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An Assessment of the Perceptions of School Professionals Regarding Prenatal Substance Exposure

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AN ASSESSMENT OF THE PERCEPTIONS OF SCHOOL PROFESSIONALS REGARDING PRENATAL SUBSTANCE EXPOSURE

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APPROVAL OF THESIS

We, the faculty supervising the work of Aliyah Vicia Mickey, affirm that the thesis, *An Assessment of the Perceptions of School Professionals Regarding Prenatal Substance Exposure*, meets the high academic standards for original scholarship and creative work established by the School Psychology Program and the College of Education. This work also conforms to the editorial standards of our discipline and the Graduate College of Marshall University. With our signatures, we approve the manuscript for publication.

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ABSTRACT

Children who have been prenatally exposed to drugs are at higher risk of experiencing academic and behavioral difficulties as they become students. Current research is limited on the specific long-term social-emotional, behavioral, and cognitive effects for school-aged children. As these children advance into the schools, they need knowledgeable school professionals and evidence-based interventions that will support their academic and behavioral well-being. The purpose of the current investigation served to gather information regarding school professionals' experiences, knowledge, and self-efficacy related to prenatal substance exposure of students. The results from the survey indicated school professionals are reporting having general knowledge of facets of prenatal substance exposure. However, despite this knowledge, the majority of school professionals reported low self-efficacy on all items. Additionally, there was no significant relationship between school professionals' years of experience and self-efficacy ratings. Lastly, school professionals are requesting training regarding the global topic of prenatal substance exposure to increase current knowledge and feelings of self-efficacy. The results of this survey can serve as a guide for future training based on participant responses.

CHAPTER 1

To fully recognize the extent of the substance use epidemic in our nation requires acknowledgement of the detrimental impact of affected children. When a pregnant woman intakes a substance, it directly crosses the placenta and the fetus is exposed (Behnke & Smith, 2013). Behnke and Smith explain how prenatal drug and alcohol exposure results in adverse effects to children's cognitive and behavioral development at varying degrees, and these impacts are not always detectable at birth. As children develop, the cognitive and behavioral effects that progress can manifest in different ways. Children prenatally exposed to substances become students that have to face these challenges in addition to the demands of academia (Behnke & Smith, 2013). It is recommended that the school environment be a source of support for these children. To assist in their preparation, schools need to be provided with evidence-based research and best practices for meeting the needs of this growing population of students. The school community should be involved in the development of educational trainings or modules. Before these modules can be developed, input is required to see what they are experiencing, what they already know, and what additional information or resources they seek. The following review of literature will discuss the short-term and long-term effects of prenatal substance exposure in regard to multiple substances (including, alcohol, opioids, nicotine, and cocaine). Furthermore, the literature review will discuss the effects of prenatal substance exposure on students and the preparedness (or lack thereof) of schools in handling this specific population.

LITERATURE REVIEW

Precursors of Prenatal Substance Exposure

In recent years, a substance use crisis has taken place throughout communities in the United States. This epidemic has brought widespread attention towards addiction and substance

use as a whole. Subsequently, prenatal substance exposure rates have concurrently increased with this epidemic. According to the National Survey on Drug Use and Health, in 2017, 8.5% of pregnant women were reported to use illicit substances, 11.5% consumed alcohol, 14.7% used tobacco products, and 1.4% of pregnant women reported opioid use (SAMHSA, 2018). The rate of infants born with Neonatal Abstinence Syndrome in the U.S. were reported as 10.7 per 1,000 births.

West Virginia is experiencing its own crisis relating to prenatal substance use and exposure. In 2017, 14% of infants born in West Virginia were prenatally exposed to drugs (Mullins, 2017; West Virginia University Birth Score Office, 2018). In 2017, the West Virginia Department of Health and Human resources reported that the rate of infants born with Neonatal Abstinence Syndrome (per 1,000 births) as 50.6 (Department of Health and Human Resources, 2018). In Lincoln County, West Virginia, rates were reported to be as high as 10.6% of all live births (Department of Health and Human Resources, 2018).

The true count of infants born prenatally exposed to drugs is hard to determine because of the discrepancies of maternal use rates and identification limitations. These limitations are due to varying methodology and inconsistency in screening/reporting, as well as the high occurrence of comorbid drug use in women who use drugs while pregnant (Behnke and Smith, 2013). Currently, the most common methods of maternal substance use are self-reports and biological specimens (Behnke & Smith, 2013; Moe & Slinning, 2002). Self-reports can be inaccurate due to the truthfulness and accurate recall of answers. The validity of self-reports is questioned due to the inaccuracy of the reports, and most measures obtained from self-reports will underestimate actual prevalence (Chiandetti, et al., 2017). Heavy substance use in combination with polysubstance use of the reporters make it difficult to obtain “reliable accounts of the amount,

time, and frequency of substance use" (Moe & Slinning, 2002). Methods of biological specimens mostly include urine samples. However, the information obtained from this method only provides record of drug use from 72 hours at the most (Moe & Slinning, 2002). Meconium sampling of newborns is another method used to assess the presence of substances. This method provides information from 20 weeks in the gestational period. A limitation of this method, however, is that it does not report timing or dose of the substance used. The high occurrence of comorbid drug use rates among pregnant women makes it harder to identify exactly what drugs are affecting the infant and how they are affecting the infant as well (Behnke & Smith, 2013; Minnes, Lang, & Singer, 2011). Chiandetti et al. (2017) compared reports obtained from self-reports (i.e., questionnaires) with those obtained via biological samples. Upon review, it was found that self-reporting measures significantly underestimate the prevalence of prenatal substance use and thus, biological samples should always accompany self-reports and questionnaires.

Prenatal Effect of Substance Exposure

Several factors influence the impact substances have on the fetus. The infant's genetics, the developmental stage of the fetus at the time of exposure, and the amount of the substance ingested affect later outcomes with the child (Ross, Graham, Money, & Stanwood, 2015; Minnes et al., 2011; Chiandetti et al., 2017). In utero, the placenta acts as an active metabolizer for drugs to enter the bloodstream. When the mother ingests a drug, it often directly crosses the placenta, bypassing the placental barrier (Behnke & Smith, 2013). This interaction often affects the infant's genetic make-up. Additionally, the developmental stage of the fetus may have a role in how ingested substances affect the fetus. The developing brain is plastic, malleable, and fragile (Ross et al., 2015). When a pregnant woman ingests substances, their harmful agents are often

disrupting usual development, including the central nervous system. The younger the fetus and the earlier developmental stage the fetus is in, the more adaptable and susceptible it is to the influence of substances (Ross et al., 2015; Minnes et al., 2011). Lastly, lower amounts of exposure of substances have produced lower adverse effects for infants prenatally and postnatally (Ross et al., 2015; Minnes et al., 2011).

Additionally, women who often abuse these substances are also usually experiencing harmful environmental and emotional influences as well (Moe & Slinning, 2002). Stress, high-risk behaviors, domestic abuse, lack of resources for prenatal care expose the women, and consequently, the fetus, to additional harm (Minnes et al., 2011). Not only can these environmental effects negatively impact the fetus during pregnancy, but it is likely that they continue to be present after birth.

Short Term Effects of Prenatal Substance Exposure

Short-term effects that have been observed perinatally (the period right after birth) include the development of an abstinence syndrome and possible interruptions of breastfeeding practices, dependent on physician recommendations (Behnke & Smith, 2013). Growth and brain development are both affected by prenatal exposure to substances. Small head circumference is also indicative of a significant effect on an infant's brain structure (Mactier, 2013). Other indicators of prenatal substance exposure include low birth weight and intrauterine growth disturbances (Moe & Slinning, 2002). Low birth weight is a risk factor indicative of fetal tobacco, alcohol, and opiate exposure (Behnke & Smith, 2013). In regard to neuro behavior, muscle tone abnormalities, autonomic regulation, and impaired orientation have been suggestive of prenatal nicotine exposure.

In cases involving an increased and continued substance intake throughout pregnancy, prenatal exposure can be identified at birth or within the first few days after an infant is born. Withdrawal symptoms can often be seen in infants born addicted to opioids, methadone, and other substances (Mullins, 2017). Neonatal Abstinence Syndrome (NAS) involves the physiological and neurological symptoms associated with the sudden loss of a drug in an infant's system (Chasnoff & Gardner, 2015). NAS is commonly associated with withdrawal from opioids, although other drugs such as benzodiazepines can also cause symptoms. Criteria for NAS exposure involves clinical symptoms and it is not only limited to cases requiring pharmacological treatment (Mullins, 2017). As stated previously, in the United States, per 1,000 births, 10.7 of those were estimated to exhibit NAS (SAMHSA, 2018). In West Virginia, these numbers are significantly larger (50.6 per 1,000 births) (Department of Health and Human Resources, 2018). NAS is commonly seen in infants prenatally exposed to opiates; however, NAS can include neonatal withdrawal from many substances (Chasnoff & Gardner, 2015; Maguire et al., 2016). Symptoms include irritability, seizures (clinically called tremors), sweating, increased muscle tone and activity, feeding problems, and diarrhea (Chasnoff & Gardner, 2015; Behnke & Smith, 2013). Neonatal abstinence syndrome usually involves an extended hospital stay and medicinal treatments. It is important to note the distinction between prenatal substance exposure and NAS. Neonatal Abstinence Syndrome refers solely to the withdrawal symptoms that may appear within the first few days after birth to an infant prenatally exposed to substances (Chasnoff & Gardner, 2015). However, prenatal substance exposure refers to the multitude of short-term and long-term effects that can be experienced due to the intake of substances by a pregnant woman (Behnke & Smith, 2013). These effects may present within the first year, during school age, or not at all (Chasnoff & Gardner, 2015; Behnke & Smith, 2013). In

West Virginia, for example, 14% of infants were prenatally exposed to substances. However, only 5% of those identified with prenatal substance exposure tested positive for NAS (Mullins, 2017). This literature review and subsequent project focuses mostly on the effects of prenatal substance exposure.

Long Term Effects of Prenatal Substance Exposure

Long-term physiological influences include negative effects on growth, brain development, and behavior. A cross-sectional study found significant differences in children with prenatal substance exposure compared to their same age peers (Pulsifer, Butz, Foran, & Belcher, 2008). Children affected by prenatal exposure scored significantly lower on measures of language, school-readiness, impulse control, and visual attention span/sequencing. At least 40% of the sample scored at least one standard deviation below the mean, indicating an IQ of less than 85. Executive functioning problems occur at higher rates in children with prenatal exposure compared to same-age peers. In a study of 68 children, 25 of which were prenatally exposed to alcohol, cognitive scores were significantly lower in achievement, sequential processing, and the mental processing composite (Coles et al., 1991).

Impulsivity and attention problems have been identified in children prenatally exposed to nicotine, alcohol, opiates, and marijuana (Behnke & Smith, 2013). In a study of 24 prenatally exposed children and a control group of 25 children, exposed children had a higher rate of attention deficit hyperactive disorder (ADHD) symptoms (Jaeger, Suchan, Schölmerich, Schneider, & Gawehn, 2015). Assessment measures included parent ratings, neuropsychological methods, and electrophysiological methods.

Externalizing behaviors (e.g., tantrums, outbursts, defiance) are also correlated with prenatally exposed children (Dixon, Kurtz, & Chin, 2008). These children are at an increased

risk of violent or aggressive behaviors such as fighting, stereotypy, and self-injurious behaviors. The presence of these behaviors subject a child to isolation, suspensions or expulsions, or even trouble with the criminal justice system.

Other areas aside from cognitive and behavioral deficits have been found, as well. Children with prenatal substance exposure have exhibited higher rates of adaptive behavior deficits than children without the history of exposure (Behnke & Smith, 2013). Aspects of adaptive behavior include living skills, communication, and socialization (Whaley, O'Conner, & Gunderson, 2001).

With infants and children in this demographic, the postnatal environment can also have ongoing adverse effects long after they have departed from the prenatal environment. Children with a history of prenatal substance exposure are more likely to be faced with environmental risk factors, including abuse, neglect, and family changes, which put them at an even greater disadvantage for learning and social development (Lowe et al., 2017; Watson & Westby, 2003). Long-term effects are confounded by familial variables such as poverty, unstable home life, and substance use in the family (Lowe et al., 2017; Mactier, 2013). Multiple studies have found vital covariates of the environment of children prenatally exposed to substances and socioeconomic status (Ross et al., 2015). The combination of the biological effects from the exposure and a harmful postnatal environment are predictive of negative child outcomes later in life (Dixon et al., 2008). In later adolescence, a child's substance-related deficits in combination with a maladaptive environment can increase the odds of "substance abuse, psychopathology, and involvement with the criminal justice system" (Minnes et al., 2011).

Challenges of determining long-term effects. Predicting the outcomes of prenatal exposure can be a complex process and as a result, research on the long-term effects of

prenatally exposed children has been limited (Dixon et al., 2008). Longitudinal studies are complicated to design due to difficulties with the initial identification of these children and monitoring their development through the years. One article outlined that a successful study should include assessment of the key effects of substances on a developing fetus, the behavioral and cognitive outcomes that have been hypothesized, and a sufficient number of participants in order to achieve statistical power (Minnes et al., 2011). Researchers must also control for attrition throughout the period of the study in order to maintain an adequate number of participants, as well. However, several valid studies have been designed to find these long-term effects (Minnes et al., 2011).

Prenatally Exposed Children and Schools

Schools offer an environment for children to achieve academically and to gain life skills that will put them on the path toward a successful future. However, the increasing cognitive, academic, and social demands of the school environment can hinder children that are already facing deficits.

Legal obligation to provide support. As discussed earlier, the long-term effects of prenatal substance exposure often persist into school age. Children who enter school with challenges and who are at risk for escalating problems have a legal right to be supported by schools and exposed to an atmosphere that encourages healthy development. The Individuals with Disabilities Education Act (IDEA 2004) is a federal law requiring schools to serve the educational needs of students. As a result, school systems have services in place to combat these difficulties, not only through special education, but through individualized services as well (August, Piehler, & Miller, 2018).

Special education and prenatal substance exposure. In the statutes of IDEA 2004, currently, there are no procedures specific to special education rights of students affected by prenatal substance exposure. However, these students are still afforded a free, appropriate, and public education through IDEA 2004 to address their individual difficulties. Multiple studies have shown an increased special education need for this population.

Prenatal substance exposure has been found to be a predictor of special education placement as early as Head Start (Sinclair, 1998). Sinclair's 1998 study of 145 Head Start children found that 47% of the substance-exposed group met classification for emotional and behavioral disorders. Only 35% of the control group met classification requirements. Additionally, 53% of the substance-exposed group were placed in special education kindergartens compared to 29% of the control group (Sinclair, 1998). Another study found an increase in IEPs and support services for school-aged children identified with prenatal cocaine exposure (Levine et al., 2008). The results showed 16.5% of the children in the prenatal cocaine exposure group received special education services compared to the national average of 6.8%. Fill et al. (2018) conducted a similar study comparing the special education needs of Tennessee school-aged children with a history of Neonatal Abstinence Syndrome (NAS) and a control group. Findings suggest that children with a history of NAS are more likely to be referred for special education and meet eligibility for individualized services (Fill et al., 2018).

It is important to note that students can receive support without special education and an Individualized Education Plan (IEP). Support for Personalized Learning (SPL), Response to Intervention (RTI), and Multi-Tiered Systems of Support are frameworks designed to support students independent of the special education pathway. These approaches provide opportunities

for students to receive intensively increasing and individualized support for academic and/or behavioral difficulties (August et al., 2018).

Identification of students. Before interventions can begin, schools need measures in place to identify these students. Currently, Child Find is a tenet of IDEA 2004 legally requiring all school districts to seek out, identify, and evaluate all students with disabilities, regardless of the severity or nature of the disability. Developmental assessments and screenings should include provisions for children affected by prenatal substance exposure (Pulsifer et al., 2008). Additionally, developmental records, early intervention program documentations, and preschool records can provide sufficient information regarding a child's developmental and medical history. The importance of interagency communication and partnership is especially important in this stage.

It can be difficult to identify children who are experiencing the effects of the prenatal exposure later in life. This system level struggle is partly attributed to the fact that hospitals, social services, schools, etc. operate as silos and don't typically promote interagency communication. The National Center on Substance Abuse and Child Welfare (NCSACW) addressed these concerns:

> From initial hospital reporting of SEI [substance exposed infant] births, to child protective services (CPS) recording referrals from hospitals, to the drug and alcohol treatment system capturing referral sources and the presence of prenatally exposed children, and on to the early childhood and developmental disabilities systems recording developmental assessments of SEIs—the information gaps at each of these hand-off points are substantial. Such gaps weaken the ability of the systems to work together to track children and families as they move from agency to agency. (Young, et al., 2009)

Furthermore, when children matriculate into schools, the school systems are lacking this critical information in their records. Incomplete records could be due to the aforementioned systemic gaps. However, the lack of student history may also be due to issues with the

identification of prenatal substance exposure following birth (Behnke & Smith, 2013; Chiandetti et al., 2017; Moe & Slinning, 2002). Subsequently, the stigma of the identification may also be a hindrance for parents and could explain resistance to reveal this information (Thompson, Levitt, & Stanwood, 2009). Thus, when these children begin displaying struggles related to academics and behavior, a lack of accurate developmental history makes it harder for the schools to accurately assess and assist these students.

Academic interventions and support. Currently, the research shows children affected by prenatal substance exposure are at-risk for long-term academic and behavioral effects. However, the research is limited on successful academic and behavioral interventions specific to this demographic.

Establishing a supportive school environment for students who have been prenatally exposed to substances must include implementing interventions to address their academic and behavioral deficits. Children who were prenatally exposed to substances are at higher risk for learning and attention deficits (Nygaard, Slinning, Moe, & Walhovd, 2016). Thus, they require developmental monitoring and interventions to promote their academic success (Pulsifer et al., 2008). Watson, Westby, and Gable (2007) stress the importance of intensively and systematically developed interventions. The developmental age of the child or children in question should be taken into consideration and interventions should be designed with their specific deficits in mind. The Office of Special Education Programs (2018) suggests language and literacy interventions in order to promote language and literacy skills. Similarly, speech and language therapy provide opportunities for students to work one-on-one or in small groups with a trained specialist. Some interventions can be applied to the classroom, others are more effective

in small groups, and some may be more appropriate as individualized interventions (Office of Special Education Programs, United States Department of Education, 2018).

Behavioral interventions and supports. Though these students may experience academic deficits, behavioral problems are prominent, as well. A study of 8-year-old children affected by prenatal opioid and poly-substance exposure reported significant internalizing, externalizing, social, and attention problems (Nygaard et al., 2016). Multiple studies have supported these findings (Jaeger et al., 2015; Office of Special Education Programs, United States Department of Education, 2018). Successful behavior-based interventions need to be developed specifically for students who are experiencing the long-term effects of substance exposure because of the nature of the deficits.

It is pertinent to identify whether students that will be placed in these interventions are suffering from knowledge deficits or performance deficits (Watson et al., 2007). A knowledge deficit means that they do not have the information or skill for a task. A performance deficit indicates that the student has the knowledge and skill to perform the task; however, they are not displaying these at the appropriate times (Watson et al., 2007). Knowing the nature of the deficits will assist in selecting appropriate and relevant interventions.

The most common issues with school-age children that have been prenatally exposed to substances include emotional regulation and executive functioning deficits (Nygaard et al., 2016; Sandtorv, Hysing, Rognlid, Nilsen, & Elgen, 2017). In their 2007 study, Watson, Westby, & Gable list several evidence-based interventions that could be useful for these affected students. For example, students that display hyperactive behaviors may have trouble remembering things, completing previously learned tasks, being on time, or selecting the appropriate behavior for a given situation. The Office of Special Education Programs recommends interventions that have

been successful for students with Attention-Deficit Hyperactive Disorder (ADHD) to help prenatally exposed students suffering from similar symptoms. Developing nonverbal mental representations of tasks and providing a structured, routine environment are evidence-based methods for targeting those deficits (Watson, Westby, & Gable, 2007).

To provide environmental structure, functional routines and structured teaching are useful tools (Petrenko, 2015). Additionally, an enriching environment would be beneficial for all students, including prenatally exposed children. Providing clear and predictable instructions assists the children presenting emotional dysregulation problems (Kalberg & Buckley, 2007). Additionally, social stories, visual cues and schedules, and checklists have assisted in providing tangible, visual reminders for children affected by Fetal Alcohol Spectrum Disorder (Blackburn & Whitehurst, 2010). Visual structures also aid in making class routines visually clear and predictable. Visual aids foster organizational skills and self-direction. Teachers or aides can designate sections of the room for specific activities, assign seats and carpet squares, or make visual picture schedules. Students also benefit from explicit directions like providing written examples of instructions or providing a complete sample of a task so a student knows what is expected (Blackburn & Whitehurst, 2010; Kalberg & Buckley, 2007). For children with prenatal substance exposure, transitions can be difficult to comprehend (Jaeger et al., 2015). Establishing environmental aids to assist in their classrooms helps to alleviate frustrations.

The impulsivity, hyperactivity, and inattention can also manifest in other ways that require intervention assistance (Jaeger et al., 2015; Sandtorv et al., 2017). The behavioral deficits should be addressed in conjunction with academic concerns. Multiple cognitive-behavioral interventions could increase development in these areas. Cognitive-Behavioral Therapy (CBT) uses techniques such as psychoeducation to change a child's behaviors by changing their

cognitions (thoughts) (Office of Special Education Programs, United States Department of Education, 2018; Watson et al., 2007). Role-playing allows repeated opportunities to act out social skills and social situations. Similarly, play therapy provides a constructive outlet for younger children to express their emotions and unconscious feelings (Office of Special Education Programs, United States Department of Education, 2018; Watson et al., 2007). Modeling, through a teacher or another peer, can also be used to guide a student toward the correct and appropriate behaviors. As always, providing reinforcement increases desirable behaviors and fosters motivation (Watson et al., 2007).

School Professional Preparedness

Even with the important and direct role of teachers, establishing a system of support for prenatally exposed children requires a shared responsibility throughout the school. To elaborate, students suffering from the long-term effects of prenatal substance exposure are dealing with implications across multiple areas of development: academically, socially, and behaviorally (Nygaard et al., 2016). Thus, limiting this conversation to only classroom teachers is not enough to target these complex deficits because these problems are not limited to the classroom. Difficulties can manifest in the lunchroom, on the bus, at recess, in the hallways, in gym class, etc. All staff should be educated on the problem and research-backed solutions. Teachers are usually at the center of the model because of their direct and daily access to the children, but establishing a supportive system will require buy-in on a school and district level. Professional development efforts should be accessible to all school staff in order to maximize student success.

School professional knowledge. In order for an intervention to be the most effective, it requires competent, knowledgeable implementers (Tschannen-Moran & Barr, 2004). Knowledge

can be obtained through college education, professional development, and experience (Beijaard, Verloop, & Vermunt, 2000; Putnam & Borko, 2000; Tsui, 2005).

Over the course of a professional's career, the experiences gained adjust and shape their perceptions about their role. Tsui (2005) notes how experienced professionals have been found to be more flexible and analytic towards unexpected events than those early in their career. Experienced teachers are able to make sense of events in a meaningful approach. This research also shows that those with more practice can use their accumulated knowledge, past successes, and experiences with various types of students over the years to recognize patterns, compare them to past experiences, and use their repertoire of pedagogical knowledge for decision-making and problem solving (Tsui, 2005).

Another study aimed to examine how educators' perceptions of knowledge may have changed over their career (Beijaard et al., 2000). Participants rated their current knowledge as a combination of subject matter, didactic knowledge, and pedagogical knowledge. Their ratings indicated a significant change from early career perceptions, in which they rated themselves more knowledgeable in subject matter above all other areas (Beijaard et al., 2000). Novice educators may be more comfortable in subject content due to the focus in academics and collegiate programs. Whereas didactic knowledge and pedagogical knowledge may come with practice and years of experience from within the classroom (Putnam & Borko, 2000).

School professional self-efficacy. School professionals need to be given the necessary tools and resources to be successful, while also possessing the internalized belief that they are able to do their jobs. Teacher efficacy involves the attitudes or beliefs that teachers feel they can make a positive impact on their students. Multiple studies have found a significant correlation between teacher efficacy and student achievement (Tschannen-Moran & Barr, 2004). The

researchers found that high self-ratings of efficacy predicted higher scores across subjects. Research is limited regarding teacher efficacy and children affected by prenatal substance exposure. However, Tschannen-Moran and Barr's (2004) results can be used as a guide stressing the importance of equipping teachers so they feel ready. If teachers are given the proper tools and resources to increase efficacy regarding supporting students affected by prenatal substance exposure, student achievement is expected to increase, as well.

The research has also found correlations between self-efficacy and years of experience. In Klassen & Chiu's (2010) study of 1,430 practicing teachers, years of experience was shown to have a nonlinear relationship with self-efficacy of teaching strategies, classroom management, and student engagement. Across each self-efficacy factor measured, self-efficacy increased until around 23 years of experience and decreased afterward (Klassen & Chiu, 2010). Another study of 1,024 teachers reported first year teachers reported lower self-efficacy than all other years of experience, teachers with one to five years of experience had lower self-efficacy than those with more experience, and there were no differences in self-efficacy between teachers after obtaining 6 years of experience (Wolters & Daugherty, 2007). The previous study did not separate groups after 21 years of experience. Additionally, Tschannen-Moran & Hoy (2007) found the most significant predictors of teacher self-efficacy for novice teachers are interpersonal support and resources. Teachers with more experience reported satisfaction with their past successes and resources as predictors of self-efficacy (Tschannen-Moran & Hoy, 2007).

Professional Development

Guskey & Yoon's (2009) meta-analysis of 1,343 studies found several tenets of effective professional development: duration, structure, and focus. Their review indicated that effective professional development should take an appropriate amount of time while also using the time

wisely. Specifically, the most effective trainings involved over 30 hours or more. The structure should be organized, the goals should be relevant and explicit, and the professional development should focus on content, pedagogy, or both (Guskey & Yoon, 2009). Teachers rated professional development as effective when there was a focus on increasing both participants' content knowledge and pedagogical knowledge (Guskey & Yoon, 2009). Similarly, Yoo (2016) found in a study measuring teacher self-efficacy and their analysis on their own change in efficacy, a perceived increase in knowledge was positively correlated with an increase in self-efficacy ratings.

Professional development may be presented in many different ways. Many findings report there are no differences between methods of presentation. For example, one study measured differences in professional development modality and the effects on teacher knowledge, beliefs, practices, and student outcomes (Fishman et al., 2013). The study included 49 teachers (24 face-to-face and 25 online) and 1,132 students (522 face-to-face and 610 online). The teachers and students in both conditions exhibited significant gains and no differences were reported between the two methods. Another study (Yoo, 2016), found that teacher self-efficacy increased through an online professional development experience. Regardless of method, follow-up support was found to have a larger impact on effectiveness (Guskey & Yoon, 2009). After reviewing all 1,343 studies, virtually all studies deemed as effective contained some aspect of structured or continued follow-up after the main professional development training (Guskey & Yoon, 2009).

When planning professional development specific to prenatally exposed students, general education of the problem should be a primary focus of training (Thompson et al., 2009). In addition to education concerning the background of the problem, Thompson, Levitt, and

Stanwood (2009) stress the importance of educating to eliminate bias. In dealing with prenatal substance exposure, especially with children, individuals may contain negative biases, especially toward the biological parent (Thompson et al., 2009). The researchers suggest first using science to explain the complexity of substances on brain development. Addressing the facts and accounting for any internalized bias would be helpful to educate teachers on the neurological bases of "problem" behaviors.

All other aspects of training would be contingent on the explicit need of teachers and other school staff in the receiving district. The content of trainings may vary depending on the school's particular needs. To increase teacher-self efficacy and consequently, positive student outcomes, professional development should be based on data gathered from interviews, focus groups, and cohesive discussions to determine specific need (Guskey, 2014). Nonetheless, relevancy and applicability appear to be important for professional development and teacher self-efficacy (Guskey, 2014; Yoo, 2016).

NEED FOR STUDY

The purpose of this research is to gather data regarding school professionals' perceptions, knowledge, and need for education regarding prenatally exposed children. Participants are current employees of two West Virginia school systems. The survey will ask participants about the possible cognitive and behavioral manifestations of prenatal drug exposure that are being displayed in their classrooms, the level of training they have received, and how equipped they feel to help these students. The results from this initial survey are expected to indicate a collective need for trainings and education modules for school professionals in order to increase self-efficacy and knowledge to assist these students. The results of this study have promise to contribute to the development of training modules for school professionals about best practices

for creating a successful, positive school experience for students who are experiencing the impact of prenatal drug exposure.

Research Questions

1. When asked about NAS and general knowledge of the symptoms of prenatal drug exposure, what level of agreement do participants report?
2. Is there a relationship between school professionals' years of experience and their self-efficacy in working with children who have been prenatally exposed?
3. How much training are school professionals requesting for topics related to prenatal substance exposure?
4. Is there a relationship between the number of prenatal substance exposure trainings school professionals have attended and their perceptions of knowledge and self-efficacy?

CHAPTER 2

METHOD

Participants

The participants of this study were employees of two West Virginia school districts. Participants of all genders, age, education, position, and experience were invited to participate in the study. A survey link was sent out via email by the Assistant Superintendent and Superintendent of the participating districts. The only criteria for involvement was to be a current school personnel at one of the two counties. A letter of informed consent was made available before the participants began the survey. The informed consent outlined the nature of the study and the questions, the time limits, and the risks of the study. Participation was anonymous, voluntary and individuals were able to cease their participation at any time. Participants were aware that there would be no compensation for involvement in the study. The survey was approved by the International Review Board of Marshall University before distribution (see Appendix A).

The survey was distributed through an email link to all personnel in two West Virginia school districts. One of the districts contained 301 total personnel and the other contained 1705.85 total personnel at the time the survey was distributed (West Virginia Department of Education, 2018). Thus, the survey was sent to an estimated total of 2007 personnel. Participants were not asked to identify their county of employment. Participants with access to the survey included teachers, school psychologists, administrators, special education faculty, guidance counselors, reading specialists, and speech language pathologists.

Overall, 281 participants engaged in the survey and completed the first question (See Table 1). General education teachers comprised the largest percentage of respondents (58.7% of

responders). Special education teachers had the second highest rate of participation (11% of responders), followed by principals (7.8% of responders). An "other" category was provided for employment roles that did not fall under the provided categories. These participants identified themselves as art teachers, substitutes, instructional aides, and secretaries. Eighty-three percent of responders were female. The majority of responders primarily serve at the elementary school level (42.86%).

Table 1

Professional Roles of Participants

	Frequency	Percent
General Education	165	58.7
Special Education	31	11.0
Counselor	14	5.0
School Psychologist	3	1.1
SLP	7	2.5
Principal	22	7.8
Central Office	12	4.3
Interventionist	10	3.6
Other	12	4.3
Nurse	5	1.8
Total	281	100

Participants were also asked to identify their total years of experience. Six ranges were provided (See Table 2). The largest majority of participants indicated having between 2-5 years of total experience (33.7% of responders). Additionally, 19.4% of responders reported having between six and 10 years of experience, while 13.6% of responders reported having one or less years of experience,11.8% reported having 21 years of experience or more, and 11.5% reported having between 11 and 15 years of experience. Ten percent of responders reported having between 16 and 20 years of experience.

For analyses, years of experience was collapsed into three categories. Participants with less than one year of experience to five years of experience were combined into an "early career"

category. Participants with six to fifteen years of experience were combined into a "moderate experience" category. Participants with more than sixteen years of experience were combined into a "veteran" category.

Table 2

Participants' Years of Experience

Years of Experience	Frequency	Percent
1 or less	38	13.6
2-5 years	94	33.7
6-10 years	54	19.4
11-15	32	11.5
16-20	28	10.0
21+	33	11.8
Total	279	100

Participants were also asked to report the number of trainings they have attended that focused on prenatal substance exposure and its effects (See Table 3). The majority of participants indicated having no training on the topic (72.9%). 22.3% of participants reported attending a "few" trainings, which was operationally defined as one to three trainings. Only 4.7% of participants reported attending four or more trainings focusing on prenatal substance exposure.

Table 3

Number of Previous Trainings on Prenatal Substance Exposure

	%
None	72.94
Few	22.35
More than 3	4.71

Materials

A survey was created through the online website, *Qualtrics* (see Appendix B for survey). The link generated through *Qualtrics* was sent to school-based emails of every school personnel in the corresponding district. The survey was only accessible through the link. The survey was only available online, as well. The link sent participants directly to the *Qualtrics* website to

complete the survey. The link could be accessed through any mobile device or computer. *Qualtrics* also gave the option of completing the survey on their mobile application. The letter of informed consent appeared before the survey began. The survey was designed so participants could discontinue at any time.

The survey contains 30 items and was estimated to require around 10-15 minutes to complete. The survey is comprised of demographic questions (gender, age) and questions about participants' job (number of years in current position, other positions held). The participants were not asked to identify themselves by name. Participants were asked various questions about previous trainings on prenatal substance exposure, knowledge, and perceptions of self-efficacy about the topic of prenatal substance exposure.

Procedure

Questions were split into two sections. The first section focused on demographic information such as age, gender, years of experience, age/grade of students served, and current position in the school. Survey responders were not asked to include their names, birth dates, or unique identifiers. The second section contained various questions relating to prenatal substance exposure. Participants were asked to report the number of previous trainings they may have attended related to prenatal substance exposure. Next, questions focused on the participants' experiences, beliefs, and attitudes regarding prenatal substance exposure as it relates to their profession in the schools. Participants had the option to include their own input in several open-ended response options.

Items were constructed using a Likert Scale ranging from *strongly agree, somewhat agree, undecided, somewhat disagree,* and *strongly disagree.* Another version of Likert Scale

items were also used ranging from *a great deal*, *a lot*, *a moderate amount*, *a little*, and *none at all*. Other questions required a yes or no response or open-ended responses.

The IBM SPSS Statistics software program was utilized in the data analysis of this study. Percentages were calculated to show the level of agreement participants reported being familiar with general knowledge of prenatal substance exposure symptoms and the term Neonatal Abstinence Syndrome. Percentages were also calculated to determine how much training of various components participants reported needing. Non-parametric tests were run to determine if there were any statistical differences between participants' years of experience and their ratings of self-efficacy. Additionally, relationships were examined between the number of prenatal substance exposure trainings participants reported and their perceptions of knowledge and self-efficacy.

Though 281 participants engaged in the survey and completed the first question, the number of responses per question varied. To account for items with missing responses, pairwise deletion, or available-case analysis, was used. By using pairwise deletion methods, analyses were run as long as all values were available for the particular analysis in question (Acock, 2005). This method allowed all available data to be used.

CHAPTER 3

RESULTS

Research Question 1: When asked about NAS and general knowledge of the symptoms of prenatal drug exposure, what level of agreement do participants report?

Table 4

Participants' Knowledge Rating

Survey Item	Agree	Neither Agree or Disagree	Disagree
1. I am familiar with the term Neonatal Abstinence Syndrome.	47.4%	9.4%	43.2%
2. I know the signs of a student who has been prenatally exposed to alcohol or other drugs.	60.5%	12.9%	26.6%

Due to the low cell sizes, the Likert scale responses were collapsed for analysis. "Somewhat agree" and "strongly agree" were collapsed into "agree." Similarly, "somewhat disagree" and "strongly disagree" were collapsed into "disagree."

Table 4 shows the results of the survey. Overall, more responders (47.4%) generally agreed to being familiar with the term "Neonatal Abstinence Syndrome" compared to those who disagreed (43.2%). More school professionals agreed to knowing the signs of a student that may have been prenatally exposed to alcohol or other drugs (60.5%). Conversely, 26.6% of responders disagreed.

Before Likert categories were collapsed, only 15.5% of responders "strongly agreed" with being familiar with the term Neonatal Abstinence Syndrome (20.9% "strongly disagreed"). When participants were asked about knowledge on the signs of a prenatally exposed student, at the extremes and before categories were collapsed, 10.95% "strongly agreed" compared to 6.71% who "strongly disagreed."

Due to the data not approximating a normal distribution, a non-parametric test was selected for analysis. The chi-square test is best used for determining if there are statistically significance differences between multiple independent variables for ordinal and nominal data (McHugh, 2013). This test was selected due to the presence of three independent variables and the nature of the categorical data being analyzed. The skewed distribution of the data was also taken into consideration.

A chi-square analysis was run to determine if there were any statistical significance between knowledge ratings and other participant demographics. Analyses were run to compare knowledge ratings with years of experience and the professional role of participants. There was not enough evidence to support a relationship with either items regarding knowledge. No relationship was indicated as statistically significant between knowledge and years of experience (See Table 5 and 6) or professional role (See Tables 7 and 8).

Table 5

Knowledge of Neonatal Abstinence Syndrome and Years of Experience

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.75	4	.441
Likelihood Ratio	3.86	4	.426
Linear-by-Linear Association	.16	1	.686
N of Valid Cases	234		

Table 6

Knowledge of Symptoms and Years of Experience

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.68	4	.612
Likelihood Ratio	2.68	4	.582
Linear-by-Linear Association	.02	1	.879
N of Valid Cases	233		

Table 7

Knowledge of Neonatal Abstinence Syndrome and Profession

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	19.16	18	.382
Likelihood Ratio	21.91	18	.236
Linear-by-Linear Association	1.88	1	.170
N of Valid Cases	234		

Table 8

Knowledge of Symptoms and Profession

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	26.38	18	.091
Likelihood Ratio	34.28	18	.012
Linear-by-Linear Association	5.87	1	.015
N of Valid Cases	233		

Research Question 2: Is there a relationship between school professionals' years of experience and their self-efficacy in working with children who have been prenatally exposed?

Table 9

Participants' Self-Efficacy Ratings

	Agree	Neither Agree nor Disagree	Disagree
1. I feel I have the appropriate resources available when working with a child who has been prenatally exposed to alcohol or other drugs.	15.8%	18.0%	66.2%
2. I feel comfortable speaking with caregivers about their child if my concerns are about suspected prenatal alcohol or other drug exposure and its effects.	28.2%	14.4%	57.3%
3. I feel there is little I can do to help children who have been prenatally exposed to alcohol or other drugs.	30.9%	21.5%	47.6%

After data was collapsed, 66.2% of responders felt they did not have the appropriate resources to support students affected by prenatal substance exposure. The extreme ends show that before collapsing Likert scale categories, only 3.4% of responders strongly agreed with

feeling they have the appropriate resources, compared to 33.8% of responders who strongly disagreed. About 57.2% of responders reported not feeling comfortable discussing suspected prenatal substance exposure with the caregivers of their students, compared to 28.2% of responders who agreed with feeling comfortable having that discussion. At the extremes, 3.0% of responders strongly agreed with feeling comfortable speaking with caregivers about suspected prenatal substance exposure, compared to 26.9% of responders who strongly disagreed with this statement. Despite these ratings, 47.6% of responders disagreed with a statement insinuating that there was nothing they could do to support these students. Prior to collapsing, 5.6% of participants strongly agreed with the statement and 17.6% of participants strongly disagreed.

The self-efficacy items were analyzed based on the experience of responders. A chi-square test was used to determine if there were any statistical differences between self-efficacy ratings of participants based on years of experience. The results of this analysis yielded no significant difference. Thus, there were no significant differences identified and not enough evidence to support a relationship between years of experience and any ratings of self-efficacy (See Tables 10, 11, and 12).

Table 10

Appropriate Resources and Years of Experience

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.41	4	.843
Likelihood Ratio	1.39	4	.846
Linear-by-Linear Association	.62	1	.432
N of Valid Cases	234		

Table 11

Comfortability Speaking with Caregiver and Years of Experience

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.66	4	.617
Likelihood Ratio	2.75	4	.601
Linear-by-Linear Association	.17	1	.684
N of Valid Cases	234		

Table 12

Feelings of Hope and Years of Experience

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.73	4	.785
Likelihood Ratio	1.71	4	.788
Linear-by-Linear Association	.03	1	.854
N of Valid Cases	233		

Research Question 3: How much training are school professionals requesting for topics related to prenatal substance exposure?

Table 13

Training Needs

Survey Item	A Great Deal/ A Lot	Moderate	A Little/ None
Prevalence of prenatal alcohol and other drug exposure and its effects on children	58.3	24.8	17.0
Community supports and resources available to students who have been prenatally exposed to alcohol or other drugs.	67.8	17.8	14.3
Academic strategies for improving learning outcomes	64.8	21.3	13.9
Strategies for improving student behavior	64.8	20.9	14.3
Strategies for increasing parent/grandparent/guardian involvement in school activities	64.0	20.0	16.1

Due to small cell sizes, Likert scale items were also collapsed for this research question. “A great deal” and “a lot” were combined into one category for analysis. “A little” and “none” were also combined. The majority of responders identified needing “a lot” to “a great deal” of training across each training component. Specifically, 67.8% of participants reported needing the most training on community resources and supports for their students that were prenatally exposed to substances. About 64% of participants reported needing “a great deal/a lot” of training for academic strategies, behavior strategies, and strategies for increasing the home and school partnership. 58.3% of participants reported needing “a great deal/a lot” of training about the prevalence of prenatal substance exposure and the effects.

Participants were able to list additional training components needed in an open-ended "other" category. A total of thirty participants utilized the open-ended option. Many participants elaborated on their selections from the fixed choice options given above. For example, of the 30 responses in the other category, nine participants reiterated needing support for prenatal substance exposure in general. Trainings requested that were not previously given included trauma-focused professional development, steps to take when prenatal substance exposure is suspected, and crisis management.

Research Question 4: Is there a relationship between the number of prenatal substance exposure trainings school professionals have attended and their perceptions of knowledge and self-efficacy?

Participants were asked to indicate the number of trainings attended that focused on prenatal substance exposure. Due to the varying degrees of training participants reported, analyses were run to determine if there were any statistically significant relationships between the number of trainings reported and participants' ratings of knowledge and self-efficacy.

No significance was shown between knowledge of the term Neonatal Abstinence Syndrome and the number of trainings attended by participants (See Table 14). However, a significant relationship was shown between knowledge of the signs of a prenatally exposed student and the number of trainings participants reported, x^2 (4, N = 230) = 10.79, $p < .05$ (See Table 15).

Table 14

Number of Previous Trainings and Knowledge of Signs and Symptoms

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.79	4	.029
Likelihood Ratio	14.68	4	
Linear-by-Linear Association	9.52	1	
N of Valid Cases	230		

Table 15

Number of Previous Trainings and Knowledge of NAS

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.82	4	.099
Likelihood Ratio	7.30	4	
Linear-by-Linear Association	2.46	1	
N of Valid Cases	231		

The relationship between self-efficacy ratings and the number of trainings regarding prenatal substance exposure was also explored. No relationship was indicated between the number of trainings each participant has attended on prenatal substance exposure and their feelings on having the appropriate resources to work with students affected by prenatal substance exposure (See Table 16). Likewise, there was no relationship between numbers of trainings and participants' self-efficacy related to feeling as if there is something they can do to help prenatally exposed students (See Table 17).

Table 16

Number of Previous Trainings and Appropriate Resources

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.69	4	.069
Likelihood Ratio	6.94	4	
Linear-by-Linear Association	3.86	1	
N of Valid Cases	231		

Table 17

Number of Previous Trainings and Comfortability Speaking with Caregiver

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	14.05	4	.007
Likelihood Ratio	13.85	4	
Linear-by-Linear Association	11.96	1	
N of Valid Cases	231		

However, the relationship between the number of trainings participants reported and their self-efficacy in feeling comfortable speaking with caregivers when prenatal substance exposure

was suspected was indicated as statistically significant, x^2 (4, N = 231) = 14.05, p < .05. See Table 18.

Table 18

Number of Previous Trainings and Feelings of Hope

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.77	4	.100
Likelihood Ratio	8.07	4	.089
Linear-by-Linear Association	.95	1	.330
N of Valid Cases	230		

CHAPTER 4

DISCUSSION

The results of this survey were used to answer four research questions regarding children prenatally exposed to substances. When asked about NAS and general knowledge of the symptoms of prenatal drug exposure, what level of agreement do participants report? Is there a relationship between school professionals' years of experience and their self-efficacy in working with children who have been prenatally exposed? How much training are school professionals requesting for topics related to prenatal substance exposure? Is there a relationship between the number of prenatal substance exposure trainings school professionals have attended and their perceptions of knowledge and self-efficacy?

Current Knowledge

A slight majority of participants are reporting being familiar with the term Neonatal Abstinence Syndrome (NAS). However, a large majority of responders report having general knowledge of the signs and symptoms of a student affected by prenatal substance exposure.

There may be a relationship between the high ratings of knowledge on these items and the demographics of the participants. In one of the counties that received the survey, the rates of NAS were 6.23% (Department of Health and Human Resources, 2018). These NAS rates for the county were significantly higher than the national rates of 1.07%. This county has seen some of the higher rates for prenatal substance exposure in the state according to recent statistics disclosed by West Virginia's Department of Health and Human Resources. Professionals in this county may have been exposed to more children impacted by prenatal substance exposure. Additionally, within recent years, these communities have also taken great initiatives to combat the negative effects of prenatal substance exposure. Data for the other county had been

suppressed for unknown reasons and was not available. However, the rate of prenatal substance exposure in West Virginia was 14.3% (Mullins, 2017). Thus, high knowledge ratings may be due to the higher rates of prenatal exposure in the respective areas, more opportunities for experience in working with these students, and the communities‘ responses to the problem. Further investigation will be needed to analyze this relationship.

The research states there is a relationship between perceptions of knowledge and years of experience (Beijaard et al., 2000; Putnam & Borko, 2000; Tsui, 2005). Professionals with more practice in their fields have greater perceptions of knowledge due to more access to professional development, more exposure to more students, and general classroom experience. However, additional analyses from the survey do not indicate a relationship between participants’ years of experience and their perceptions of knowledge. Additionally, there was not enough evidence to support a relationship between perceptions of knowledge and participants’ professional role. Due to the increasing rates of prenatally exposed children within recent years, the problem has just recently begun to be addressed in research and communities. Thus, years of experience and the role of the school professional are not enough to influence knowledge ratings.

Self-Efficacy of School Professionals

Self-efficacy was measured by respondent’s agreement to three key items. A majority of school professionals are reporting low self-efficacy on two of the self-efficacy items. Specifically, the majority of responders do not feel they have the appropriate resources available to assist students in this population. They are also reporting they do not feel comfortable speaking with the caregiver of a student they suspect is being affected by previous prenatal substance exposure. However, the majority of school professionals feel there is something they can do to help these students.

Analyses indicate there are no significant differences in reports when comparing ratings of self-efficacy to their years of experience. According to the literature, years of experience have been shown to have a nonlinear relationship with self-efficacy across multiple factors (Klassen & Chiu, 2010; Wolters & Daugherty, 2007). Self-efficacy generally increases until school professionals have about 20 years of experience. However, according to the results, the relationship was not found to be statistically significant. According to Tschannen-Moran and Hoy (2007), interpersonal support and resources are found to be the biggest predictors of self-efficacy for educators. Our analyses show that 66.2% of school professionals surveyed disagreed with feeling they have the appropriate amount of resources to support prenatally exposed students. Thus, increasing support and resources for our school professionals may aid in increasing their self-efficacy.

When comparing findings of participants' knowledge compared to their self-efficacy, their reported knowledge is identified as being higher than their feelings of self-efficacy. Thus, though school professionals may know how to identify the signs of prenatal substance exposure, they do not feel confident about managing the problems in their respective school settings.

The literature shows us the importance self-efficacy has on student achievement. An increase in self-efficacy has been directly correlated with an increase in student achievement across subjects (Tschannen-Moran & Barr, 2004). Based on the self-efficacy ratings obtained from this survey, our school professionals are going to need more education and training to increase knowledge and self-efficacy, which will expectantly increase achievement for students affected by the long-term impacts of prenatal substance exposure.

Ratings of Interest for Trainings

Training components were divided into five categories: prevalence of prenatal substance exposure, information on community resources and supports, strategies for improving academic difficulties in students, education on behavior interventions, and strategies for increasing the parent/school partnership. Overall, participants reported a higher interest in receiving education on academic strategies and behavior interventions. However, across all training categories, the majority of respondents reported wanting more training than not. Similarly, a majority of participants reported having no previous training specifically focusing on prenatal substance exposure. Though the survey provided forced choices for training components, participants were also able to report any additional trainings. Many responders reiterated trainings previously identified in the forced choice options. However, other training components identified by responders included crisis response training, steps to take when prenatal substance exposure is suspected, and how to talk with students. The additional training components identified by participants indicate a desire for not only informational knowledge about prenatal substance exposure, but practical skills and procedures to apply in their professional roles.

Effect of Previous Trainings

The majority of responders report receiving no explicit training regarding prenatal substance exposure (72.9%). A relationship was indicated between number of trainings and responders' comfortability in speaking with caregivers about suspected prenatal exposure. Additionally, a relationship was indicated between trainings attended and participants' reported knowledge of signs of prenatal substance exposure. It is expected that school professionals with more training will have received education on how to identify students with possible prenatal substance exposure. Similarly, trainings may have included procedures on how to handle suspected problems, including discussing concerns with parents. Professional development has

been found to be most effective when participants receive multiple hours of trainings (Guskey & Yoon, 2009). Thus, these relationships compare to the literature's findings on connections between effective trainings and their increase of knowledge and self-efficacy (Guskey & Yoon, 2009).

Additional Findings

Additional items on the survey not linked to the research questions indicate school professionals are reporting a noticeable change in learning ability over the past five years. School professionals are reporting more distractibility and difficulty focusing from their students. Memory issues were also identified. A large majority of participants report that due to prenatal substance exposure, students' related behavior is significantly affecting the learning of students. These identified problems have found to be commensurate with studies of long-term effects of prenatal substance exposure. Attention, impulsivity, and general school readiness have been identified with prenatally exposed children (Behnke & Smith, 2013; Pulsifer et al., 2008).

The behavior change of these students is an identified concern of school professionals, as well. About 85% have reported a perceived change in behavior over the last five years. School professionals are reporting increased mental health diagnoses and more instances of inattention, oppositional behavior, and impulsivity. The literature supports these observations. Prenatally exposed students have higher rates of ADHD symptoms, externalizing behaviors, and other violent or aggressive behaviors (Dixon et al., 2008; Jaeger et al., 2015).

Across both learning and behavior concerns, responses mention concerns regarding the unmet needs of students (e.g., mental health, physical, emotional). Responders report concerns with how the effects may negatively impact social development. Social and adaptive behaviors have been found to be lower in students with prenatal substance exposure than students without

the exposure (Behnke & Smith, 2013). The long-term effects are often confounded by familial variables and environmental factors affecting the child independent of biological affects (Dixon et al., 2008).

Limitations

This current study is not without limitations. This survey was distributed to the school professionals of two West Virginia counties. The responses of the participants may not be generalizable to the population due to many cultural differences. Responses may also differ from rural to urban settings and across districts with differing socioeconomic statuses. Additionally, as mentioned before, the professionals receiving this survey are a part of a state significantly impacted by the opioid crisis, especially when compared with national rates (Department of Health and Human Resources, 2018; Mullins, 2017). Thus, the participants in the survey may be exposed to higher rates of prenatal substance exposure and, as a result, possess more experience with this population.

Finally, low cell sizes may have affected the distribution shape of the data and significance levels. Though 281 participants began the survey, fewer finished the complete survey without missing any items. Missing data may be explained by time constraints of participants or technological issues. Some questions may have not been relevant or applicable to some participants due to their professional role, which would cause them to skip the question. In the future, missing responses may be accounted for with an option for “does not apply” if surveying a large variety of school professionals.

Implications and Future Directions

The implications of this research could reach multiple disciplines and departments. Through the survey, schools could use the responses of professionals regarding training to begin

planning necessary and relevant professional development. Responses could potentially serve as a guide for future training modules and presentations based on what school professionals have reported experiencing in their own schools and classrooms.

The generalizability of the survey was previously discussed as a limitation. Future directions may lead to a similar survey being distributed to a larger audience with varying population sizes, socioeconomic statuses, geographical locations, and school governing (private, public, charter, etc.). Expanding the number of recipients would offer a larger sample size and more generalizable data.

There is a large gap in literature on the topic of prenatal substance exposure and more research is needed across this topic. The pool of available information decreases even more so when the topic narrows to the possible long-term effects. Similarly, the research was deficient for literature and studies on evidence-based interventions specific to assisting students experiencing the long-term effects of prenatal substance exposure. Thus, future directions offer the possibility of strengthening the current research on long-term effects of prenatal substance exposure, targeting limitations in the identification process of these children, and examining evidence-based interventions to support their development.

School psychologists are tasked with serving students across all backgrounds and disabilities. The comprehensive and multi-faceted education of school psychologists provide an opportunity to serve students across all aspects of their academic and home environments. Students affected by prenatal substance exposure may require comprehensive support, as well. From fostering the parent-school partnership, to supporting teachers through consultation, to the evaluation and intervention processes, school psychologists can be involved at every step for these students offering expertise, support, and guidance (Skalski et al., 2015). The framework of

this survey can be used or adapted by other school psychologists as a needs assessment in their own schools and districts. The data procured from this project can be used to begin planning professional development solely focused on prenatal substance exposure and the impact seen in schools.

Despite knowledge, years of experience, and self-efficacy, school professionals as a whole are requesting comprehensive trainings on this topic. The population of students suffering from the long-term effects of prenatal substance exposure is increasing. School professionals need to be educated and supported in order to ensure success for these children across every environment. Promoting the education and efficacy of teachers and school staff will aid in establishing an accommodating, supportive, and developmentally advantageous environment for children affected by the long-term effects of prenatal substance exposure.

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APPENDIX A: OFFICE OF RESEARCH INTEGRITY APPROVAL LETTER

MARSHALL UNIVERSITY
www.marshall.edu

Office of Research Integrity
Institutional Review Board
One John Marshall Drive
Huntington, WV 25755

FWA 00002704

IRB1 #00002205
IRB2 #00003206

May 12, 2017

Conrae Lucas-Adkins, PsyD
School Psychology, MUGC

RE: IRBNet ID# 1057321-1
At: Marshall University Institutional Review Board #2 (Social/Behavioral)

Dear Dr. Lucas-Adkins:

Protocol Title:	[1057321-1] Building Supports within Schools to Address Impact of Drug Exposure	
Expiration Date:	May 12, 2018	
Site Location:	MUGC	
Submission Type:	New Project	APPROVED
Review Type:	Exempt Review	

In accordance with 45CFR46.101(b)(2), the above study and informed consent were granted Exempted approval today by the Marshall University Institutional Review Board #2 (Social/Behavioral) Designee for the period of 12 months. The approval will expire May 12, 2018. A continuing review request for this study must be submitted no later than 30 days prior to the expiration date.

This study is for student Aliyah Mickey.

If you have any questions, please contact the Marshall University Institutional Review Board #2 (Social/Behavioral) Coordinator Bruce Day, ThD, CIP at 304-696-4303 or day50@marshall.edu. Please include your study title and reference number in all correspondence with this office.

APPENDIX B: SURVEY

1. Please indicate the WV district (county) in which you primarily work

2. Please select your current professional role
   - General Education Teacher
   - Special Education Teacher
   - School Counselor/School SocialWorker
   - School Psychologist
   - Speech Language Pathologist
   - Principal/Assistant Principal
   - Central Office Administrator
   - Interventionist (Reading, Math, Title I)
   - Diagnostician/IEP Coordinator
   - Other Professional Staff (including substitute teachers, student teachers
   - School Nurse

3. Please select the grade level of students you primarily serve
   - PreK
   - Elementary (K through 5th)
   - Middle (6th through 8th)
   - High School (9th through 12th)
   - All (PreK through 12th)

4. Please select the length of time you have served in your current position
   - 1 year or less
   - 2 to 5 years
   - 6 to 10 years
   - 11 to 15 years
   - 16 to 20 years
   - 21 years or more

5. Please select the total number of years you have worked in the WV school system
   - 1 year or less
   - 2 to 5 years
   - 6 to 10 years
   - 11 to 15 years
   - 16 to 20 years
   - 21 years or more

6. Please select the total number of years you have worked in a school system of another state
   - 1 year or less
   - 2 to 5 years
   - 6 to 10 years
   - 11 to 15 years
   - 16 to 20 years

21 years or more

7. Please indicate your age
   20 to 25 years
   26 to 30 years
   31 to 35 years
   36 to 40 years
   41 to 45 years
   46 to 50 years
   51 to 55 years
   56 to 60 years
   61 years or older

8. Please indicate your sex
   Male
   Female
   Choose not to disclose

9. How many trainings have you attended that focused on the signs and symptoms of alcohol and other drug use in students ?

10. How many trainings have you attended that focused on either instructional supports or behavioral strategies for improving the performance of students who have been affected by alcohol and other drug use?

11. How many trainings have you attended that focused on strengthening the community supports for students and their families who are affected by alcohol and other drug use?

12. How many trainings have you attended that specifically focused on the effects of prenatal alcohol and other drug exposure?

13. How many trainings have you attended that specifically focused on trauma in students?

14. Is your school currently using any alcohol and other drug use prevention programs?

15. Does your school have any mental health care providers (e.g. therapists or counselors) besides a school counselor?

16. Please indicate the extent to which you agree with the following statements:

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
I am familiar with the term Neonatal Abstinence Syndrome.					
I know the signs of a student who has been prenatally exposed to alcohol or other drugs.					
I trust that the information I receive about my students' developmental histories, including prenatal alcohol or drug exposure, is reliable and valid.					
I feel I have the appropriate resources available when working with a child who has been prenatally exposed to alcohol or other drugs.					
I feel comfortable speaking with caregivers about their child if my concerns are about suspected prenatal alcohol or other drug exposure and its effects.					
I feel there is little I can do to help children who have been prenatally exposed to alcohol or other drugs.					

17. Please indicate the extent to which you agree with the following statements:

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
I know the signs of a student who is currently using alcohol or other drugs.					
I feel I have the appropriate resources available when working with a student who may be currently using alcohol or other drugs.					
I feel comfortable speaking with caregivers about their child if my concerns are about their child's current alcohol or drug use or suspected alcohol or other drug use.					
I feel there is little I can do to help students who are currently using or suspected of using alcohol or other drugs.					

18. The effects of prenatal alcohol or other drug exposure on children vary, depending on several factors. Think about your personal experiences with students who have been exposed to alcohol or other drugs prenatally as you respond to the following statements.

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
Based upon my personal experiences, I've observed the behavior of students prenatally exposed to alcohol or other drugs (e.g. inattention, hyperactivity, impulsivity, emotional dysregulation, etc.,) to significantly impede their own learning and/or the learning of others in the classroom.					
Based upon my personal experiences, I've observed the academic performance of students prenatally exposed to alcohol or other drugs to significantly impair their achievement to the extent that these students are typically one grade level or more behind in at least one core content area.					
Based upon my personal experiences, I've observed significant impairment with the ability to form and maintain age-expected peer relationships in students prenatally exposed to alcohol or other drugs.					

19. Current alcohol or other drug use may result in symptoms with varying degrees of severity. Think about your personal experiences with students who were using alcohol or other drugs as you respond to the following statements.

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
Based upon my personal experiences, I've observed the behavior of students who were using alcohol or other drugs (e.g. inattention, hyperactivity, impulsivity, emotional dysregulation, etc.,) to significantly impede their own learning and/or the learning of others in the classroom.					
Based upon my personal experiences, I've observed the academic performance of students who were using alcohol or other drugs to significantly impair their achievement to the extent that these students are typically one grade level or more behind in at least one core content area.					
Based upon my personal experiences, I've observed significant impairment with the ability to form and maintain age-expected peer relationships in students who were using alcohol or other drugs.					

20. Alcohol or other drug use by caregivers impacts students to varying degrees. Think about your personal experiences with students whose caregivers were using alcohol or other drugs as you respond to the following statements.

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
Based upon my personal experiences, I've observed the behavior of students whose caregivers were using alcohol or other drugs (e.g. inattention, hyperactivity, impulsivity, emotional dysregulation, etc.,) to significantly impede their own learning and/or the learning of others in the classroom.					
Based upon my personal experiences, I've observed the academic performance of students whose caregivers were using alcohol or other drugs to significantly impair their achievement to the extent that these students are typically one grade level or more behind in at least one core content area.					
Based upon my personal experiences, I've observed significant impairment with the ability to form and maintain age-expected peer relationships in students whose caregivers were using alcohol or other drugs.					

21. Please rate how much training you need in the following areas:

	A great deal	A lot	A Moderate Amount	A little	None at all
Prevalence of prenatal alcohol and other drug exposure and its effects on children.					
Community supports and resources available to students who have been prenatally exposed to alcohol or other drugs.					
Academic strategies for improving learning outcomes.					
Strategies for improving student behavior (e.g., social skills training, behavior management, conflict- resolution, positive behavior supports, mindfulness, etc.)					
Strategies for increasing parent/grandparent/guardian involvement in school activities					
Evidence-based drug prevention programs for at-risk students					
Signs and symptoms of student alcohol or other drug use					

22. Please list any additional areas for training related to alcohol and other drug use that you consider beneficial for your professional role in the schools.

23. What are the most significant challenges you have encountered from students who have been prenatally exposed to alcohol or other drugs e.g., poor impulse control, emotional dysregulation, inattention, physical aggression, problems learning to read, etc.?

24. Discuss the effective strategies you have used when working with students who have been prenatally exposed to alcohol or other drugs e.g., redirection, visual schedules, tutoring, etc.

25. What are the most significant challenges you have encountered from students who were using or suspected of using alcohol or other drugs e.g., behavioral problems, academic difficulties, involvement with legal system, truancy, etc.?

26. Discuss the effective strategies or interventions you have used when working with students who were using or suspected of using alcohol or other drugs e.g., referral to behavioral healthcare providers, conferences with families, referral to school counselor/social worker/psychologist, meetings with student, drug testing, etc.

27. I have noticed a significant change in the behaviors of students over the past 5 years
    Yes
    No
    I have not been working in the field of education for more than 5 years

28. Please discuss the changes in behaviors of students you have observed over the past 5 years.

29. I have noticed a significant change in the learning ability of students over the past 5 years
    Yes
    No
    I have not been working in the field of education for more than 5 years

30. Please discuss the changes in the learning abilities of students over the past 5 years

APPENDIX C: VITA

Aliyah Vicia Mickey

EDUCATION

School Psychology, Education Specialist Degree — **Expected Graduation: May 2019**
M.A. Psychology — **Conferred: December 2017**
Marshall University, South Charleston, WV — **Cumulative Graduate GPA: 4.0**

- Graduate Thesis Development- An Assessment of The Perceptions of School Professionals Regarding Prenatal Substance Exposure, In Process
- School Psychology Graduate Representative – 2017
- Marshall University 2018 Women of the Year Award Recipient

B.A. Psychology — **Conferred: May 2016**
Marshall University, Huntington, WV — **GPA: 3.97**

- Graduated Summa Cum Laude
- 2016 Marshall University Outstanding Research Achievement Award in Psychology
- Psi Chi – International Honor Society for Psychology Students
- Marshall University Honors College
- Dean's List Recipient (2012-2016)
- Teaching Assistant – Undergraduate Social Psychology 302
- Advanced Master's Degree Program

PROFESSIONAL EXPERIENCE

Indianapolis Public Schools — **Indianapolis, IN**
School Psychology Intern — Fall 2018-Present

Marshall University — **Huntington, WV**
Graduate Assistant
Student Health Education Programs — Fall 2016-Spring 2016
Screening Brief Intervention and Referral to Treatment (SBIRT) Grant — Summer 2016-2018

Fifth Avenue Baptist Nursery and Preschool — **Huntington, WV**
Full Time Teacher — Summer 2016
Substitute/Part-time Teaching Assistant — Feb. 2014- June 2018

PRACTICUM AND FIELD EXPERIENCES

Wayne County Public Schools, Wayne County, WV — **Fall 2016-June 2018**
School Psychology Practicum Site

River Park Hospital — **Huntington, WV**
Practicum Student — January 2015-May 2015

PROFESSIONAL MEMBERSHIPS

- **National Association of School Psychologists (NASP), Student Member –** 2017-Present
- **West Virginia School Psychologists' Association (WVSPA), Student Member –** 2017-Present
- **Cabell County Health Department Tobacco Coalition –** 2016-2018
- **West Virginia State Training and Registry System (WV STARS) for Early Childhood Education –** 2015-Present