates through self-efficacy. This section begins with a discussion of the sample characteristics and then discusses findings from the study in further detail.

Discussion of Child Welfare Worker Characteristics

Gender. The sample of CWWs was voluntarily recruited from child welfare agencies across the state of Tennessee. Results regarding gender are consistent with other national and state studies that the position of a CWW continues to be dominated by females (Barth, Lloyd, Christ, Chapman, & Dickson, 2008; Caley et al., 2008; National Association of Social Workers [NASW], 2004). The prevalence of CWWs among the sample who are female (91%) compared to national averages of 81% (Barth et al., 2008) and 84% (NASW, 2004) were slightly higher in representation. In state-to-state comparison to the first use of HPSP (Caley et al., 2008) among CWWs, the representation of females was also higher (82% vs. 91%) in this sample. The finding that female representation was higher in the second use of the HPSP by as much as 9% is interesting, particularly because the survey administration methods were different. For example, in the Caley et al. (2008) study the HSPS was administered via mail survey method and sample for this study was collected via online method. This is worth noting because the traditional mail survey method has been found to produce increased response rates among women over men

compared to web-based survey methods (Sax, Gilmartin & Bryant, 2003; Palmquist & Stueve, 1996; Tomsic, Hendel, & Matross, 2000). Further, there is some considerable time span between the most recent publication of national averages of females working in child welfare (Barth et al., 2008; NASW, 2004) and the Caley et al. (2008) study which reported results comparable to national averages (81%; 84% and 82%). Therefore, the results of this study using the same survey but a different data collection method which was administered approximately six years later, may suggest that females may now be as inclined as men to respond to online survey methods than past studies suggest (Sax et al., 2003; Palmquist & Stueve, 1996; Tomsic et al., 2000). This is also contrary to other studies suggesting that the traditional paper survey methods are more successful than online surveys in gathering increased response rates (Bothell, & Henderson, 2003; Manfreda, Bosnjak, Berzelak, Haas, & Vehovar, 2008; Roster, Rogers, Hozier, Baker & Albaum, 2007; Shih, & Fan, 2008). Further, if men respond at a higher rate on Web-based surveys, it would seem that non-response bias occurs with women (Llewellyn, 2003). However, in the child welfare setting, this study's findings suggest support for online surveys. It may be that over time the web is becoming a stronger survey tool, at least in the child welfare setting.

Race/Ethnicity. More than half of the CWWs were White non-Hispanic (68%), which is also somewhat representative of the population in the state of Tennessee (75%) and U.S. national average (63%) (U.S. Census Bureau, 2014). This also consistent with the national average of White CWWs (67%; Barth et al., 2008). Studies have found that Whites are more likely to participate in surveys than non-whites (Curtin, Presser, Singer, 2000; Groves, Singer, & Corning 2000; Voigt, Koepsell, & Daling, 2003). However, African Americans in the study (30%) were slightly over-represented in comparison to state prevalence (17%) and the U.S. (13%) national

average (U.S. Census Bureau, 2014). According to NASW (2004), the national average of African Americans among CWWs is 14%, which is also consistent with the national average. In state-to-state comparisons to the first use of HSPS (Caley et al., 2008) this study yielded a considerably higher representation of African American participants (30% vs. 5%). This over-representation may suggest that either African Americans are employed at a higher numbers in Tennessee or that there are potentially several other more complex factors which may have increased their response rate. According to NASW (2004), African Americans social workers are more likely to be employed in social services than other ethnicities. Further, nearly 60% of African American social workers report that they plan to remain in their current position over the next two years (NASW, 2004). Typically, the average length of time a CWW works in child welfare is less than two years (U.S. General Accounting Office [GAO], 2003). Another factor is that among African American social workers 80% have a BSW degree, but only 14% hold a MSW degree, and just 5% a doctoral degree (NASW, 2004). Therefore, it is likely that within this sample, African American CWWs are over-represented because they have stayed in the position/title of CWW longer because fewer advanced to supervisory positions due to not having obtained a MSW.

Age. Over half (62%) of the CWWs were between 30 to 49 years of age. This is similar to the national median age of 43 for CWWs (NASW, 2006). Older CWWs were more likely to be African American and younger CWWs were more likely to be White non-Hispanic. These rates are similar to another study (Bart et al., 2008). Among the African Americans who responded to the HSPS survey, the majority were older. Young (20-29) African Americans (14%) were least represented compared to young Whites (81%). Younger people have been found to be more likely to participate in surveys than older people (Van Selm, & Jankowski,

2006), particularly to online surveys (Shih & Fan, 2008). In this sample, however, it appears that middle age CWWs are more inclined to participate in surveys. It is not surprising that CWWs' age range was significantly correlated with recognizing clients with FASD. One explanation of this is that older workers have had more training opportunities than younger workers to acquire the skills necessary to recognize FASD. Another possible explanation is that having more work experience in general gives them a vast array of knowledge about all neurodevelopmental disorders, thus making it easier for them to identify a child with FASD. Further, perhaps older workers would be more likely to have had cases longer and know more about a client/family's history and if the child was possibly exposed to alcohol prenatally.

Years in job position/title. In regards to work experience, 37% of the CWWs had less than five years of experience, 34% had between 5-10 years and 29% had 10 or more years. It is not unexpected that CWWs who reported more years in their job position were more likely to report higher self-efficacy (i.e. feeling prepared) to identify FASD in children under their care, nor was it surprising that CWWs who reported more years in their job position reported being more likely to provide care/services for a client with FASD. This is because these workers may have particular protective factors established through their work environments which contributed to their retention. Studies on worker retention have found that workers who stay have a sense of commitment to mission of the organization, a relationship with their supervisor where they feel trust and respect, and feel they are developing new skills that will improve their performance (Fukofuka, 2014; Armstrong, Bluit-Fisher, Lopez-Newman, Paul, & Paul, 2009). Workers who feel professionally valued by having their work recognized and appreciated are also more likely to stay (Wold, 2010). In regards to CWWs specifically those who stay are more likely to have a higher degree of support from family and friends, strong level of commitment to child welfare,

and are better at coping with work related client issues or conflicts; therefore, they experience less feelings of burnout with the job (DePanfilis & Zlotnik, 2008). Another recent study reports that CWWs who remained on the job were more likely to feel that their abilities are effective in helping their clients (Dickinson & Painter, 2009)

Discussion of Findings

Question 1: Do child welfare workers who receive training in FASD concepts engage in more FASD practices? CWWs who reported FASD training were more likely to report engaging in practice behaviors in Model 1 but not Model 2.. Those who reported training on recognizing features associated with FASD were not more likely to report recognizing a client as having FASD. In addition, those who reported training on making referrals for children suspected of FASD were more likely to report providing care/services for these clients. These finding are inconsistent with other studies which suggest that CWWs knowledge gains following training did not change practice behaviors related to the training (Beckman & Mays, 1985; Curry et al., 2004; Alliger, Tannenbaum, Bennett, Traver, & Shotland, 1997).

Question 2: Do child welfare workers who receive training in FASD concepts report higher levels of self-efficacy? CWWs who reported training on recognizing features associated with FASD reported higher levels of self-efficacy. Although training was not found to affect practice, it was found to affect a worker's level of self-efficacy. CWWs who reported training on recognizing features associated with FASD report higher levels of self-efficacy in identifying children with possible FASD symptoms. Further, CWWs who report training in making referrals for children suspected FASD report higher levels of self-efficacy in managing/coordinating the treatment of children with FASD.

Question 3: Does self-efficacy mediate the relationship between FASD training and practice? CWWs level of self-efficacy to identify children with possible FASD symptoms was found to fully mediate the relation between training on recognizing features associated with FASD and the practice of recognizing a client as having FASD. CWWs level of self-efficacy to manage/coordinate the treatment of children with FASD was also found to partially mediate the relation between training on making referrals children suspected FASD and providing care/services for someone with FASD. The child welfare research has for some time examined possible mediators of training transfer. Early studies on training transfer found that it was more likely to occur when there are plans made to implement the training on the job (Austin & Pecora, 1985) and involve the workers in the development of the training (Denning & Verschelden, 1993). Later studies found that it was important to include supervisory support, collective coworker support (Liu & Smith, 2011), decrease caseload size, and provide application planning (Antle, Barbee, Sullivan & Christensen, 2009). Other training transfer factors have been found to include learning readiness (Antle et al., 2008), opportunity to perform new tasks on the job, support of peers in using new skills, and familiarity with content prior to training (Similarly, Wehrmann, Shin, & Poertner, 2002). Further, CWWs' level of self-efficacy has been investigated often in recent child welfare literature, particularly in retention and job performance (Chen, & Scannapieco, 2010; Cherry et al., 2014; Collins-Camargo, 2007) but not as much with training transfer. Cherry et al. (2014) recently promoted more study on self-efficacy, particularly in the domains of practice and training and Ellett (2009) further suggests that CCWs must believe in their ability in order to affect change.

This study adds to the child welfare literature by suggesting that techniques to improve a CWWs self-efficacy would also contribute to training transfer practically in the area of FASD.

For example, this study found that while only 9% of the CWWs reported having been trained in recognizing FASD, a higher percentage felt very to somewhat prepared (16%) to identify children with FASD and an even higher percentage (21%) reported recognizing one or more clients as having FASD. The results of the mediation analyses demonstrate that self-efficacy plays a significant role in the relation between training and practice. The child welfare setting is unique and, although 13% or less of learning has been found to transfer into practice (Curry et al., 2004), this study and others mentioned are proof that this percentage could be greater. Further, while Caley et al. (2008) original study using the HSPS survey appeared to suggest FASD training perhaps did not transfer in to practice, this study, through additional statistical analysis, was able to demonstrate that self-efficacy played a role in the relation between training and practice through mediation. These findings however, do not stand alone, but offer support to another study which found that self-efficacy mediates the training and practice relation (Holladay & Quiñones, 2003), therefore offering more evidence that further study is needed on these variables.

Strengths and Limitations

Strengths. This study has several strengths. First, the CDC Southeastern RTC data contains a sufficient sample of White and African American CWWs to make a meaningful contribution to the child welfare literature by examining workers by racial/ethnic subgroups. Second, the amount of missing data is less than 1%. Finally, this is a replicated study that was conducted in another state several years earlier. State-to-state comparisons can be made as well as changes over time.

Limitations. Although there are many strengths to this study, there are several limitations. While the sample is likely representative of a significant portion of CWWs (i.e.,

child protective services and foster care) in the U.S., the extent to which the findings will be generalizable to workers in other locations may be limited. The exact number of CWWs who had an opportunity to respond to the survey is unknown, thus limiting the accuracy of the response rate, however an approximation of the total number of workers working for the TN-DCS near that time was obtained so the response rate could at least be somewhat estimated. Also problematic was the lack of additional demographic variables which limits generalizability. The exclusion of additional variables is, however, justifiable to assure the CWW participants anonymity and increase participation in the study.

The practice items are somewhat problematic because the worker might have no clients with FASD, therefore regardless of training knowledge and self-efficacy this item is not an accurate measure. However, only 10% of the respondents in this data set could correctly identify all three features associated with FAS on item Q7. In the Caley et al. (2008) study only 18.2% could correctly identify all three features associated with FAS. Further, considering factors such as being asked how many clients the worker had in past 12 months, the average case load size, and the prevalence of FASDs in the child welfare system, by putting the categorical variables into a dichotomous (none or any), workers who have any skills and/or confidence should at least be able to report one case. Therefore, a zero score could more justifiably mean that they did not have adequate training to be able to recognize clients with FASD. In other words, it is statistically unlikely they did not have at least one client with FASD in the last 12 months. Finally, the survey data was self-reported, a common limitation in survey research.

Implications

Implications for social work practice. When training transfer works, CCW's are better equipped to improve the quality of life of children/youth living with FASD. Like all

neurodevelopmental disorders, early detection is crucial (Shannon & Tappan, 2011). Foremost, training CWWs to make every effort to obtain the biological mother's prenatal alcohol use history for a child coming into care can provide the worker with the critical information it takes to confirm prenatal alcohol exposure has occurred when dysmorphic facial features and other medical conditions are not present. In order for these standards to become part of the screening and assessment protocol, child welfare administrators need to set these standards and to require these trainings. This is especially true in cases of FASD. A CWW who is aware of the importance of early detection of FASD at an early age may be more inclined to place a child at risk outside the biological family home in order to decrease the risk of traumatic experiences and promote more favorable socioemotional development (Koponen, et al., 2009). When children with FASD do remain in the home or are re-unified, parental education (Stressguth et al., 2004), family support services (Coggins, 2011) and nutritional supplementation (Fuglestad et al., 2013) can significantly help to lessen the organic damage done by in utero exposure to alcohol.

CWWs are often called upon immediately when infants are diagnosed with FAS at birth; however, ND-PAE characteristics are often not apparent until the child is older (Howell et al., 2006). Fortunately, it is now possible with the advancement of biological markers, to detect in utero alcohol exposure early in cases where the infant does not present with FAS but prenatal alcohol use is suspected (Bearer et al., 2005; Goh et al., 2010). CWWs working with pregnant women whom they suspect may have consumed alcohol during their pregnancy can explain the benefits of early detection. Meconium testing (infant's first poop) can detect any in utero alcohol exposure during the second and third trimesters (Bearer et al., 2003; Chan et al., 2004; Goh et al., 2010). Further, CWWs who work with pregnant women who have consumed alcohol during their pregnancy may soon be able to help these women reduce the severity of FASD prior to

birth with nutrient supplementation. People who drink a lot of alcohol are at risk for choline deficiency, and higher levels of choline are actually needed during pregnancy (Zeisel, 2006). Alcohol use during pregnancy damages multiple areas of the brain and causes cell mutation and death (Wang & Bieberich, 2010); however, animal model studies have found that choline supplementation during pregnancy can counteract the decrease of cell death and protect the fetal cranium from damage during maternal drinking episodes (Bekdash, Zhang & Sarkar, 2013; Wang & Bieberich, 2010). Choline supplementation has also been found to enhance memory and learning during fetal development (Zeisel, 2006). Other nutrient supplementation studies have discovered that Vitamin D3 given before and during the 3rd trimester reduces learning deficits (Idrus, Happer, & Thomas, 2013).

CWWs who are informed about the benefits of nutrition post-birth for infants, toddlers and children with FASD can help educate and encourage parents and caregivers to ensure that these nutrients are received (Fuglestad et al., 2013). Studies have found that 50% of children with FASD do not meet the Recommended Dietary Allowance (RDA) or adequate intake for fiber, n-3 fatty acids, vitamin D3, vitamin E, vitamin K, choline, and calcium (Fuglestad et al., 2013). Post-birth supplementation with choline (Wozniak et al., 2013), vitamin D3 (Idrus et al., 2013), and n-3 fatty acids, has been shown in animal models to lessen the cognitive deficits of FASD (Fuglestad et al., 2013). Choline supplementation administration continuing into childhood is being studied for use as an antioxidant therapy to diminish alcohol damage (Wozniak et al., 2013). Omega-3, now advertised to support brain health on some milk cartons, has been found to restore glutathione levels and prevent oxidative damage caused by prenatal alcohol exposure (Patten, Brocardo, & Christie, 2013).

CWWs who are more knowledgeable about FASD can offer impacted families more support. Foster parents, in particular, report that it is difficult to get support from social workers when they lack knowledge about FASD because it makes it harder for them to make informed decisions (Mukherjee et al., 2013). Further, CWWs who are knowledgeable about the benefits of pharmacological treatment for children with FASD can significantly help guide families, educators, and others to what medications and supplements might help alleviate or reduce problematic behaviors. For example, the stimulants methylphenidate (Ritalin, Concerta), dextroamphetamine (Adderall), and lisdexamphetamine (Vyvance) have been found to be effective in treating attention problems in children with FASD (Choong & Shen, 2004; Oosterheld et al., 1998; Ozsarfaty & Koren, 2015). The antipsychotic risperidone is currently being studied as treatment for disruptive behavior in children with FASD and has been showing promise (Koren, 2015; Ozsarfaty & Koren, 2015).

FASD treatment approaches are still in development; however, through the borrowing of techniques used for the treatment of other NDDs, we have learned that traditional educational services and interventions do not completely meet the needs of children with FASD (Bertrand, 2009; Miller et al., 2014). In fact, to date there is no one intervention that has been found capable of meeting all the unique needs of children with FASD and their families (Coggins, 2011). Rather, interventions should emphasize social skills, treatment of co-occurring conditions (including medication management), advocacy in multiple settings (i.e., school, home and workplace) and appropriate developmental and educational services (Stressguth et al., 2004). Additionally, CWWs need to work collaboratively with family members, teachers, physicians and others to figure out exactly what the child's own unique needs are because FASD deficits can vary considerably in comparison from one FASD child to another (Coggins, 2011).

Implications for social work education. Schools of social work need to become a better training ground for FASD, which would help close the FASD knowledge gap and produce graduates more likely to identify and provide services for FASD-impacted families. Even though schools of social work are making research and evidence-based practice a more important part of BSW and MSW curriculums (Kessler, Gira, & Poertner, 2005), instructors first need to become more educated about FASD. It is commonly known that the most direct way to keep college and university instructors updated on the current state of research is the continuing cycle of textbook revision. Presently (and for some time), the social work course linked to CSWE Policy and Accreditation Standards (EPAS), which covers prenatal alcohol use and its effects on the fetus, is the course Human Behavior and the Social Environment (HBSE). Three commonly used textbooks for HBSE are Zastrow & Kirst-Ashman (2015), which is in its 10th edition; Ashford & Lecroy (2013), in 5th edition; and Rogers (2013), in 4th edition. Unfortunately, even the newest editions of these textbooks only mention FAS and not FASD. Moreover, treatment options for FAS are not given. In fact, Ashford & Lecroy (2013) does not cite any recent literature studies about prenatal alcohol exposure beyond 2000 (i.e., Hannigan & Armant, 2000). Rogers (2014) predominantly only cites the CDC's (2006) website, and the latest literature study cited is from 2004 (Lupton et al., 2004). Zastrow & Kirst-Ashman's (2015) later edition does include newer citations but it is of other textbooks (i.e., Yarber & Sayad, 2013; Shaffer & Kipp, 2010) and not of specific studies regarding the topic. Zastrow & Kirst-Ashman (2015) does provide some mention of the non-dysmorphic characteristics; however, it is referred to as fetal alcohol effects (FAE) rather than new term ND-PAE now being used in the DSM-5 (APA, 2013). Even the outdated diagnostic term ANRD (Stratton et al., 1996; Sampson et al., 1997) previously used before ND-PAE to describe the cognitive, behavioral and social problems along the mild to

moderate end of the FASD spectrum (APA, 2013), goes unmentioned in any of the three textbooks. Therefore, until HBSE textbooks are updated appropriately, instructors and students will not have adequate text material that could provide them awareness of this enormous individual, family, societal and social work issue. It is hoped, that through publication of this dissertation manuscript that more awareness will emerge among social work educators and more importantly the authors of not only HBSE textbooks but other social work textbooks. Further, better prepared undergraduate and graduate level social work students going into to child welfare would take a generous amount of burden off the child welfare system.

Implications for social work policy. An aim of this study is to provide child welfare and others a way to enhance the training transfer process of FASD concepts. However, the ultimate goal is that improved training transfer will result in better recognition of FASD and the provision of services for children with FASD. Should this work facilitate these aims and goals, there are emerging policy changes that could contribute to even greater outcomes not only for child and families impacted by FASD but for other children in general involved with the child welfare system. Every Child Matter's (ECM) is a government response to national mounting concerns about child welfare agencies needing better assessment and communication tools to protect children in their care (Peckover, White, & Hall, 2008). The ECM is a proposed data base system, which could be used by child welfare professionals to indicate their involvement with a child and areas of concern (Peckover et al., 2008). Pilot studies have shown that it could improve information sharing and communication and therefore facilitate prompter joint action by an agency (Peckover et al., 2008). The inclusion of FASD in this data base could improve communication across agencies and draw attention to FASD as a concern.

It is evident that before any additional policy guidelines can be proposed to child welfare agencies regarding FASD training and practice that a broader examination of the children/youth and families impacted by FASD in the child welfare system is warranted. From what we do know, the first step should begin with improving training on FASD assessment and referral for services. In order to do this social workers must advocate for policy changes that will allow for the creation of or tailoring of training programs which increase workers self-efficacy.

Implications for social work research. Identifying self-reported preparedness (self-efficacy) as a significant mediator can help trainers develop trainings that focus on building preparedness or confidence. This knowledge is valuable not only to the social work profession, but also to healthcare providers and other parties interested in FASD training modules. It is hoped that this information could be used to assist in the enhancement of required information and skill sets needed for better FASD recognition, referral, and provision of services. In particular, the findings from this study are very important for prevention and early intervention purposes associated with the children/youth in the foster care system who suffer from FASD. This study's results also further contribute to a stronger base of FASD knowledge pertaining to frontline CWWs, particularly practices utilized for meeting the needs of children/youth with FASD. Other agencies that may benefit from this study are state human resource agencies, children's homes, foster parents and adoptive parents of foster children.

Conclusions

FASD is a lifelong disorder and children with FASD ultimately become adults with FASD. According to Hurlburt et al. (2004), children who are able to remain in their home or return to home access services less, despite high levels of need. Therefore, CWWs have a small window of opportunity to educate families about the long-term needs of persons with FASD. The

findings from this study suggest that CWWs with higher self-efficacy in ability to provide services to children with FASD are more likely to provide services to FASD-impacted families. Therefore, more workers who become confident in providing FASD services should increase the number of workers in the field who are engaging in desired FASD practices behaviors, particularly in regards to service provision. This then leads to more children with FASD receiving needed services. In the long term this may lead to greater understanding by families that they should continue to reach out for services long after child welfare involvement has ceased.

This dissertation study used a mediation model to examine the role of self-efficacy on CWW FASD training and practice. Findings suggest that frontline CWWs received very little training on FASD concepts; however, despite the lack of training, years on the job had an effect on self-efficacy, which may suggest self-efficacy may have an effect on retention. This study makes a unique contribution to both the child welfare and FASD literature. Findings from this study can be used by researchers, practitioners, and policymakers to better understand FASD and the role of self-efficacy in improving the recognition of and services provided to children with FASD in the child welfare system.

The number of children in foster care today is astounding and learning that one of the largest placement factors for children in foster care is parental substance use/abuse seems like an overwhelming problem. However, CWWs who are more aware of children/youth with fetal alcohol spectrum disorders (FASDs), their unique services needs and available strategies to help them can improve their outcomes. Foremost, better training may bring about much better outcomes with a correct diagnosis. Additionally, as this study suggests, these children, do not need to have the poor outcomes often associated as a result of having FASD. FASD training

which includes techniques to build self-efficacy can better assure CWWs will have the tools to provide better FASD services; thus, the lives of these children can and would be most assuredly improve.

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APPENDIX A

Human Services Professional Survey (HSPS) Modified from (Caley et al., 2008)

1. Please select your gender: Male Female
2. What is your age range?
 20-29 50-59
 30-39 60-69
 40-49
3. What is your race?
 White non-Hispanic American Indian/Alaska Native
 African American Native Hawaiian/Pacific Islander
 Hispanic Other
 Asian
4. How many years have you been in your job position/title?
 1 year or less
 1-5 years
 5-10 years
 10-15 years
 15-20 years
 20-25 years
 25+ years
5. The prevalence rate of fetal alcohol syndrome (FAS) in the U.S. is:
 1 in 10
 1 in 100
 1 in 1,000
 1 in 10,000
 1 in 100,000
6. FASD occurs at similar rates in all socioeconomic groups of society.
 Agree
 Disagree
 Don't know

7. A person must exhibit all three of the following facial features to be diagnosed with FAS:
- Low set ears, large eye openings, large forehead
 - Small palpebral fissures, smooth philtrum, thin upper lip**
 - Large palpebral fissures, smooth philtrum, thin upper lip
 - Large forehead, flattened cheeks, small eyes
 - Thin upper lip, distinct philtrum, ectropion

During the last 12 months, how many clients have you?

8. Suspected as possibly having FASD?
- None
 - 0 to 50
 - 50 to 100
 - 100 to 150
 - Greater than 150
9. Recognized as having FASD?
- None
 - 0 to 15
 - 15 to 30
 - 30 to 45
 - Greater than 45
10. Referred to confirm a diagnosis of FASD?
- None
 - 0 to 15
 - 15 to 30
 - 30 to 45
 - Greater than 45
11. Provided care/services for someone with FASD?
- None
 - 0 to 30
 - 30 to 60
 - 60 to 90
 - Greater than 90

Have you received formal training in any of the following?

12. Recognizing features associated with FASD and other alcohol-related effects Yes No
13. Effects of fetal alcohol exposure on the developing fetus Yes No
14. Methods to screen children suspected of having prenatal alcohol exposure Yes No
15. Identifying risk factors associated with fetal alcohol exposure Yes No
16. Interventions to prevent secondary FASD disabilities Yes No
17. Making referrals for children suspected of having prenatal alcohol exposure Yes No
18. Assisting clients in assessing local FASD-related resources Yes No

In general, how prepared do you feel to:

19. Identify children with possible FAS or FASD symptoms?
- Very unprepared
 - Somewhat unprepared
 - Prepared
 - Somewhat prepared
 - Very prepared
20. Manage/coordinate the treatment of children with FAS or FASD?
- Very unprepared
 - Somewhat unprepared
 - Prepared
 - Somewhat prepared
 - Very prepared

APPENDIX B

Moderation Results

Table B1

Moderation results for Model 1. Recognition of FASD Features/Symptoms

	Coefficient (SE)	z	p	Confidence Interval	
Constant	-3.09 (1.29)	-2.39	0.02	Low -5.62	Up -0.56
Training	0.53 (0.23)	2.30	0.02	Low 0.08	Up 0.98
Self-efficacy	0.72 (0.94)	0.77	0.44	Low -1.12	Up 2.55
Interaction (Training X Self-efficacy)	-0.69 (0.72)	-0.95	0.34	Low -2.10	Up 0.73
Gender	0.11 (0.57)	0.19	0.85	Low -1.01	Up 1.23
Age	0.34 (0.18)	1.84	0.07	Low -0.21	Up 0.70
Race/Ethnicity	-0.17 (.33)	-0.53	0.59	Low -0.82	Up 0.48
Years on the job	0.26 (0.12)	2.19	0.03	Low 0.03	Up 0.50

Table B2
Moderation results for Model 2. Provide FASD Care/Services

	Coefficient (SE)	z	p	Confidence Interval	
Constant	-4.22 (1.82)	-2.31	0.02	Low -7.80	Up -0.63
Training	0.85 (0.26)	3.35	< 0.01	Low 0.36	Up 1.36
Self-efficacy	0.94 (0.50)	1.89	0.06	Low -0.04	Up 1.92
Interaction (Training X Self-efficacy)	-0.47 (0.49)	-0.95	0.34	Low -1.42	Up 0.49
Gender	0.75 (0.82)	0.90	0.37	Low -0.87	Up 2.36
Age	0.17 (0.22)	0.80	0.43	Low -0.25	Up 0.60
Race/Ethnicity	-0.17 (0.37)	-0.46	0.64	Low -0.91	Up 0.56
Years on the job	0.19 (0.14)	1.40	0.16	Low -0.08	Up 0.47

APPENDIX C

IRB Approval



February 19, 2016

Kristy M. Durkin, MSW
School of Social Work
The University of Alabama
Box 870314

Re: IRB # EX-16-CM-023 "The Influence of Self-efficacy on Fetal Alcohol Spectrum Disorder Training and Practice in Child Welfare Workers"

Dear Ms. Durkin:

The University of Alabama Institutional Review Board has granted approval for your proposed research.

Your protocol has been given exempt approval according to 45 CFR part 46.101(b)(4) as outlined below:

(4) Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.

Your application will expire on February 18, 2017. If your research will continue beyond this date, complete the relevant portions of Continuing Review and Closure Form. If you wish to modify the application, complete the Modification of an Approved Protocol Form. When the study closes, complete the appropriate portions of FORM: Continuing Review and Closure.

Should you need to submit any further correspondence regarding this proposal, please include the assigned IRB application number.

Good luck with your research.

Sincerely,



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