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# The Effects of American Sign Language on General Self- Efficacy and Anxiety Among Mothers in a Residential Rehabilitation Facility for Drug Addiction and Substance Abuse

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FLORIDA INTERNATIONAL UNIVERSITY

Miami, Florida

THE EFFECTS OF AMERICAN SIGN LANGUAGE ON GENERAL  
SELF-EFFICACY AND ANXIETY AMONG MOTHERS IN A RESIDENTIAL  
REHABILITATION FACILITY FOR DRUG ADDICTION AND  
SUBSTANCE ABUSE

A dissertation submitted in partial fulfillment of the  
requirements for the degree of  
DOCTOR OF EDUCATION

in

ADULT EDUCATION AND HUMAN RESOURCE DEVELOPMENT

Bonnie J. Kissel

2010

To: Interim Dean Marie McDemmond  
College of Education

This dissertation, written by Bonnie J. Kissel, and entitled The Effects of American Sign Language on General Self-Efficacy and Anxiety among Mothers in a Residential Rehabilitation Facility for Drug Addiction and Substance Abuse, having been approved in respect to style and intellectual content, is referred to you for judgment.

We have read this dissertation and recommend that it be approved.

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Thomas G. Reio Jr.

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Luz S. Porter

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Tonette S. Rocco, Major Professor

Date of Defense: March 25, 2010

The dissertation of Bonnie J. Kissel is approved.

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Interim Dean Marie McDemmond  
College of Education

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Interim Dean Kevin O'Shea  
University Graduate School

Florida International University, 2010

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## DEDICATION

This doctoral dissertation is dedicated to the memory of Doctor Wayne Moye; a man and physician who led by example. This was a man of great integrity who possessed a love and passion for the practice of medicine. He willingly shared his knowledge and sought to help others raise themselves to their full potential. A man who knew and lived God's word, a man who proudly walked beside his wife and a man who diligently worked to help us all connect. Thank you Doctor Moye, your spirit continues to guide our lives.

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Vivian Bango-Sanchez, my buddy, my friend, the other “Twin”....I remember your words as you sensed the fear of someone who managed to fail PE class in high school....”a university is nothing but a bigger community college”. Our journey of education outshines any roller coaster ride that’s out there. I am forever jealous of your photographic memory but it sure saved us on many exams. Go ahead admit it.....your glad I saved all those books and papers. It is from you I learned “You never know unless you ask” and every time it worked. Our balance through this whole journey has been a blessing....thank goodness we alternated the bad days! We hit many a speed-bumps on this journey...said good-bye to a few along the way.... And through it all I know I could not have done it without you. Thank you my friend!

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ABSTRACT OF THE DISSERTATION

THE EFFECTS OF AMERICAN SIGN LANGUAGE ON GENERAL  
SELF-EFFICACY AND ANXIETY AMONG MOTHERS IN A RESIDENTIAL  
REHABILITATION FACILITY FOR DRUG ADDICTION AND  
SUBSTANCE ABUSE

by

Bonnie J. Kissel

Florida International University, 2010

Miami, Florida

Professor Tonette S. Rocco, Major Professor

Globally, approximately 208 million people aged 15 and older used illicit drugs at least once in the last 12 months; 2 billion consumed alcohol and tobacco consumption affected 25% (World Drug Report, 2008). In the United States, 20.1 million (8.0%) people aged 12 and older were illicit drug users, 129 million (51.6%) abused alcohol and 70.9 million (28.4%) used tobacco (SAMHSA/OAS, 2008). Usually considered a problem specific to men (Lynch, 2002), 5.2% of pregnant women aged 15 to 44 are also illicit drug and substance abusers (SAMHSA/OAS, 2007).

During pregnancy, illicit drugs and substance abuse (ID/SA) can significantly affect a woman and her infant contributing to developmental and communication delays for the infant and influencing parenting abilities (Budden, 1996; March of Dimes, 2006b; Rossetti, 2000). Feelings of guilt and shame and stressful experiences influence approaches to parenting (Ashley, Marsden, & Brady, 2003; Brazelton, & Greenspan, 2000; Ehrmin, 2000; Johnson, & Rosen, 1990; Kelley, 1998; Rossetti, 2000; Velez et al.,

2004; Zickler, 1999). Parenthood is an expanded role that can be a trying time for those lacking a sense of self-efficacy and creates a high vulnerability to stress (Bandura, 1994). Residential treatment programs for ID/SA mothers and their children provide an excellent opportunity for effective interventions (Finkelstein, 1994; Social Care Institute for Excellence, 2005).

This experimental study evaluated whether teaching American Sign Language (ASL) to mothers living with their infants/children at an ID/SA residential treatment program increased the mothers' self-efficacy and decreased their anxiety. Quantitative data were collected using the General Self-Efficacy Scale and the State-Trait Anxiety Inventory showing there was both a significant increase in self efficacy and decrease in anxiety for the mothers.

This research adds to the knowledge base concerning ID/SA mothers' caring for their infants/children. By providing a simple low cost program, easily incorporated into existing rehabilitation curricula, the study helps educators and healthcare providers better understand the needs of the ID/SA mothers. This study supports Bandura's theory that parents who are secure in their efficacy can navigate through the various phases of their child's development and are less vulnerable to stress (Bandura, 1994).

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## CHAPTER I

### INTRODUCTION

This experimental study evaluated whether the use of American Sign Language (ASL) between infants and mothers in a residential program recovering from illicit drug use/substance abuse (ID/SA) increased the mother's self-efficacy and decreased her anxiety. This chapter presents the background to the study, statement of the problem, purpose of the study, hypotheses, and theoretical framework. The chapter concludes with definitions of terms, significance of the study, and summary.

#### Background to the Study

The background to the study first explores illicit drug/substance abuse, ID/SA during pregnancy and parenting skills of ID/SA women. Residential treatment programs and American Sign Language are then presented.

#### *Illicit Drug /Substance Abuse*

Five percent of the global population aged 15 to 64, or approximately 208 million people have used illicit drugs at least once in the last 12 months. Roughly half of these or 100 million people use drugs once a week or monthly (United Nations Office on Drugs and Crime, 2008). Illicit drug use includes using marijuana/hashish, cocaine (including crack), inhalants, hallucinogens, heroin, or prescription drugs for non-medical purposes. Substance abuse includes the overuse of legal substances such as alcohol and tobacco (Substance Abuse and Mental Health Services Administration /Office of Applied Studies, 2007). In 2006, 20.4 million Americans (8.3%) aged 12 and older were illicit drug users, 125 million (50.9%) abused alcohol and 72.9 million (29.6%) used tobacco (SAMHSA/OAS, 2007).

### *ID/SA and Pregnancy*

In 2002 and 2003, the National Survey on Drug Use and Health (NSDUH) surveyed 135,910 persons aged 12 and older concerning illicit drug and substance use. Among those surveyed, 2,226 were pregnant women ages 15 to 44. Of these pregnant women 4.3% used an illicit drug, 11.2 % used alcohol and 4.5 % reported binge drinking (SAMHSA, 2007). During pregnancy some women who are chemically dependent do not seek proper prenatal care because they believe they will be punished by law and they would rather “go underground” to avoid detection and treatment for fear of incarceration and loss of their children (Poland, Dombrowski, Ager, and Sokol, 1993).

Illicit drug and alcohol abuse during pregnancy are leading preventable causes of mental, physical, and psychological problems in infants and children (March of Dimes, 2006b). Risks include mental retardation, heart defects and an inability to respond to another human face or voice. Severe speech and language disorders have been reported in infants exposed in utero to the use of polydrugs (Budden, 1996). Polydrugs is the use of more than one drug usually with the intention of enhancing or countering the effects of one drug with another.

### *ID/SA and Parenting*

Compared to ID/SA men, ID/SA women have lower self-efficacy and higher levels of anxiety (Washington, 2001). Women who abuse drugs and illicit substances during their pregnancy are at risk of not achieving their role as successful parents (Coyer, 2001). Infants exposed to drugs before birth may suffer withdrawal symptoms at the time of birth or may become distressed and constantly tense after going home (Bauer, 2003). Parenting difficulties like these may overwhelm a new mother and increase her struggle to end her own drug dependency (March of Dimes, 2006b). Stressful experiences like a

constantly crying infant, may impair confidence, lead to anxiety arousal, and create discomfort in the parenting role (Bandura, 1994; Johnson, & Rosen, 1990). In addition, parenting-related stress can produce maladaptive coping strategies, such as a relapse into drug use (Kelley, 1998; Velez, et al., 2004).

Communication between a mother and infant at an early age establishes a lasting foundation for the infant's physical, intellectual, emotional and spiritual health (Garcia, 2006). New mothers who abused cocaine during pregnancy were found to be less attentive and more distracted during interactions with their children contributing to communication problems (Ball, Mayes, DeToso and Schottenfeld, 1997). Parents and children can create feelings of inefficacy in each other when a child has difficulty signaling appropriately and a parent has difficulty interpreting and responding to a child's cue (Goldberg, 1977).

#### *ID/SA Residential Treatment Programs*

Residential programs that include participants' children have been demonstrated to be effective (Social Care Institute for Excellence, 2005). ID/SA mothers significantly reduce their drug and or alcohol use following treatment in a program that allows them to bring their children with them in residence (Rosack, 2001). Residential programs address issues of shame and guilt and give mothers a sense of empowerment by providing services to meet their specific needs as well as the emotional needs of their family (Jackson, 2004). Many treatment programs facilitate mother-infant interaction, improvement of communication skills and foster harmonious mother-child relationships (Porter & Porter, 2004). Learning American Sign Language to help improve communication between a mother and her child, as was done in this study, is an

additional parenting tool that will increase the ID/SA mother's self-efficacy, decrease her anxiety and therefore lead to more successful parenting.

### *American Sign Language*

ASL is the fourth most commonly used language in the United States (National Institute on Deaf and Other Communication Disorders [NIDCD], 2000). A language with its own rules of grammar, punctuation, and sentence structure, ASL is one of several communication options available to deaf people. To form its words, ASL uses hand shapes with position and movement, body movements, gestures, facial expressions and other visual cues (NIDCD, 2000). Although usually associated with the Deaf community, research using ASL has also been conducted in the hearing community (Garcia, 1986). For example, hearing parents have been taught to regularly and consistently expose their hearing infant to ASL and by the age of 8 or 9 months these infants began using this expressive form of communication (Garcia, 1986; Whaley, 1999). ASL is being taught to hearing parents and infants across the nation in playgroups and preschools and products such as DVDs and books can also be purchased to help facilitate learning ASL at home. Adults help children learn to speak by talking with them (Perry, 2006) and using signs to communicate before speech develops can enhance the overall communication process (Garcia, 2006).

The use of ID/SA can result in unsuccessful parenting, stress that can lead to anxiety arousal and an inattentive infant (Ball et al.1997, Bandura, 1994; Coyer, 2001). The ID/SA mother enrolled in a residential rehabilitation treatment program with her infant/child was the population in this study and taught ASL. Teaching ASL to the ID/SA

mother promoted an increase in her self efficacy that lead to better parenting and a decrease in her anxiety.

With increased self-efficacy one can better execute actions necessary to deal with life events (Bandura, 1982) Parenting is one of these life events where increased self-efficacy may provide a rehabilitating mother with the belief that she has the capability to be a successful parent.

#### Statement of the Problem

Parenthood places one into an expanded role which can be trying for those who lack a sense of efficacy and can create a high vulnerability to stress and depression (Bandura, 1994). The birth of an infant is considered a crisis event because of the biological, psychological, and family changes that occur (Brazelton, & Cramer, 1990). Parenting an irritable drug exposed infant may be a difficult task the ID/SA mother will shy away from. For people to act differently, they must see that different behavior would result in a better outcome (Bandura, 1994). When people understand the impact of their actions and the consequences that can follow, it may serve as a source of motivation (Patterson, Grenny, Switzler and McMillion, 2002). A way to increase self-efficacy is to create situations that bring success and avoid situations that bring failure (Bandura, 1994).

Illicit drug and substance abusing mothers may be more vulnerable to parental role difficulties (Coyer, 2001). They have feelings of guilt and shame concerning their children and look at themselves as a failing parent (Ehrmin, 2001). Learning new parenting skills can boost a recovering mother's self-esteem, alleviate self-contempt and deepen her bond with her child (Bauer, 2003). Learning ASL as an additional

communication tool between mother and infant can enhance the overall communication process (Garcia, 2006). This new parenting skill may increase the self efficacy of the ID/SA mother and therefore increase her belief about her capability to parent more successfully.

### Purpose of the Study

The purpose of this experimental study was to determine whether the use of American Sign Language (ASL) between mothers and their infant/child who are living in a residential treatment program for illicit drugs/substance abuse (ID/SA) showed an increase in the mothers' general self-efficacy and a decrease in their anxiety.

### Hypothesis

The hypotheses for this study were:

H<sub>1</sub>: ID/SA mothers who have participated in ASL will report higher levels of self-efficacy than those mothers who have not participated.

H<sub>2</sub>: ID/SA mothers who have participated in ASL will report lower levels of anxiety than those mothers who have not participated.

### Theoretical Framework

Self-efficacy is at the core of Bandura's Social Cognitive Theory (Pajares, 2002). Perceived self-efficacy is one's belief about one's capability to produce levels of performance that exercise influence over events affecting one's life (Bandura, 1994). A strong sense of self-efficacy enhances human accomplishment and personal well-being. Levels of motivation, affective states and actions are based more on what someone believes than on what is objectively true (Bandura, 1997). People who doubt their

capabilities shy away from difficult tasks, viewing them as personal threats (Bandura, 1994).

Affecting thought patterns and emotional reactions, high self-efficacy can create feelings of serenity and therefore deter anxiety and stress that lead to a narrow vision of how best to solve a problem (Pajares, 2002). Initial efficacy experiences, such as verbal and nonverbal judgments of others, are centered in the family and undergo changes throughout the lifespan (Bandura, 1994, Pajares, & Urdan, 2006). Parents who are secure in their efficacy can navigate through the various phases of their child's development and are less vulnerable to stress (Bandura, 1994).

#### Definition of Terms

*American Sign Language (ASL)* is one of several communication options available to deaf people. It is a language with its own rules of grammar, punctuation, and sentence structure (NIDCD, 2000). Considered a visual-gestural language, ASL, is visual because we see it and gestural because the signs are formed by the hands (Stewart, 1998). Participants' knowledge and use was evaluated by return demonstration to the instructor during session.

*Anxiety* includes feelings of apprehension, tension, nervousness and worry, which increase in response to physical danger and psychological stress (Spielberger, Gorsuch, & Lushene, 1983). Participant anxiety was assessed by having them agree or disagree on a five point Lickert scale with a series of statements about their level of anxiety right now.

*Illicit drugs (ID)* include the use of illicit substances such as marijuana/hashish, cocaine (including crack), inhalants, hallucinogens, heroin, or prescription drugs for non-medical purposes (SAMHSA/OAS, 2007).

*Residential treatment programs* provide treatment for ID/SA that include halfway housing, residential long-term treatment with beds for clients' children, outpatient programs and partial hospitalization/day treatment for persons with co-occurring mental and substance abuse disorders, pregnant/postpartum women and their children (US Drug Rehab Centers, 2004).

*Self-efficacy* is a person's belief about his or her capabilities to produce designated levels of performance that exercise influence over events that affect his or her life (Bandura, 1994). ). Participants' general self-efficacy will be assessed by having them agree or disagree on a 4 point scale with a series of statements about their level of self-efficacy.

*Substance abuse (SA)* is defined by societal disapproval and may include the experimental and recreational use of substances such as alcohol and tobacco which is usually viewed as legal but may hold the risk of arrest (Beers, & Berkow, 1999). Participant substance abuse was assessed on the demographic questionnaire by them indicating the type and frequency of use.

#### Significance of the Study

This study adds to research concerning services provided to recovering ID/SA mothers in residence with their children. It provides a tool that may help educators and healthcare providers support the ID/SA mother with a greater understanding of the needs of women with addiction problems. The addition of ASL to existing recovery program services can improve outcomes for both parent and infant/child. Learning ASL as a parenting tool can contribute to improving a mother's self-efficacy by increasing her knowledge of parenting skills and therefore decreasing her anxiety. This research can



also have the potential to improve speech and language problems secondary to infants' exposure to illicit drugs while in utero. ASL facilitates communication in the home and allows infants and young children to express their needs without frustration (Daniels, 2000). Harmonious interaction, such as a mother recognizing the way her infant communicates, is vital to an infant's well-being and development (Porter, & Porter, 2004).

### Summary

Women who abused drugs and illicit substances during their pregnancies are at risk of not achieving their roles as successful parents (Coyer, 2001). The birth of a child with prenatal drug exposure creates added responsibility for an ID/SA mother and may cause her to become more vulnerable to parental role difficulties (Coyer, 2001). Learning ASL to help increase a mother's self-efficacy concerning her role as a parent can help with these parenting difficulties. By increasing self-efficacy of the recovering ID/SA mother, the parenting task may be seen as a challenge to accomplish rather than as a threat to avoid.

This chapter has introduced the background to the study, statement of the problem, purpose of the study, hypotheses, theoretical framework, definition of terms, significance of the study, and summary. Chapter 2 reviews the literature that supports the research question, and chapter 3 presents the research design. Chapter 4 presents the data and findings of the study and chapter 5 provides a conclusion and recommendations.

## CHAPTER II

### LITERATURE REVIEW

This chapter is a review of the literature relevant to this study. Three sections comprise the chapter: (a) illicit drug /substance abuse, (b) self efficacy, and (c) communication.

#### Illicit Drug /Substance Abuse

People have always used drugs. During the twentieth century in the United States certain patterns of drug use were labeled as addictions (Szasz, 2003). Illicit drugs and certain abused substances such as alcohol and tobacco only become a concern when their use results in a significant negative consequence for the user and society (Goode, 2008; Substance Abuse and Mental Health Services Administration [SAMHSA]/Center for Substance Abuse Treatment [CSAT], 2006; Szasz, 2003).

#### *Defining Illicit Drugs and Abused Substances*

Illicit drug use includes marijuana/hashish, cocaine (including crack), inhalants, hallucinogens, heroin, or prescription drugs for non-medical purposes (SAMHSA/OAS, 2007). Objectively, illicit drug use refers to drug consumption that is harmful or risky to users and to persons who come in contact with users (Goode, 2008). Substance abuse includes the overuse of legal substances such as alcohol and tobacco (SAMHSA/OAS, 2007). Heavy alcohol use is drinking five or more drinks on the same occasion on each of 5 or more days in the past 30 days. Binge alcohol use is defined as drinking five or more alcoholic drinks on the same occasion (i.e., at the same time or within a couple of hours of each other) on at least 1 day in the past 30 days (SAMHSA/OAS, 2007). Tobacco, also

considered an abused substance, includes cigarettes, cigars, smokeless tobacco and pipes (SMAHSA/OAS, 2007).

### *History of ID/SA*

History reveals that the use of drugs and certain substances has been around for a very long time. The use of opium, cocaine and marijuana are three drugs documented in numerous historical writings along with substances such as alcohol and tobacco products such as cigarettes.

Sumerians, who once inhabited what we now know as Iraq, cultivated poppies and isolated opium around 5000 B.C. One of oldest known medical works of magical formulas and folk remedies, the Ebers Papyrus, 1500 B.C., describes the use of the poppy plant to relieve the excessive crying of children (Aggrawal, (1995); Brownstein, 1993; Szasz, 2003).

Over 4,000 years ago, leaves from the coca plant were found in graves (Goode, 2008; Grinspoon, & Bakalar, 1985). In 1863, a French chemist created a soft drink containing cocaine and Americans soon followed with a similar concoction known as Coca-Cola. Cocaine was used as a local anesthetic in eye, nose, and throat surgeries in the 1880s and when soldiers were given the drug it was believed they were less likely to become tired (Drug Enforcement Administration, 2007; Goode, 2008). Sigmund Freud treated his own depression for approximately three years with cocaine. Freud reported feelings of exhilaration and lasting euphoria that were no different from that of a healthy person. He perceived an increase in self-control, possessed more vitality and capacity for work and found it hard to believe he was under the influence of a drug (Brecher, 1972a; Goode, 2008; Szasz, 2003).

Cultivation of marijuana in the United States began around 1600 when Jamestown, Virginia, settlers grew the plant for its strong fiber and created a source of major revenue until after the Civil War. During the 19th century marijuana plantations flourished in Mississippi, Georgia, California, South Carolina, Nebraska, New York, and Kentucky (Brecher, 1972b).

In nineteenth century America, over the counter medications containing opium, cocaine, and marijuana were common. In 1897, hypodermic kits, including syringe, needles, vials and a carrying case could be purchased from the Sears Roebuck and Co. catalogue (Goode, 2008). These three major drugs affected behavior and were used to enable men to work better, harder and longer. They were to pre technological man what machines are to technological man. In other words, they helped to increase productivity and output (Szasz, 2003).

Also having a long history and the potential to harm, alcohol and tobacco are the two most common substances used or abused (Goode, 2008). Humans have been ingesting alcohol for more than 10,000 years, and one of its earliest historical recordings is the description of a brewery from the Egyptians in 3500 B.C. (Goode, 2008; Szasz, 2003). Upon returning to Europe from America, Columbus brought the gift of tobacco from the inhabitants of the Caribbean and in 1613, John Rolfe, husband of Pocahontas, sent the first shipment of tobacco from Virginia to England (Goode, 2008; Szasz, 2003). Today, throughout the world, the use of illicit drugs and the abuse of substances continue (UNODC, 2008).

### *ID/SA Use Globally*

Although remaining stable for the past four years about 0.6 % of the global population, aged 15 to 64, approximately 208 million people, have used illicit drugs at least once in the last 12 months (UNODC, 2008). Using marijuana as an example, the United Nations estimated that in 2006, 166 million people used this drug (World Drug Report, 2008). Worldwide and in the United States, marijuana is the most commonly used illegal drug (Goode, 2008; UNODC, 2008). The World Health Organization (WHO) estimates 2 billion people (age 15 years and older) worldwide consume alcohol and tobacco consumption affects as much as 25% of the global adult world population (UNODC, 2008; World Health Organization, 2004).

Illicit drug and substance abuse has primarily been considered a problem specific to men and most of the research has been focused on males (Lynch, 2002). International, national and local studies on the prevalence of substance abuse does not often address the gender issue due to the lack of awareness and negative attitudes to substance abuse by women (United Nations Office on Drugs and Crime, 2004). However, the most recent United Nations report indicates that women represent an estimated 10 percent of substance users in some traditional Asian societies, 20 percent in countries of the former Union of Soviet Socialist Republics and Latin America and about 40 percent in North America and some European countries (Global Illicit Drug Trends, 2002). For example, in Germany about 15 to 25 percent of substance abusers (those using illicit drugs other than marijuana) are women. Most of these women use more than one drug and research shows an increase of crack use among women in their twenties and thirties (Vogt, 2004). The number of women in Chile abusing illicit drugs has increased and these women have

a higher dependency on cocaine and an increase in alcohol use when compared to men (Lara, 2004).

*ID/SA Use in the United States*

In 2006, 20.4 million Americans (8.3%) aged 12 and older were illicit drug/substance abusers (SAMHSA/OAS, 2007). Also in 2006, 125 million (50.9%) abused alcohol and 72.9 million (29.6%) used tobacco (SAMHSA/OAS, 2007). Heavy drinkers numbered 17 million, binge drinkers were 57.8 million and 70.9 million people used tobacco products (SAMHSA/OAS, 2007). Health and other public concerns, such as the cost of health services, have prompted detailed federal and state regulations concerning the sale and possession of alcoholic beverages and tobacco products (Cochran, 2007).

The National Survey on Drug Use and Health survey includes reports of the 15 largest metropolitan statistical areas (MSA) in the United States. These areas compare the rates of past month use of illicit drugs, alcohol bingeing and cigarette use with the entire nation (National Survey on Drug Use and Health, 2007).

According to the U.S. population in 2005 these areas included Atlanta, Boston, Chicago, Dallas-Fort Worth, Detroit, Houston, Los Angeles, Miami-Fort Lauderdale, New York, Philadelphia, Phoenix, Riverside, San Francisco, Seattle and Washington, D.C. To obtain sufficient numbers to make reliable estimates, the comparisons are based on the combined data from SAMHSA's 2002 to 2005 annual National Surveys of Drug Use and Health. The target population for the NSDUH survey is limited to a civilian, non-institutionalized population aged 12 and older.

The national average rate of current illicit drug users aged 12 or older, was 8.1%. San Francisco was significantly higher at 12.9% and Detroit was 9.5%. Also above the

national average, with a 2005 census of 5.4 million residents, Miami-Fort Lauderdale was 8.2% (National Survey on Drug Use, 2007).

Past month binge drinking was 22.7% for the nation. Above national average, Chicago reported 25.7 % and Houston was 25.6%. Miami-Fort Lauderdale ranked close to the national average at 21.7%. The rate of current cigarette smoking was 25.3% nationally. Of the 15 MSA's only Detroit was above the national average reporting 27.4%. Lower than the national average, Miami-Fort Lauderdale reported 22.0% and San Francisco and Los Angeles tied at 17.9%.

Illicit drug use or the use of prescription drugs for non-medical purposes leads to the death of between 20,000 and 30,000 people each year, alcohol consumption claims 85,000 lives and 440,000 lives are claimed from the use of cigarettes (Goode, 2008). Costing over 180 billion dollars in 2002, drug and substance dependence problems place an enormous emotional and financial burden on individuals, their families and society (Mark, Coffey, Vandivort-Warren, Harwood, and King, 2005; Office of National Drug Control Policy, 2002; World Health Organization, 2003). Clearly, drug and substance abuse are of concern when their use results in significant negative consequences for the user and society.

#### *Women and ID/SA*

During the 19<sup>th</sup> century opiates, cocaine and marijuana were widely used to treat gynecological problems such as vomiting from pregnancy, labor pains and cracked nipples (Kandal, 1999). Colonial women used a special high proof drink to ease pregnancy labor even though drinking alcohol by women was usually done privately (Eames, 1996). During the start of the 20<sup>th</sup> century, women smokers were rare, but in

1928, after smoking was promoted as a benefit for weight loss, the number of female smokers greatly increased (American Lung Association, 2008; Herrera, 1999). Because women make up a significant portion of America's drug users and addicts, the child bearing years are of increased concern due to the possible effects of ID/SA use in utero (Kandal, 1999).

### *ID/SA Effects on Pregnancy*

Pregnancy can occur after a female's first menstrual period around age 12 (American Society for Reproductive Medicine, 2003) resulting in a population vulnerable to the negative consequences of ID/SA. The use of ID/SA during pregnancy actually affects two humans at the same time, mother and baby. The possibility of miscarriage, stillbirth, placental problems and premature rupture of membranes are some of the risks when pregnant women use illicit drugs or abuse certain substances (March of Dimes, 2006b).

Smoking and cocaine use among pregnant women can independently contribute to the risk of miscarriage according to a case control study of 970 inner-city women. Both cocaine and tobacco are strong vasoconstrictors that reduce blood flow. Substance abuse was high among this group with an almost 30 percent evidence of cocaine use in the previous few months and more than one-third being current smokers. Of the study group, 400 of the women had miscarriages. The study revealed that 24 percent of the risk of miscarriage was related to cocaine and tobacco use (Ness, Grisso, Hirschinger, Markovic, Shaw, Day, Kline, 1999). The 2004 Surgeon General's Report states that once a smoking woman is pregnant they are twice as likely to experience complications such as placenta previa. This is a condition where the placenta grows too close to the opening of the uterus and frequently leads to delivery by Caesarean section. Another complication for pregnant



smokers is placental abruption. The placenta prematurely separates from the wall of the uterus and can lead to preterm delivery, stillbirth or early infant death. Placental abruption for smokers is 1.4 to 2.4 times that of nonsmokers. The Surgeon General's Report also states that pregnant smokers are at a higher risk for the premature rupture of membranes before labor begins leading to a shorter gestation period (Center for Disease Control, 2004).

Potential complications for the newborn include low birth weight, withdrawal symptoms, distress and constant tenseness after going home (Bauer, 2003; Connors, Bradley, Mansell, Liu, Roberts, Burgdorf, Herrell, 2003; March of Dimes, 2006b; Reider, 1990). The relationship of methamphetamine exposure and the incidence of small for gestational age was analyzed using multivariate logistic-regression analysis in a study involving 1,618 subjects, 84 were exposed and 1534 were not exposed. Both groups included prenatal alcohol or marijuana use but not opiate, LSD, PCP or cocaine only. The exposed group was 3.5 times more likely to be small for gestational age. In addition, mothers using tobacco during pregnancy were nearly 2 times more likely to have small for gestational age infants. Continued follow-up of care will help determine if these infants are at increased risk for growth abnormalities (Smith, LaGasse, Derauf, Grant, Shah, Arria, Huestis, Haning, Strauss, Grotta, Liu, Lester, 2006).

Determining the effects of patterns of drug use during term pregnancy on infant growth parameters at birth was the objective of a study consisting of 241 cocaine-exposed women and 410 non-cocaine-exposed women. In the cocaine-exposed group, 75% used alcohol, 90% used tobacco, and 53% used marijuana; in the non-cocaine-exposed group, 57% used alcohol, 34% used tobacco, and 19% used marijuana. Birth

weight, birth length, and head circumference were significantly greater among infants born to women who used no drugs, compared with women with any cocaine, opiate, alcohol, tobacco, or marijuana use, and were greater among infants born to cocaine nonusers, compared with cocaine users. The effects of patterns of multi-drug use during pregnancy were analyzed, rather than use in a single trimester or drug use averaged throughout the pregnancy, making this study unique (Shankaran, Das, Bauer, Bada, Lester, Wright, Smeriglio, 2004).

Illicit drug use and substance abuse is the leading preventable cause of mental, physical, and psychological problems in infants and children (March of Dimes, 2006b). Health risks include mental retardation, heart defects and an infant's inability to respond to another human face or voice. Further complicating matters during pregnancy, some women who are chemically dependent do not seek proper prenatal care because of their chronic drug intoxication and the fear of how health professionals will treat them (Davis, 1997). A review of the literature from 1975 to 2005 has confirmed this fear of seeking medical care. An investigation of 280 relevant articles investigated gender differences in substance abuse treatment outcomes. Ninety percent of the studies were published since 1990 and over 40% since 2000. Only 11% of the studies were randomized clinical trials. The evidence suggested that over a life time women with substance use disorders were less likely, to enter treatment when compared to males (Greenfield, Brooks, Gordon, Green, Kropp, McHugh, Lincoln, Hien, Miele, 2007).

Severity of complications for infants depends on the substance used, the possible use of polydrugs (the use of more than one drug with the intention of enhancing or countering the effects of another drug) and the dosage ingested by the mother (Budden,

1996; Reider, 1990; Rossetti, 2000; Zickler, 1999). Infants exposed to cocaine can be extremely irritable with abnormal sleep patterns and lower test scores that measure alertness, attention and intelligence as they mature.

Over 600 children, with either no exposure to any drug, or exposed prenatally to cocaine; to cocaine and marijuana, tobacco or alcohol; or to marijuana, tobacco or alcohol but not to cocaine participated in a study. When examined at 3, 12, 18 and 24 months in a variety of settings, the cocaine exposed children appeared to require more stimulation to increase arousal and attention but were less able to control higher states of arousal than unexposed children (Mays, & Grillon, 1999). In a longitudinal project, 154 cocaine users were matched with 154 control participants that required drug testing at enrollment and delivery. After birth, lower scores were demonstrated on the Brazelton Neonatal Behavioral Assessment Scale (BNBAS) among infants exposed to both cocaine and tobacco and among those exposed to both marijuana and tobacco. This scale tries to capture behaviors of the neonate while he/she defends themselves from intrusive, negative stimuli, and controls interfering motor and autonomic responses in order to attend to important social and nonsocial stimuli (Heidelise, Tronick, Lester and Brazelton, 1997). The results raise concerns about later developmental abilities as well as the effect these infants may have on caregivers who may be compromised in their parenting abilities by their drug use (Eyler, Behnke, Conlon, Woods, Wobie, 1998). Through early childhood these effects create a need for a child to work harder at being alert, focusing, and processing information (Rossetti, 2000; Zickler, 1999). Marijuana can produce excessive crying and trembling in infants and later cause subtle problems

affecting memory and again the ability to pay attention (March of Dimes, 2006b; NIDA, 2005).

Drinking alcohol at any stage of pregnancy can affect an infant's brain as well as his or her growth (Center for Disease Control and Prevention, 2008; March of Dimes, 2006a). Fetal alcohol spectrum disorders (FASD) are caused by the effects of drinking alcohol during pregnancy. Consequences are life-long and the behavioral and learning difficulties are often greater than the degree of neurocognitive impairment (Wattendorf, & Muneke, 2005).

Infants of mothers who smoke during pregnancy can also experience withdrawal-like symptoms similar to those seen in babies of mothers who use illicit drugs. Smokers' infants appear to be more jittery and difficult to soothe (Law et al, 2003; March of Dimes, 2006c). A prospective study of the effects of maternal smoking during pregnancy was done on 27 nicotine exposed and 29 unexposed full-term infants. The infants had no medical problems, were from comparable social class backgrounds and had no in utero illicit drug involvement. The tobacco-exposed infants were more excitable and hypertonic, required more handling and showed more stress/abstinence signs, specifically in the central nervous system, gastrointestinal, and visual areas. These findings suggest a neurotoxic effect of prenatal tobacco exposure on newborn behavior (Law, et al, 2003).

During pregnancy, severe exposure to toxins such as drugs and alcohol can be a cause or contributing factor to developmental and communication delays (Budden, 1996; Rossetti, 2000). For example opiate use resulted in psycholinguistic deficits, cocaine produced problems with language development; marijuana produced significantly lower scores in verbal use, and alcohol showed deficits in the use and comprehension of language (Brady, Posner,

Lang, Rosati, 1994). Several studies concerning language development will be presented later in this chapter. Combined surveys from 2006 and 2007 revealed 5.2% of pregnant women aged 15 to 44 reporting illicit drug use in the month prior to the survey. Alcohol use was 11.6%, binge drinking was 3.7%, heavy drinking was 0.7% and cigarette use was 16.4% (SAMHSA/OAS, 2007). The use of these illicit drugs and abused substances during pregnancy can certainly have an influence on the parenting abilities of these women.

### *ID/SA and Parenting*

Many pervasive, intractable and costly problems, such as low birth weight, neurobehavioral difficulties, child abuse and neglect are partly the result of adverse maternal health-related behaviors such as drug use during pregnancy and dysfunctional infant care (Olds, Hill, Mihalic, O'Brien, 1998; SAMHSA/ CSAT, 2006; Velez et al, 2004). Illicit drug and substance abusing mothers can be more vulnerable to parental role difficulties; they experience feelings of guilt and shame concerning their children and look at themselves as a failing parent (Ashley, Marsden, & Brady, 2003; Ehrmin, 2001). Parenting difficulties increase as a mother struggles to end her own drug dependency and the added responsibility of a child may become overwhelming (Coyer, 2001; March of Dimes, 2006b). Stressful experiences such as a constantly crying infant or an infant not focusing may impair confidence and create discomfort in the parenting role and produce maladaptive coping strategies, such as a relapse to drug use (Johnson & Rosen, 1990; Kelley, 1998; Rossetti, 2000; Velez et al., 2004; Zickler, 1999). High levels of stress can influence the way a woman approaches parenting (Brazelton, & Greenspan, 2000; Velez et al., 2004) and there is a need to teach parental skills to help reduce the anxiety from these stresses (Coyer, 2003).

Programs such as Porter's Parenting Enhancement Program (PEP), is an example of educational training for women in residential ID/SA treatment centers that can help enhance the parenting skills of high risk mothers (Porter, & Porter, 2004). Besides increasing parenting skills, PEP increases the mother's knowledge of infant health and illness, growth and development, safety, cardio-pulmonary resuscitation (CPR), self-care and relaxation (Porter, & Porter, 2004).

#### *ID/SA and Residential Treatment*

Lack of parenting knowledge and misconceptions concerning parenting practices for the ID/SA mother can be due to a history of poor parental role modeling (Camp, & Finkelstein, 1997; Coyer, 2003; Velez et al, 2004). Residential treatment programs for ID/SA mothers that include their children have been demonstrated to be an effective intervention (Finkelstein, 1994; Social Care Institute for Excellence, 2005). These programs showed a significant reduction in drug and alcohol use, a decrease in criminal behavior and six months following the program mothers were free of drugs and alcohol (Rosack, 2001). Residential programs address issues of shame and guilt and give mothers a sense of empowerment by providing services to meet their specific needs as well as the emotional needs of their families (Finkelstein, 1994; Jackson, 2004). Treatment programs that specifically addressed women's needs have proven to be beneficial (Ashley, Marsden, Brady, 2003). After completing treatment in a residential program women have better scores on addiction severity and parental stress along with improved behavioral and emotional functioning of their children (Killeen, & Brady, 2000). These programs facilitate mother infant interaction, improved communication skills and fostered harmonious mother-child relationships (Porter, & Porter, 2004).

People will be more likely to attempt to persevere and be successful at tasks, such as parenting, if they have a sense of efficacy. It is the efficacious parent who is likely to achieve parental competence (Hess, Teti, Hussey-Gardner, 2004).

### Self-Efficacy

Self-efficacy is at the core of Bandura's Social Cognitive Theory and states that individuals are actively engaged in their own development and can make things happen by their actions (Pajares, 2002). Perceived self-efficacy is a person's belief about his or her capability to produce levels of performance that exercise influence over events affecting his or her life (Bandura, 1994). Self-efficacy beliefs produced through four major processes determine how people feel, think, motivate themselves and behave. They include cognitive, motivational, affective and selection processes.

Effective cognitive processing of information can be unclear and uncertain. Learning predictive and regulative rules draws on several things. They include a person's knowledge to create options, weigh and integrate predictive factors, test and revise judgments against the immediate and distant result of their actions, and remember which factors they have tested and how well they worked. Motivation in self-efficacy determines goals people set for themselves, the effort expended, length of perseverance in the face of difficulties and resilience to failure. A belief in coping capabilities affects how much stress and depression a person experiences in threatening or difficult situations and their level of motivation. Perceived self-efficacy concerning exercising control over stressors plays a central role in anxiety arousal. It is not the stressful life conditions, but the perceived inability to manage them that is debilitating. Anxiety arousal is affected not only by perceived coping efficacy but by perceived efficacy to control disturbing

thoughts. A low sense of efficacy to exercise control produces depression as well as anxiety. Beliefs of personal efficacy can shape the course a life takes by influencing the types of activities and environments people choose. Selections people make cultivates different competencies, interests and social networks that determine life courses. Any factor that influences choice behavior can profoundly affect the direction of personal development (Bandura, 1999).

Some researchers explain self-efficacy in a general sense that refers to a global confidence across a wide range of situations (Scholz, Guitierrez-Doña, Sud, and Schwarzer, 2002). Bandura (1997) believes that perceived self efficacy should be conceptualized in a situation specific manner meaning that one can have a firm self-belief in different domains or particular situations of functioning.

With a strong sense of self-efficacy there is enhanced human accomplishment, personal well-being and the ability to quickly recover one's sense of efficacy after failures or setbacks (Bandura, 1994). This efficacious outlook reduces stress, produces personal accomplishment, and lowers vulnerability to depression.

#### *Self-Efficacy and ID/SA*

Not only is perceived self-efficacy a predictor of substance use (Bandura, 1999, 1994); it is involved in both initiation and maintenance of addiction-free states (Hyde et al. 2008). Self-efficacy assessments provide a way to monitor the impact of substance abuse treatment (Bandura, 1999) therefore; specifically targeting self-efficacy may enhance treatment (Hyde, Hankins, Deale, & Marteau, 2008).

An exploratory and confirmatory study was done with male prisoners who were dependent users of hard drugs (heroin, cocaine, cannabis, etc.). A total of 146



questionnaires were obtained and reported that drug users' self-efficacy was best described in three correlated dimensions: environmental factors, negative mood and positive mood. The study reports consistency with other research and supports the concept of situational self-efficacy. Suggesting that self-efficacy should not be considered a stable quality in a person but depends on the situation. Data suggested that the validity of the three factors was supported by the pattern of associations with severity of drug use and lower self-efficacy scores being related to a higher number of days experiencing problems related to drug use (DeWeert-VanOene, Breteler, Schippers, & Schrijvers, 2000).

Also supporting previous studies, a national outcome study looked at the relationship between self-efficacy and drug use with a sample of 294 cocaine users. Frequency of cocaine use was reported for one year before treatment and one month and three months in treatment. Data reported that with increased self-efficacy regarding resisting drug use, there was an association with lower rates of use during treatment. Clients for this study were limited to a subset of clients from a national multisided study and although the results were favorable, it was suggested that more controlled studies were needed (Dolan, Martin, & Rohsenow, 1997).

When comparing women to men concerning substance abuse, women have lower self-efficacy and higher levels of anxiety (Washington, 2001). An experimental study examined the effectiveness of two group (cognitive-structured and experiential-less structured) therapy models on 55 substance dependent women. Although general self-efficacy did not change, there was a positive increase for both groups concerning social self-efficacy. With group members performing meaningful work and showing common

concerns, needed support allowed these women to identify with and be nurtured by their peers (Washington, 2001).

There are a significant number of women, aged 15 to 44 and pregnant, that adds to America's drug and substance abuse (SAMHSA/OAS, 2007). Along with an increased concern due to the possible effects of ID/SA in utero (Kandal, 1999) is the concern of parenting practices among these mothers.

### *Self-Efficacy and Parenting*

Having the ability to meet the demands of being a parent was tested on 82 primiparas at 1 and 3 months postpartum. One year after delivery, mothers who had higher self-efficacy early when transitioning to parenthood, had more confidence in parenting and less stress. This research encourages interventions that will promote empowerment for mothers with low self-efficacy in their role as a parent (Reece, 1992).

Sixty-five mothers of high-risk infants was the focus of a study examining the independent and joint relations of self-efficacy beliefs of parenting and parent knowledge of child development to maternal behavioral competence. Self-efficacy concerning parenting and parenting competence was positively associated when parental knowledge of development was high. In contrast, self-efficacy beliefs of parenting and parenting competence were inversely associated when knowledge of development was low. Confidence is one's ability to perform a task (parenting) successfully is a necessary condition for task mastery (Bandura, 1977). Therefore, self-efficacy theory states that not only should a mother feel confident in her ability to be a good parent, she must also have specific knowledge (Hess et al. 2004).

### *Self-Efficacy and the ID/SA Mother*

The birth of an infant is considered a crisis event due to the biological, psychological, and family changes that occur (Brazelton, & Cramer, 1990). People who doubt their own capabilities shy away from difficult tasks that they view as personal threats (Bandura, 1994). The crisis event of birth may be a task the ID/SA mother lacking self-efficacy will shy away from, since parenting the drug exposed infant can be more difficult. Parenthood places one into an expanded role that can be a trying time for those who lack a sense of self-efficacy and can create a high vulnerability to stress (Bandura, 1994).

An exploratory qualitative study used a convenience sample of 11 women, aged 20-35, recovering from cocaine addiction. During their discussion of efforts to be good parents, all the women identified behaviors that they wanted to change. Five themes emerged, lack of structure (consistency in providing structure for their children), abandonment (leaving their children while using drugs), impatience/anger (sometimes leading to violent episodes with children), knowledge (the need for more information concerning parenting), and repeating dysfunctional patterns from their family of origin (Coyer, 2003). Implications of this study support the opportunity for treatment programs and nursing professionals to promote successful adaptation to the role of parenting. The study also provides a better understanding of the stresses women recovering from ID/SA are experiencing in their role as a parent. Parenting also includes the important skill of communication between mothers and infants which is a vital connection (Garcia, 2006).

### *Self-Efficacy and Communication*

Self-efficacy plays an important role in the process of communication. To be useful, information and knowledge need to be effectively communicated (UN System Network on Rural Development and Food Security, 2008). The following two studies reinforce the importance.

Female partners of men with hemophilia and HIV infection completed a self-report questionnaire that assessed the hypothesized predictors of safer sexual behaviors, current sexual behaviors and key demographic variables. A path analysis was conducted to investigate the relationships between the hypothesized determinants. A significant relational path was found between emotional adjustment, general communicational skills, self-efficacy, and the pros of condom use and the consistent use of safer sexual behaviors. The results demonstrated that increased general communication skills were significantly linked to increased self-efficacy. In turn, there was an increase of safer sexual behavior. The results of this study will help develop risk reduction interventions (Huszti, Parsons, Haas, & Parish, 1995).

Investigating the effects of communication skills training was part of a randomized controlled trial with 19 doctors and 11 nurses. The intervention was evaluated by questionnaires measuring the effect of communication courses on changes in the participant's self-efficacy. Results showed an improvement of self-efficacy for specific tasks and these improvements remained constant for the following 6 months. The sample size was small however the study inspired the need to also look at the impact on patient outcomes and the relation between clinician's ratings of self-efficacy and the patient's experiences of the communication (Ammentorp, Sabroe, Kofoed, Mainz, 2007).

Self-efficacy involves judgments concerning the ability to be successful in such tasks as parenting and it is the efficacious parent who will most likely achieve competence in parenting (Hess et al., 2004). A parent's self-efficacy can significantly affect the quality of care given to a child while contributing to a child's development and influencing the stressfulness of parenthood (Bandura, 2006; Sanders, & Wooley, 2004). For people to act differently, they must believe that different behavior will result in a better outcome (Bandura, 1994). When people understand the impact of their actions the consequences may linger and serve as a source of motivation (Patterson et al., 2002). To increase self-efficacy, situations can be created that bring success and avoid situations that bring failure (Bandura, 1994). Education provides the best escape from substance abuse (Bandura, 2006); and parenting training through education, increases parental self-efficacy (Sanders, 1999; Tucker, Gross, Foss, Delaney, Lapporte, 1998). Learning new parenting skills can boost a recovering mother's self-esteem, alleviate self-contempt and deepen the bond with her child (Bauer, 2003). One of the important skills for mothers is communication with her infant. From the moment of birth, infants communicate with the world around them and this highest form of social interaction is crucial to the development of all infants (Garcia, 2006).

### Communication

To create shared understanding, communication becomes a process of assigning and conveying meaning. The process requires multiple processes (listening, observing, questioning) leading to collaboration and cooperation (Washington office of Superintendent of Public Education, 2008), Information and knowledge are vital for people so they can successfully respond to opportunities and challenges therefore

communication must be effective (UN system Network on Rural Development and Food Security, 2008).

Communication between a mother and infant at an early age establishes a lasting foundation for the infant's physical, intellectual, emotional and spiritual health (Garcia, 2006). Human language transfers an enormous amount of information in a short period of time and in three years a child can hear, mimic, explore, practice and learn language (Perry, 2006). Parents and children can create feelings of inefficacy in each other when a child has difficulty signaling appropriately and a parent has difficulty interpreting and responding to a child's cues (Goldberg, 1977).

#### *Communication and Pregnancy*

It is much more important to experience auditory and tactile stimulation in the early developing years than it is to experience visual ones (Montagu, 1986). The womb is far from being a quiet place. Blood rushes through a mother's vessels, rumbling comes from her stomach and intestines, and tones come from her voice and that of others. At about eight weeks gestation a baby's ears begin to form and they become structurally complete around 24 weeks. Bones of the inner ear and nerve endings from the brain are developed enough at 18 weeks and allow the baby to hear sounds. Until the completion of the pregnancy sound will be a major input of information (Discovery Health, 2008). Newborns can naturally discriminate speech sounds used in all languages and are ready to learn any language. Towards the end of their first year speech perception for the infant becomes specific to the sounds they hear at home. Not only do newborns prefer the human face to other sights, they prefer the human voice to other sounds (Thompson, 2001).

During their last 6 weeks of pregnancy, a group of pregnant women recited a particular speech passage aloud each day. After the birth of their infants, each child was tested with an operant-choice procedure to determine if the sounds of the recited passage were more reinforcing than the sounds of a novel passage. The reinforcing value did not differ for the matched group of control subjects. However; the passage was more reinforcing for the infants whose mothers recited to them before birth. Third-trimester fetuses experience their mothers' speech sounds and that prenatal auditory experience can influence postnatal auditory preferences (DeCasper, & Spence, 1986).

Mothers who abused cocaine during pregnancy were found to be less attentive and more distracted during interactions with their children three months after birth (Ball et al., 1997; Perry, 2001). The first three years of life are the most intense period of speech and language development and it develops best when there are rich sounds, sights and consistent exposure to the speech and language of others (National Institute on Deafness and Other communication Disorders, 2000).

### *Language*

Language is made up of socially shared rules and speech is the verbal means of communication. Receptive language disorders consist of trouble understanding others and disorders of expressive language include difficulty sharing thoughts, ideas and feelings completely (American Speech-Language-Hearing Association, 2008).

Several studies document difficulties in language and speech development for the infant exposed to ID/SA in utero. A cross-sectional study compared cognitive functioning at age five in 204 prenatal drug exposed children with 47 non drug exposed children from the same urban hospital settings (Pulsif, Butz, O'Reilly, Belcher, 2008). The findings

showed significantly lower scores of expressive and total language, school readiness skills and impulse control for the child exposed to drugs in utero. Although the retention rate of subjects was low (57%), the results were consistent with previous studies and suggested close developmental surveillance and coordinated care to support school success (Pulsifer et al., 2008). The effects on language functioning at 3, 5 and 7 years of age were reported in a longitudinal study with a total of 443 (236 prenatal cocaine exposed infants and 207 non exposed infants) infants participating (Bandstra, Morrow, Vogel, Fifer, Ofir, Dausa, Xue, James C. Anthony, 2002). Evidence supported an association between prenatal cocaine exposure and deficits in total language functioning. However, generalization to other groups of children may be a limitation to this study since children were referred to intervention services on an as-needed basis.

Another longitudinal study followed and compared 189 in utero cocaine exposed children and 185 non exposed children from birth to 4 years (Lewis, Singer, Short, Minnes, Arendt, Weishampel, Klein, Min, 2004). The exposed children performed more poorly on the expressive and total language measures, had increased mild receptive delays and were less likely to have higher expressive abilities. In addition, prenatal tobacco and marijuana exposure were related to deficits in specific language skills. Findings support that cocaine affects language skills in early childhood and suggest that these effects may be modified with an enriched environment.

Two prospective cohort studies with a total of 882 children sampled (430 with prenatal cocaine exposure and 452 non exposed) consistently agreed. Cocaine exposed children were two and a half times more likely to be categorized as low language functioning (Delaney-Black, Covington, Templin, Kershaw, Nordstrom-Klee, Ager,



Clark, Surendran, Martier, Sokol, 2000; Morrow, Vogel, Anthony, Ofir, Dausa, Bandstra, 2004).

Examining the effects of prenatal cocaine and polydrug exposure on the language development of preschool children was looked at in another longitudinal study (Lewis, Kirchner, Short, Minnes, Weishampel, Satayathum, Singer, 2007). There were 209 cocaine exposed and 189 non cocaine exposed children followed at birth, 1, 2, 4, and 6 years of age. Children were compared on receptive, expressive and total language scores. The study concluded that cocaine exposure had a negative effect on language skills during the first 6 years and that the cumulative risk for language disorders could be based on prenatal drug or other toxic exposure. Learning additional ways to communicate with their infant/child, the ID/SA mother may be able to more effectively deal with the difficulties in language and speech development for the infant exposed in utero.

### *American Sign Language*

From the earliest days of communication, people have relied on symbols created by the hands to communicate with other groups of people (Stewart, 1998). ASL is the fourth most commonly used language in the United States (National Institute on Deaf and Other Communication Disorders [NIDCD], 2000). A language with its own rules of grammar, punctuation, and sentence structure, ASL is one of several communication options available to deaf people. To form words, ASL uses hand shapes with position and movement, body movements, gestures, facial expressions and other visual cues (NIDCD, 2000).

Infants as young as 8 months old communicate using gestures (Acredolo, & Goodwin, 2002; Garcia, 2006). It may take 12 to 16 months for clear speech to develop

(Garcia, 2006); therefore; ASL provides an excellent way for infants to express their needs prior to speaking (Whaley, 1999). Signing can facilitate communication in the home and allow infants and young children to express their needs without frustration (Daniels, 2000) and further frustrating the parent. Harmonious interaction, such as mothers recognizing the ways their infants communicate, is vital to infants' well-being and development (Porter, & Porter, 2004).

Although usually associated with the Deaf community, American Sign Language is also being taught and used in the hearing community. For his graduate thesis, Joseph Garcia chose to research early childhood language acquisition and the part sign language could play in the process (Garcia, 1986), Seventeen families participated in the study using the tool of sign language with pre-verbal infants. Results indicated that infants exposed to signs regularly and consistently at six to seven months of age could begin to use expressive communication by the eighth or ninth month (Garcia, 1986). A similar pilot study also discovered that babies as young as nine months of age could use sign language to communicate with their caregivers. This study reported that it was easier for teachers to work with 12 month old infants that would sign for their bottle instead of crying and having to figure out what the infant wanted (Whaley, 1999). A longitudinal study involving 140 families exposed to sign language demonstrated that hearing children who used ASL in their infancy understood more words, had larger vocabularies, scored higher on intelligence tests and enhanced their overall communication processes. The parents of the signing infants in the Acredolo, & Goodwin (2000) study reported decreased frustration, increased communication, a deepened bond with their child, increases in their child's self confidence and interest in books. When the families were

revisited and the children were seven and eight years old, the signing infants had a mean IQ of 114 compared to the non-signing control group who's mean IQ score was 102 (Acredolo, & Goodwin, 2000).

ASL is being taught to parents and infants across the nation in private classes, playgroups, preschools and at home. A population to consider learning the skills of ASL is the ID/SA mother currently enrolled in a residential rehabilitation treatment program with her infant. Many of these mothers are from low income situations and may not have the opportunity to attend private, community offered classes or purchase teaching tools for home use (Conners, 2003; Kerwin, 2005).

Since language skills and development are affected by ID/SA (Kim, & Krall, 2006), learning ASL as an additional communication tool between mother and infant can therefore enhance the overall communication process (Garcia, 2006). When taught in residential rehabilitation programs, ASL can help increase an ID/SA mother's self-efficacy and reduce her anxiety. With increased self-efficacy there is a better estimation of how well one can execute actions necessary to deal with life events (Bandura, 1982). Parenting is one of these life events where increased self-efficacy and reduced anxiety can provide a rehabilitating ID/SA mother with the belief that she has the capability to be a successful parent.

### Summary

Chapter 2 reviewed the literature concerning illicit drugs and substance abuse, including its history, costs to society and its effects on pregnancy, the unborn infant and parenting challenges. Feelings of guilt and shame along with the lack of positive parental role models, creates discomfort in the parenting role and can produce maladaptive coping

strategies. Lacking a sense of self-efficacy, the expanded role of parenthood can be difficult. Education provided during ID/SA residential treatment programs that include children are effective and can increase a mother's self-efficacy.

In this study the ID/SA mother engaged in learning American Sign Language and promoted communication between herself and her infant, she increased her perception of self-efficacy and the belief that she was more effective in her parenting role. Confidence in being a more effective parent will also lower vulnerability to stress.

In chapter 3 the research method is discussed, chapter 4 presents the findings of the study and chapter 5 concludes with a summary, implications and recommendations.

## CHAPTER III

### METHOD

This section presents with the purpose of the study and the research hypotheses, followed by a description of the research design, the population and sample, and instruments used to measure the variables. The chapter concludes with a discussion of the procedures for data collection and analysis, data management, limitations, and summary.

#### Purpose of the Study

The purpose of this experimental study was to determine whether the use of American Sign Language (ASL) between a mother and her infant/child who were living in a residential treatment program for illicit drugs/substance abuse (ID/SA) showed an increase in the mother's self-efficacy and a decrease in her anxiety.

#### Hypotheses

H<sub>1</sub> ID/SA mothers who have participated in ASL will report higher levels of general self-efficacy than those mothers who have not participated.

H<sub>2</sub> ID/SA mothers who have participated in ASL will report lower levels of anxiety than those mothers who have not participated.

#### Research Design

Experimental design determines the impact of an intervention on the outcome for participants in a study and provides the ability to predict similar events in the future (Babbie, 2004; Creswell, 2003, 2005; Merriam, & Simpson, 2000). A control group and an experimental group are the primary components of experimental design used to establish cause and effect between the independent and dependent variables. Individuals are *randomly* assigned to these groups and every individual has an equal probability to be

selected (Merriam, & Simpson, 2000). Known as equating the groups, this process equally distributes any variability of individuals between or among the groups (Babbie, 2004; Creswell, 2005). The impact is assessed by giving the experimental group one set of activities, referred to as an intervention, and withholding the same set from the control group (Creswell, 2003, 2005; Merriam, & Simpson, 2000).

An attempt is made to control all variables that may influence the outcome except for the independent variable; therefore, experimental design is the best quantitative design to use in establishing probable cause and effect (Creswell, 2005). With this design, it is possible to accurately predict events in similar settings without actually observing those events (Merriam, & Simpson, 2000).

When populations are not easily accessible, results of experimental studies, utilizing a sample, can be generalized to a greater population. The intent of generalization in experimental design is to apply results from a small number of people, who represent a cross section of individuals, to a larger number of people (Creswell, 2003, 2005). The larger the number of representative individuals studied, the stronger the case for generalizing the results (Creswell, 2005). When generalizing beyond the sample, settings or ecological validity may impose threats since results may be applied from the set of environmental conditions created by the researcher to real life situations. Methods, materials and settings of an experiment must mimic the real-life situation under study for ecological validity; however, if the study is in the setting of eventual interest, generalizability is not an issue (Reis & Judd, 2000; Cone J. D. & Foster, S., 2005).

The researcher obtained a Human Participant Protections Education for Research Completion Certificate from the National Institutes of Health (NIH) on August 1, 2005. This information, along with the required application and documentation, was submitted to the Florida International University's Institutional Review Board for human subjects and was approved.

### Research Population

The population of interest is illicit drug/substance abusing mothers living with and caring for their infant/child who is less than 2 years old. There are 315 residential drug rehabilitating facilities in the United States accommodating pregnant/postpartum women and their children (Mason, 2006).

### *Sample*

The sample for this study was composed of ID/SA mothers living with and caring for their infant/child while in a residential rehabilitation center in Broward County, Florida. Florida currently has 12 residential drug rehabilitation centers providing residential beds for the clients' children; two of these centers are located in Broward County (U.S. Drug Rehab Centers, 2009).

This convenience sample was chosen because of the limited number of local rehabilitating centers in which mothers and their infants/children can reside together and the facility was accessible to the investigator. Participants were ambulatory and capable of performing activities of daily living and the type of illicit drug or substance abused was not a factor in determining eligibility for participation in this study.

The participants were from one of five structured levels within the facility. Orientation or Orientation/ Omega are the entry levels of the facility. If the mother is

drug and alcohol free she is assigned to Orientation. Mothers are placed in the Orientation/Omega level if they test positive for drugs upon arrival and are provided extra supportive classes concerning drugs and alcohol. Levels I through IV are each reached by the mothers meeting specific criteria. This includes filling out a level movement application, accruing a certain number of points by attending classes, doing chores, following a dress code and always displaying a name tag. Also each level requires one written paper by the mother that addresses the subjects of responsibility, cooperation, gratitude and citizenship. A 55 dollar money order is also required for each level move and is placed into a savings account to be given to the mother upon successful completion of the program. Movement between levels should only take 30 days with the exception of Level III, which requires a 2 month stay.

The participants were caring for an infant/child less than 2 years old who was medically stable. Knowing that withholding social responses to an infants' attempt to communicate is disruptive in their learning process (Garcia, 2006), starting ASL early may prevent feelings of frustration and powerlessness for the infant (Acredolo & Goodwin, 2009). ID/SA mothers who currently used American Sign Language were excluded from this study.

Participants were randomly assigned to two separate groups. Because random assignment is a characteristic of true experimental research (Creswell, 2005), each individual had an equal probability of being selected from the population and therefore increasing the probability of representativeness (Keppel, 1991). Thus, potential bias in the personal characteristics of individuals in the experiment was distributed equally among groups and controlled for extraneous characteristics which might have influenced



outcomes (Creswell, 2003, 2005). Each participant was assigned a number and a random number generator was used to randomize the participants. (Merriam & Simpson, 2000). When conducting experimental studies such as this, Creswell (2005) advises having at least 15 members per group for statistical analytic purposes (Creswell, 2005). There were 30 participants overall in this study.

#### Instrument Selection and Evaluation

The two instruments used in the study were additive scales and have good validity estimates: The General Self-Efficacy Scale (GSE; Jerusalem & Schwarzer, 1992) and State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, & Lushene, 1983). The instruments were selected for their ease of comprehension and use, theoretical base development, and considerable reliability and validity evidence.

##### *The General Self-Efficacy Scale (GSE)*

The General Self-Efficacy scale was used to measure the ID/SA mother's self-efficacy (Appendix B). The General Self-Efficacy Scale (GSE) assesses self-efficacy and its goal is to predict the ability to cope with daily hassles as well as the ability to adapt after experiencing different kinds of stressful life events. The scale is designed for a general adult population and is self-administered. The scale was first developed in 1979 by Matthias Jerusalem and Ralf Schwarzer and later revised and adapted to 26 other languages by various co-authors. The scale is unidimensional and based on the samples from 23 nations. Good reliability estimates of the scale have been obtained with Cronbach's alphas ranging from .76 to .90. Criterion-related validity has been documented in numerous correlation studies (Jerusalem, & Schwarzer, 1992).

For example, the psychometric properties of the GSE were examined in a study with 19,120 participants from 25 countries. The main research question concerned whether the GSE measure is equivalent across cultures. Cronbach's alpha was .86 and the criterion-related validity had positive coefficients for age, expected social support, optimism and negative coefficients for anxiety and depression. Overall, the underlying construct was confirmed with the study findings (Schotz, Gutierrez-Dona, Sud & Schwarzer, 2002). These findings were a replication of previous results that also measured the psychometric properties of the GSE in 13 nations (Schwarzer & Born, 1997).

Following the beliefs of Bandura (1997) that perceived self efficacy should be conceptualized in a situation specific manner, in the present study the GSE was administered immediately prior to beginning the first class and immediately after the end of the last class to capture the specific situation.

The 10 items' responses were measured on a 4-point Likert scale. The scale anchors range from 1 = *Not at all true* to 4 = *Exactly true*. The 4-point scale is considered forced-choice because the middle option of "*Neither agree nor disagree*" is not available. There is no recoding required, with the final scores ranging from 10 to 40. In this study, the Cronbach's alpha of the GSE was .93 on the Pre-test and .92 on the Post-test, respectively. The reliability coefficients, then, are consistent with previously reported research with the measure (e.g., Jerusalem & Schwarzer, 1992).

#### *The State-Trait Anxiety Inventory (STAI)*

The State-Trait Anxiety Inventory was used to measure the current anxiety status of the ID/SA mothers (Appendix C). Permission was obtained from Dr Spielberger to

utilize this instrument (Appendix D). The State-Trait Anxiety Inventory (STAI) is a self-report assessment tool that includes separate measures of state and trait anxiety. It differentiates between the temporary condition of state anxiety (a transitory emotional state or condition) and the more general and long-standing quality of trait anxiety (differences in anxiety proneness). The STAI has 40 questions with a range of four possible responses to each (Spielberger, Gorsuch, & Lushene, 1983). Used extensively in research and clinical practice, adapted in more than 30 languages and used for cross-cultural research and clinical practice, there is much evidence that the STAI is a reliable and valid measurement tool. The Cronbach's alpha was reported to be 0.93 for State and 0.92 for Trait subscales, respectively (Fountoulakis, et al., 2006). For this study, only the State Anxiety portion was used because it evaluates how the respondent feels right now or at this moment. The State Anxiety scale consists of 20 statements and the subjects choose the number that best describes the intensity of their feelings. It is a 4-point Likert scale and the scale anchors range from 1 = *Not at all* to 4 = *Very much so*. For the current study, the Cronbach's alphas for the State scale were as follows: .93 Pre-test; .94 Post-test. Thus, the reliability coefficients are consistent with previously reported research with the measure (e.g., Spielberger, Gorsuch, & Lushene, 1983).

#### *Demographic Questionnaire*

A demographic questionnaire was administered at the beginning of the study to assess the background characteristics of the participants to afford comparison with previous research (Appendix A). Demographic questions can be categorized three ways. These include, easy such as gender, difficult, such as level of income or sensitive such as drug or alcohol use (Creswell, 2005). This kind of information helps researchers interpret

the opinions people express in surveys, because people who share particular demographic characteristics also tend to share opinions on social issues.

### Data Collection Protocol

The following describes the data collection processes, data analysis, data management and limitations to the study.

#### *Data Collection*

The data collection section discusses site selection and administration of the instruments.

*Site selection.* Although a potential limitation, the residential center was chosen because of its accessibility to the investigator along with an established relationship with the management. Respect for the site was maintained during the study by not disrupting any programs previously scheduled by the facility and remembering that the researcher would always view themselves as a guest (Creswell, 2003, 2005). Consistent with other residential rehabilitation centers mothers in this residential rehabilitation center were in recent recovery (detoxed) from drugs and alcohol and were either pregnant or had at least one child up to the age of nine (Jackson, 2004; Rosack, 2001; Velez et al., 2004). There is a maximum of three children permitted to move in with their mother at the chosen facility. Mothers who are voluntary to the rehabilitation center can stay up to 6 months and court ordered mothers can remain up to 9 months.

Funding for this center comes from various sources. They include the Department of Corrections, self-pay, Department of Children and Family (DCF), Seminole Tribe, Broward Alcohol Rehab Center (BARC) and HART (a homeless program). The center

was founded in 1995, is non-profit, and has the ability to serve 64 families simultaneously.

The Director of the selected facility in Broward County, Florida was contacted via telephone. The purpose of the study and outline of the research process, including time allocated for obtaining the data, was explained. A follow-up face-to-face appointment with the Director of the center was arranged to further explain the purpose of the study and its benefits to participants and the center. A convenient time for both mothers and the facility was arranged to begin data collection. The intervention as well as data collection took place at the facility.

*Program protocol.* At the beginning of the study, three questionnaires were administered to all participants in both the intervention and control groups. The instrument battery consisted of the General Self-Efficacy Scale (GSE), the State-Trait Anxiety Inventory (STAI), and a demographic survey. After completion of the intervention, the GSE and STAI were administered again. Doing a pretest and a posttest provides the researcher the ability to measure some characteristic in the participants before and after they receive the intervention (Creswell, 2005). Using a pretest and posttest comparison provides a clearer understanding in contrast to using the posttest measure alone (Creswell, 2005) and determines gains since there is baseline data.

Based on Porter and Porter (2004) the weekly 1 hour sessions were conducted for 4 consecutive weeks for the intervention group. The control group did not receive the intervention, but along with the intervention group continued to receive typical oversight and counseling from the center's staff. Following Porter and Porter's (2004) protocol, the mothers in the intervention group attended the four sessions with their infants/children.

The sessions were interactive with demonstration by the instructor and application of what was learned from the participant to the infant/child. Each week a selected group of words was taught using ASL guidelines developed by Joseph Garcia (Garcia, 2006). Dr. Garcia's guidelines were chosen due to his research and development of ASL and the hearing child as mentioned in chapter 2. Sessions were divided as follows: Session 1- people and food, Session 2-actions and feelings, Session 3-body and clothing, Session 4- colors and animals. In addition, each session included learning a children's song or poem also using ASL. Following is a sample of a 1 hour class for the study.

Table 1.

Course name: American Sign Language (ASL) for the ID/SA Mother in Rehabilitation

Objectives	Content	Time	Teaching Method
1-Given a brief history of ASL the participants will be able to recognize the benefits of using ASL when communicating with their infant/child. They may give their own example of when it would be beneficial.	History Benefits Examples	15 minutes	Lecture
2-During demonstration of ASL gestures the participants will be able to return demonstrate at least 3 ASL gestures to their infant/child	ASL gestures from the category people & food	25 minutes	Demonstration/ Return demonstration
3-During demonstration of an ASL song or poem the participants will be able to return demonstrate the song or poem to their infant/child	Song/poem Using ASL	20 minutes	Demonstration/ Return demonstration

If a participant was unable to attend one of the sessions, due to other obligations such as a doctor's appointment or court appearance, they were offered a make-up session. The sessions were conducted by a trained instructor knowledgeable in ASL and familiar with Dr. Garcia's guidelines.

The trained instructor collected data related to the study to establish the reliability of the resulting data. Data collection included a demographic questionnaire along with pre and posts General Self-Efficacy scale and State Anxiety Inventory.

*Expert reviewers.* Three colleagues were selected to review the test battery and provide expert judge validity for issues of content related to the study. In order to make changes based on feedback, at least two of the three reviewers had to agree. There was a 95% agreement of the content among colleagues and their feedback was integrated into the study as appropriate.

*Pilot study.* A pilot study was done by a separate group of five to six colleagues. Clarity of directions was assessed along with grammar, complexity and ambiguity. The pilot study also assessed whether the individuals in the sample were capable of understanding and completing the instruments (Creswell, 2005). The pilot study helped to uncover unanticipated problems and determine how long it would take to complete a particular instrument and if this amount of time was reasonable (Cone, & Foster, 1993; Creswell, 2005). Based on the pilot study the researcher estimated that the questionnaires would take between 10 to 20 minutes for participants to complete.

All participants of the study were informed of the purpose and nature of the research and assured that confidentiality would be maintained (e.g., participants will be identified by a code number). A written consent was obtained along with an explanation

of how to withdraw from the study without penalty should they so chose to do so (Appendix E).

After random assignment to treatment groups and an explanation of the instruments, the GSE and STAI were administered along with a demographic survey to all participants in both the intervention and control groups. All study participants continued to receive services offered by the residential program. Some of these services include 12 step meetings, individual, family and group counseling for the women and children, substance addiction education, relapse prevention, art therapy, spiritual groups, exercise classes and family bonding activities. Upon completion of the 4-week program, the GSE and STAI were again administered to all participants. After completion of the study, ASL classes were offered to participants in the control group.

#### *Data Analysis*

All data were entered into a Statistical Package for the Social Sciences (SPSS) database to examine relationships among variables such as self-efficacy and anxiety. Demographics of the groups were analyzed using descriptive statistics, which helped determine overall trends and the distribution of data (Creswell, 2005; Merriam, & Simpson, 2000). To be consistent with prior research, the demographic questionnaire included participant's age, education, race, socioeconomic status, whether or not it was their first time in a rehabilitation program, their number of children and number of years and frequency of ID/SA. The data was also analyzed using frequency counts as well as measures of central tendency. Likert-type scaled items, which use standardized response categories to determine the relative intensity of different items, were reported and analyzed (Babbie, 2004). To test both hypotheses convenience 1 and 2 the researcher



utilized an analysis of covariance analytic procedure (ANCOVA). These analyses quantify statistical differences between one or more variable while holding one or more variable constant (Cone, & Foster, 2005; McDonald, 2008). The ANCOVA reduces bias when comparing groups and it is considered a very powerful statistical test when conducting an experimental study (Stevens, 1999). For example, the covariant of age was used to see if there was a difference in the ID/SA mothers' general self-efficacy and anxiety levels after statistically controlling for age.

#### *Data Management*

All completed instruments were kept in a locked file cabinet in the researcher's home office. As per FIU institutional policy, all instruments will be kept for 3 years from the completion of the study (Florida International University Regulations for Thesis and Dissertation Preparation Manual, 2004).

#### *Limitations*

The limited number of residential treatment centers in Broward County had an effect on the sample size. The study had no control for mother's age, type of illicit drug or abused substance, race/ethnicity, or socioeconomic status.

Both the General Self-Efficacy Scale and the Stat-Trait Anxiety Inventory are forced choice research measures. Therefore, this type of survey may offer less flexibility and forces participants to choose from preset response options. Additionally, this type of survey does not capture the social context (Babbie, 2004; Creswell, 2005; Merriam, & Simpson, 2000).

The self-report has become an important data collection method in many research studies, including those conducted by the National Institute on Drug Abuse. Self-reports

may vary on the social acceptance or perceived acceptance of the behavior in question. For example, the level of stigma with heroin remains constant; however, there has been a dramatic reversal in the perception of the acceptability of behaviors such as tobacco, marijuana, and cocaine (Rouse, Kozel, & Richards, 1985).

The National Institute on Drug Abuse has generalized three categories that threaten the validity of self-reported data. They include factors in the questioning situation that influence the response by the way questions are worded; an inability to provide correct information by stating they never knew or forgot the answer, and an unwillingness to provide information that may present respondents in a socially unfavorable way (Rouse, Kozel, & Richards, 1985).

To improve the validity of self-reporting, as the researcher attempted in this study, confidentiality of answers was explained to participants. In addition, efforts were made to establish a rapport with the participants, clarify the study's intent, and make demographic questions less specific and therefore, less threatening (Rouse, Kozel, & Richards, 1985). Moreover, the researcher employed well-studied research instruments consisting of different types of questions (personal, attitudinal) with clear question construction, and performed a pilot test with colleagues to increase the likelihood of obtaining valid results (Creswell, 2005).

### Summary

Chapter 3 detailed the research processes including the research design, population and sample, instruments used, procedures for data collection and analysis, data management and limitations. Chapter 4 presents the findings of the study, and

chapter 5 concludes the study with a discussion of the findings, implications for practice, limitations of the study and recommendations for future research.

## CHAPTER IV

### DATA ANALYSIS

Results of the research are presented in this chapter and it is organized into four sections. The first section contains descriptive statistics using frequency ( $f$ ) counts to indicate general tendencies in the data (Babbie, 2004; Creswell, 2005; Merriam & Simpson, 2000). The second section presents inferential statistics using chi-square ( $\chi^2$ ) to help draw conclusions about an unknown population or the probability of having something happen (Babbie, 2004; Creswell, 2005). The testing of hypotheses 1 and 2 is described in section three. A one-way analysis of covariance analytic procedure (ANCOVA) was used to help reduce bias (Cone & Foster, 1993; McDonald, 2008; Stevens (1999). The chapter concludes with a summary of the results.

All data were entered from Excel into The Statistical Package of Social Science (SPSS) version 15. Any missing data were substituted using the number zero. Up to 15% of missing data with scores can be substituted without altering overall statistical findings (Creswell, 2005). Following the protocol of Porter and Porter, (2005), some of the data (i.e., age and income) was reported using a ratio scale with a true zero and equal distances between units (Creswell, 2005)

There were a total of 30 participants in this experimental study. They were *randomly* assigned to two groups, control (group 1) and experimental (group 2). Being *randomly* assigned provided each participant with an equal probability for selection and equal distribution of any variability that existed between or among the groups (Babbie, 2004; Creswell, 2005; Merriam & Simpson, 2000).

## Descriptive Statistics

This section provides a general description of the participants in both the control group and the experimental group. The data is collected from a demographic survey containing 18 questions, some requiring multiple answers. Data will be reported in two categories. Ten questions assess the participant's background, such as age and education. The remaining eight questions are more sensitive in nature, such as the use of illicit drugs and substance abuse.

### *Participant Background*

Background data includes age, marital status, number of children, education, income, race/ethnicity, practice of religion, living arrangement, medical care, government assistance.

#### *Age*

Thirty women responded to the survey. One (3.33%) participant was between 15 to 19 years of age and 6 (20%), were aged 20 to 24. The majority of participants, 14 (46.67%), were aged 25 to 29. Four of the women (13.33%) were aged 30 to 34, three (10%), were between 35-39, and two (6.67%) were 40-44. Table 2 provides the frequencies of the participants' ages. See Figure 1, Appendix F for the combined ages of both groups combined.

#### *Marital Status*

Of the 30 participants, four (13.33%) of the women were married, 25 (83.33%) were single and one (3.33%) was divorced. Table 3 provides detailed information on marital status. See Figure 2, Appendix F for the marital status of both groups combined.

Table 2

*Age of Participants (N = 30)*

Age	Group 1 <i>f</i>	Group 2 <i>f</i>
19	0	1
20	2	0
22	1	0
24	1	2
25	2	2
27	1	4
28	4	0
29	0	1
30	1	1
31	1	0
34	0	1
35	1	0
38	0	1
39	0	1
40	0	1
44	1	0

Table 3

*Marital Status (N=30)*

Marital Status	Group 1 <i>f</i>	Group 2 <i>f</i>
Single	13	12
Married	2	2
Divorced	0	1

*Number of Children*

Nine (30%) of the participants had a single child, ten (33.33%) had two children, three (10%) had three children and eight (26.66%) of the participants had four or more

children. Table 4 provides detailed information of the participants' number of children. See Figure 3, Appendix F for the number of children for both groups combined.

Table 4

*Number of Children (N=30)*

Number of Children	Group 1 <i>f</i>	Group 2 <i>f</i>
1	5	4
2	6	4
3	0	3
4	2	4
5	1	0
6	1	0

*Education*

Three (10%) of the participants had 6 or less years of education and 18 (60%) had 7 to 12 years of education. Five (16.67%) attended a technical/vocational school and four (13.34%) attended college or graduate school. Table 5 provides detailed information regarding the participants' education. See Figure 6, Appendix F for the educational level of both groups combined.

Table 5

*Education (N=30)*

Education	Group 1 <i>f</i>	Group 2 <i>f</i>
0-6 yrs.	1	2
7-12-yrs.	11	7
Voc/Tech	3	2
College	0	2
Graduate	0	2

### *Income*

Twenty-eight (93.33%) of the participants had an income that did not exceed \$10,000; the remaining two (6.66%) did not exceed \$30,000. Table 6 provides detailed information about income. See Figure 5, Appendix F for the income of both groups combined.

Table 6

<i>Income (N=30)</i>			
Income	Group 1		Group 2
	<i>f</i>		<i>f</i>
\$ 10,000	13		15
\$ 11-20,000	1		0
\$ 21-30,000	1		0

### *Race/Ethnicity*

Thirteen (43.33%) of the participants reported their race as white, ten (33.33%) reported black, two (6.67%) were Hispanic, and two (6.67%) were Native American. The three (10%) reporting “Other” were noted as multi-racial, Arab, and Jamaican. Table 7 provides detailed information on race/ethnicity See Figure 7, Appendix F for the race/ethnicity of both groups.

### *Religious Practice*

Thirteen (43.33%) reported practicing some form of formal religion and seventeen (56.67%) did not engage in any type of formal religion. Table 8 provides detailed information on religious practice. See Figure 8, Appendix F for the religious practices of both groups combined.



Table 7

*Race/Ethnicity (N=30)*

Race/Ethnicity	Group 1 <i>f</i>	Group 2 <i>f</i>
Black	7	3
Hispanic	1	1
Native American	2	0
White	4	9
Other	1	2

Category “Other” included:  
 Group 1: 1 multi-racial  
 Group 2: 1 Arab, 1 Jamaican

Table 8

*Religious Practice (N=30)*

Religious Practice	Group 1 <i>f</i>	Group 2 <i>f</i>
Yes	8	5
No	7	10

*Living Arrangement*

Before entering the residential treatment center seventeen (56.67%) of the women lived alone with their infant/child. Two (6.67%) lived with a spouse and one (3.33%) resided with her parents. The remainder of the women, ten (33.33%) reported being homeless. Table 9 provides detailed information on previous living arrangements. See Figure 9, Appendix F for the living arrangements of both groups combined.

*Medical Care*

The majority of participants, 17 (56.67%), visited a private doctor for medical care. The remainder, 13 (43.34%), visited a clinic setting or went to the hospital/ER. Table 10 provides detailed information on medical care. See Figure 10, Appendix F for the types of medical care for both groups combined.

Table 9

*Living Arrangement (N=30)*

Residence	Group 1	Group 2
	<i>f</i>	<i>f</i>
Alone with infant/child	9	8
With spouse	2	0
With parents	1	0
Homeless	3	7

Table 10

*Medical Care (N=30)*

Medical Care	Group 1	Group 2
	<i>f</i>	<i>f</i>
Clinic	5	6
Private Doctor	10	7
Hospital/ER	0	2

*Government Assistance*

Several forms of government assistance were available and used by the participants. Two (6.67%) participants used no assistance and three (10%) only used food stamps. The remainder, 25 (83.33%), used a combination of several government programs. Table 11 provides detailed information on government assistance. See Figure 11, Appendix F for the number of government assistance programs for both groups combined.

*Sensitive Questions*

The more sensitive questions included those concerning illicit drug and substance abuse, abortions/miscarriages, delivery of infant, and breastfeeding.

*Use of Street Drugs*

All participants but one (96.67%) in the study used street drugs. Table 12 provides detailed information. See Figure 12, Appendix F for the use of street drugs of both groups combined.

Table 11

*Government Assistance (N=30)*

Government. Assistance.	Group 1 <i>f</i>	Group 2 <i>f</i>
Food Stamps	2	1
None	2	0
2 types of assistance selected	0	4
3 types of assistance selected	8	5
4 types of assistance selected	3	5

Other assistance available includes Medicaid, WIC, Cash Assist and TANF (temporary assistance for needy families).

Following are combinations of assistance used by the participants:

- Food Stamps, Cash Assist
- Food Stamps, Medicaid
- Food Stamps-Medicaid-WIC (Women-Infant & Children)
- Food Stamps, Medicaid, WIC, TANF (also considered cash assistance)
- Food Stamps-Medicaid, WIC-Cash Assist
- Food Stamps, Medicaid, WIC, SSI (also considered cash assistance)

Table 12

*Use of Street Drugs (N=30)*

Used Street Drugs	Group 1 <i>f</i>	Group 2 <i>f</i>
Yes	15	14
No	0	1

*Age Began Use of Street Drugs*

One (3.45%) participant reported the earliest use of street drugs beginning between the ages of 5 to 9 years old. Fifteen (51.72%) of the women began using street drugs between the ages of 10 to 14 and ten (34.48%) participants were between 15 to 19 years of age. One (3.45%) participant started using between the ages of 20 to 24 and two (6.90%) began between the age of 25 to 29. Table 13 provides details about the age the women first used street drugs. See Figure 13, Appendix F for the age when both groups combined first used street drugs.

Table 13

*Age Began Use of Street Drugs (N=30)*

Age	Group 1 <i>f</i>	Group 2 <i>f</i>
9	1	0
10	0	1
11	2	2
12	1	0
13	2	2
14	2	3
15	2	1
16	0	2
17	1	0
18	2	1
19	0	1
20	1	0
25	1	0
27	0	1

*Use of Prescription Drugs for Non-Medical Purposes*

Eighteen (60%) of the participants took prescriptions for non-medical purposes and twelve (40%) denied use. Table 14 provides detailed information. See Figure 14, Appendix F for the use of prescription drugs for non-medical purposes of both groups combined.

Table 14

*Use of Prescription Drugs for Non-Medical Purposes (N=30)*

Prescription Drugs	Group 1 <i>f</i>	Group 2 <i>f</i>
Yes	7	11
No	8	4

*Age Began Use of Prescription Drugs for Non-Medical Purposes*

Six (33.33%) participants reported the earliest use of prescription drugs for non-medical purposes. They were between the ages of 10 to 14. Seven (38.89%) were between the ages of 15-19. Three (16.67%) were aged 20 to 24, one (5.56%) was between 25 to 29 years of age and one (5.56%) was between 30 to 34 years old. Table 15 provides detailed information. See Figure 15, Appendix F for the age when both groups combined first used prescription drugs for non-medical purposes.

*Use of Alcohol*

Twenty-five (83.33%) of the participants used alcohol and five (16.67%) denied its use. Table 16 provides detailed information. See Figure 16, Appendix F for the use of alcohol of both groups combined.

Table 15

*Age Began Use of Prescription Drugs for Non-Medical Purposes (N=30)*

Age	Group 1 <i>f</i>	Group 2 <i>f</i>
10	0	1
11	1	2
12	1	0
14	0	1
15	1	0
16	1	3
18	0	2
22	1	0
23	1	1
25	1	0
30	0	1

Table 16

*Use of Alcohol (N=30)*

Alcohol	Group 1 <i>f</i>	Group 2 <i>f</i>
Yes	12	13
No	3	2

*Age Began Use of Alcohol*

One (4.%) participant began the use of alcohol before the age of 5 when it was placed in her baby bottles and one (4%) more participant used alcohol between the ages of 5 to 9. The majority of participants, fifteen (60%), started using alcohol between the ages of 10 and 14. Six (24%) started between the ages of 15 to 19 and two (8%) began between ages 20 to 24. Table 17 provides detailed information. See Figure 17, Appendix F for the age when both groups combined first used alcohol.

Table 17

*Age Began Use of Alcohol (N=30)*

Age	Group 1 <i>f</i>	Group 2 <i>f</i>
2	0	1
8	0	1
10	1	1
11	0	2
12	3	1
13	3	1
14	2	1
15	0	1
16	0	2
17	0	1
18	1	1
20	1	0
21	1	0

*Use of Tobacco Products*

Of the thirty participants twenty-six (86.67%) used tobacco products.

Table 18 provides detailed information. See Figure 18, Appendix F for the use of tobacco products of both groups combined.

Table 18

*Use of Tobacco Products (N=30)*

Tobacco	Group 1 <i>f</i>	Group 2 <i>f</i>
Yes	13	13
No	2	2

*Age Began Tobacco Use*

One (3.85%) participant began using tobacco between the ages 5 to 9. Seventeen (65.38%) started its use between the ages 10 to 14 and eight (30.77%) were between the

ages 15 to 19. Table 19 provides detailed information. See Figure 19, Appendix F for the age when both groups combined first used tobacco.

Table 19

*Age Began Tobacco Use (N=30)*

Age	Group 1 <i>f</i>	Group 2 <i>f</i>
9	1	0
10	0	4
11	1	1
12	1	1
13	2	4
14	2	1
16	2	0
17	1	1
18	3	1

*Number of Abortions/Miscarriages*

Thirteen (43.33%) of the participants had 1 to 2 abortions/miscarriages. Five (16.67%) had 3 to 4, three (10%) reported 5 or more, and one did not answer the question. Table 20 provides detailed information. See Figure 4, Appendix F for the number of abortions/miscarriages for both groups combined.

Table 20

*Number of Abortions/Miscarriages (N=30)*

Abortions/Miscarriage	Group 1 <i>f</i>	Group 2 <i>f</i>
No answer	-	1
None	4	4
1 – 2	9	4
3 – 4	2	3
5 or more	0	3



### *Gestation*

Twenty-seven (90%) of the infants/children were full term and three (10%) were premature. Table 21 provides detailed information. See Figure 20, Appendix F for the number of full term/premature births for both groups combined.

Table 21

### *Gestation (N=30)*

Gestation	Group 1 <i>f</i>	Group 2 <i>f</i>
Full term	14	13
Premature	1	2

Using descriptive statistics, the tables presented above describe responses to each question on the demographic survey from the participants involved in the study. Group 1 represents the frequency (*f*) in the control group and group 2 represents the frequency (*f*) in the experimental group. The tables determine overall trends and distribution of the data (Creswell, 2005).

### Inferential Statistics

In this section chi-square ( $\chi^2$ ) is used to test the null hypothesis ( $H_0$ ), meaning there is no significant difference between the expected and observed result (Babbie, 2004). Inferential statistical procedures are used to draw conclusions about a population from a sample and help generalize the findings to a broader population. (Creswell, 2005, Healey, 1999). The table below lists the variables of the calculated chi-square ( $\chi^2$ ). Chi-square commonly compares observed data with data we would expect to obtain according to a specific hypothesis. The degree of freedom (*df*) tells how much data was used to calculate a particular statistic and the *df* is usually one less than the number of variables. The *p*

value is the probability that the deviation of the observed from that expected is due to chance alone (Creswell, 2005). Using  $p < 0.05$  you would expect any deviation to be due to chance alone 5% of the time or less. Table 22 provides detailed information.

Table 22

*Pearson Chi-Square Summary*

Variable	$\chi^2$ Value	<i>df</i>	<i>p</i>
Time in Facility (months)	2.694	3	.441
Level in Facility	5.092	5	.405
Previous Admission	.240	1	.624
Age	18.133	15	.256
Marital Status	1.040	2	.595
Number of Children	6.178	5	.289
Miscarriages/Abortions	7.828	4	.050
Education	5.422	4	.247
Income	2.143	2	.343
Race	5.856	4	.210
Religion	1.222	1	.269
Living Arrangements	4.659	3	.199
Medical	2.620	2	.270
Government Assistance	7.526	4	.111
Use of Street Drugs	1.034	1	.309
Frequency of Use	5.389	4	.250
Age First Used Street Drugs	11.867	14	.617
Last Used Street Drugs	3.667	3	.300
Use of Prescription Drugs	2.222	1	.136
Frequency of Use	4.880	4	.300
Age First Used Prescription Drugs	12.192	11	.349
Last Used Prescription Drugs	2.667	3	.446
Alcohol Use	.240	1	.624
Frequency	.042	3	.998
Age First Abused Alcohol	12.313	13	.502
Last Used Alcohol	.533	3	.912
Smoking	.377	2	.828
When Stopped	2.000	1	.157
Frequency/amt.	1.761	3	.623
Age Started Smoking	9.310	9	.409
Breastfeeding	.000	1	1.000
Frequency of Feeding	.003	1	.960
Baby Delivery	.829	1	.362
Gestation	.370	1	.543

$\alpha = .05$

From these results there was no significant impact on the demographic variables between the experimental and the control group that could affect the results. The only variable that had statistical significance was miscarriage/abortion where the  $p$  value equaled .05. This result may suggest that in future research, the researcher should separate the terms miscarriages and abortions into two separate questions.

### Hypotheses

H<sub>1</sub>: Illicit drug/substance abuse (ID/SA) mothers who participated in American Sign Language (ASL) will report higher levels of general self-efficacy (GSE) than those mothers who did not participate.

Table 23 provides detailed information using a One-Way ANCOVA, statistical procedure on the Pre-Test for the GSE survey and Table 24 provides detailed information using a One-Way ANCOVA on the Post-Test for the GSE survey.

Table 23

#### *One-Way ANCOVA Pre-Test GSE Scores*

Source	Type III Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	Sig.
Corrected Model	42.403b	2	21.202	0.557	0.580
Intercept	1626.321	1	1626.321	42.691	0.000
Age	39.703	1	39.703	1.042	0.316
Group	0.854	1	0.854	0.022	0.882
Error	1028.563	27	38.095		
Total	29223	30			
Corrected Total	1070.967	29			

Table 24

*One-Way ANCOVA Post-Test GSE Scores*

Source	Type III Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	Sig.
Corrected Model	212.280b	2	106.140	3.423	0.047
Intercept	1580.743	1	1580.743	50.980	0.000
Age	29.746	1	29.746	0.959	0.336
Group	197.067	1	197.067	6.356	0.018
Error	837.187	27	31.007		
Total	29632.000	30			
Corrected Total	1049.467	29			

The one-way analysis of covariance (ANCOVA) conducted on the post test showed a significant difference on the GSE scores between the control group and the experimental group,  $F = 6.356$ ,  $df = 1$ ,  $p = 0.018$ . Hypothesis 1 was supported such that the treatment group scored higher than the control group when age was used as a continuous covariant; the ANCOVA reported that age had no significant impact on the control group or experimental group,  $F = 0.959$ ,  $df = 1$ ,  $p = 0.336$ .

H<sub>2</sub>: Illicit drug/ substance abuse (ID/SA) mothers who participated in American Sign Language will report lower levels of anxiety than those mothers who did not participate.

Table 25 provides detailed information using a One-Way ANCOVA on the Pre-Test for the STAI survey and Table 26 provides detailed information using a One-Way ANCOVA on the Post-Test for the STAI survey scores.

Table 25

*One-Way ANCOVA Pre-Test STAI Scores*

Source	Type III Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	Sig.
Corrected Model	362.026b	2	181.013	1.534	0.234
Intercept	3409.287	1	3409.287	28.900	0.000
Age	179.493	1	179.493	1.522	0.228
Group	222.941	1	222.941	1.890	0.181
Error	3185.174	27	117.969		
Total	52998.000	30			
Corrected Total	3547.200	29			

Table 26

*One-Way ANCOVA Post-Test STAI Scores*

Source	Type III Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	Sig.
Corrected Model	1269.941b	2	634.971	5.255	0.012
Intercept	2662.761	1	2662.761	22.038	0.000
Age	129.108	1	129.108	1.069	0.310
Group	1042.286	1	1042.286	8.626	0.007
Error	3262.359	27	120.828		
Total	44063.000	30			
Corrected Total	4532.300	29			

The one-way analysis of covariance (ANCOVA) conducted on the post test showed a significant difference on the STAI between the control group and the experimental group,  $F = 8.626$ ,  $df = 1$ ,  $p = 0.007$ . Hypothesis 2 was supported such that the treatment group scored lower than the control group when age was used as a continuous covariant; the ANCOVA demonstrated that age had no significant impact on the control group or experimental group,  $F = 1.069$ ,  $df = 1$ ,  $p = 0.310$ .

## Summary

This chapter has presented the results of a true experimental study with random sampling and homogeneity of variance. The results strongly support both hypotheses  $H_1$  and  $H_2$ ; statistically finding that the intervention of American Sign Language caused the level of general self efficacy to increase and anxiety to decrease. There was no significant difference in the demographics between the experimental and control groups. The one-way ANCOVA, using the continuous variable of age on the total post score, revealed that age had no impact on the groups. Chapter 5 contains a discussion of the findings, implications for practice, the limitations of the study and recommendations for future research.

## CHAPTER 5

### DISCUSSION

This chapter is divided into four sections. The first section is a discussion of the findings, followed by implications for practice and then the limitations of the study. The final section includes recommendations for future research.

#### Discussion of the Findings

This experimental study evaluated whether the use of American Sign Language (ASL) between infants and mothers living in a residential program recovering from illicit drug /substance abuse (ID/SA) would show an increase in the mother's self-efficacy and a decrease in her anxiety. When people understand the impact of their actions the consequences may linger and serve as a source of motivation (Patterson, Grenny, Switzler & McMillion, 2002) and this study adds to the literature knowledge concerning ID/SA mother.

#### *Demographics*

Demographic information can help give rise to a mental picture of the participants. It can also help in understanding who the participants are and therefore create an avenue for reaching them. Besides knowing what the participants were like, demographics help exclude inappropriate subjects and provide alternative explanations of study results (Cone & Foster, 2005). Demographic information can be used by a wide variety of individuals and organizations such as state and federal education and budgetary officials, educational staff within facilities and other researchers (Galudete Research Institute, 2008)

The participants in this study were randomly assigned into two groups, control (group 1) and experimental (group 2). Random assignment equally distributes the potential bias in the personal characteristics of the individuals among groups and controls for extraneous characteristics which might influence outcomes (Creswell, 2003, 2005). In this study, in regard to the demographic variables, there was no significant impact between the groups. Demographics of this study will be reported along with some of the results from the 2008 National Survey on Drug Use and Health. It will show if there are similar patterns of demographics between this study done in one facility and nationwide results.

### *Participants*

The rates of current illicit drug use in 2008 was higher for young adults aged 18 to 25 than for adults aged 26 or older (National Survey on Drug Use and Health, 2008). Literature reports that women make up a significant portion of America's drug users and addicts and the child bearing years are of increased concern due to the possible effects of ID/SA use in utero (Kandal, 1999). The majority of participants in this study, 47.7 %, were between the ages of 25 to 29, placing them within child bearing age.

Of the participants, 43.3% of the women in the study reported their race as White and 33.3% reported Black. The SAMHSA/OAS (2008) reports a 2% higher abuse of substances among Blacks as compared to Whites individuals. Race and ethnicity have been found to be a predictor of treatment completion or transfer to further treatment. Understanding the racial and ethnic diversity of women who enter treatment provides an understanding of how to meet needs of individuals from different racial and ethnic groups (SAMHSA/OAS, 2009).



According to the study demographics, the marital status of 83.3% of the women was single, 33.3% had two children and 26.7% had four or more. Marital status can also be a predictor for substance abuse and its treatment. Married persons have a lower rate of substance dependence or abuse, are more willing to start treatment, spend more hours in treatment, and stay in treatment. Being unmarried may predict a rate of higher relapse into substance abuse after treatment (SAMHSA/OAS 2007).

The educational level of 60% of the women in the study was 7 to 12 years. Three women had less than 6 years of education and only two were college graduates. These figures are comparable to the 2008 SAMHSA/OAS survey that reports lower rates of illicit drug use among college graduates. Also, that survey found that alcohol use was more frequent with increasing levels of education and cigarette smoking was less prevalent among adults who were college graduates.

Twenty-eight (93.3%) of the participants had an income that did not exceed \$10,000. Several types of government assistance programs were available and used by the participants and 83.3% of the participants, used a combination of these programs. Research concurred that illicit drug and substance abusers were more likely to be unwed, have less than a high school education and use public assistance as a source of income (Slutsker, et al, 1993). Literature also reports that lack of money does not necessarily increase the chances that a person will use drugs. However, poverty can lead to certain attitudes, behaviors, and life conditions, such as having less access to resources, that contribute to drug use (Maisto, Galizio, and Connors, 2008). The poorer an area, society or community, the greater the incentive is to produce, traffic and sell illegal drugs (Goode, 20080).

The majority of the participants in this study, 56.67%, lived alone with their infants/children, sought medical care from a private doctor, and did not engage in any type of formal religion. Literature reports that strength of religious and spiritual support are associated with lower reported drug use and considered a significant independent predictor of abstinence from illicit drug use (Avants, Warburton & Margolin, 2001; Bartkowski & Xu, 2007). Adding spiritually-focused treatment as an intervention has shown to be helpful for reducing ID/SA cravings (Arnold et al., 2002).

Over 43% of the participants had one to two abortions/miscarriages and 10% reported having five or more. Because the possibility of miscarriage, stillbirth, placental problems and premature rupture of membranes are some of the risks when pregnant women use illicit drugs or abuse certain substances (March of Dimes, 2006b), it was an unexpected finding that 90% of the infants born to the women in this study were full term.

#### *Illicit Drugs/Substance Abuse*

All participants but one in the study used street drugs with the youngest starting its use at 9 years old. The average age for initiation of illicit drug use among persons aged 12 to 49 is 18.8 years old (SAMHSA/OAS, 2008). Knowing the incidence of first abuse is important for policymakers and researchers. It shows emerging patterns and provides valuable information that can assess the effectiveness of current prevention programs and focus prevention efforts (SAMHSA/OAS, 2008). Marijuana and cocaine were the two street drugs abused the most in this study and these findings were comparable to the national survey which reported marijuana as the drug used most in 2008 (SAMHSA/OAS, 2008).

Sixty percent of the participants took prescription drugs for non-medical purposes and the youngest age for first use was 10 years old. Oxycotin, Xanax, Percocet, Vicodan and Valium were the most abused prescription drugs in the study. This was similar to the national survey that reported non medical use of pain relievers followed by non medical use of tranquilizers topping the list for abuse (SAMHSA/OAS, 2008). Abuse of prescription drugs is increasingly prevalent among teens and young adults and in the past year abuse of prescription pain killers ranks second (only behind marijuana) as the nation's most prevalent illegal drug problem (The Office of National Drug Control Policy, 2008). Once again evaluating these statistics will help guide prevention efforts.

Of the alcohols, beer, wine, whiskey and vodka were almost equal in abuse. Alcohol ingestion, in this study, was noted beginning at the age of 2 (when alcohol was placed in a participant's baby bottle). Eighty-three percent of the study's participants admitted to abusing alcohol and the nation's average initiation to the use of alcohol prior to the age of 21 is 15.9 (SAMHSA/OAS, 2008). Usually, for adults aged 18 or older, the rate of alcohol consumption typically increases with increased levels of education (SAMHSA/OAS, 2008); not so in this study.

Most of the participants, 86.7%, used tobacco products. One mother began smoking at the age of 9 and cigarettes were the most popular choice of tobacco use in the study. Most new cigarette smokers in 2008 were under the age of 18 when they first smoked cigarettes and the use of illicit drugs and alcohol was more common among cigarette smokers (SAMHSA/OAS, 2008). These findings add to the body of knowledge concerned with providing programs, such as smoking cessation, for the ID/SA mother and meeting her needs.

### *Hypothesis 1*

ID/SA mothers who have participated in ASL will report higher levels of self-efficacy than those mothers who have not participated.

Results from the chi-square analysis showed there were no statistical demographic differences between the experimental and the control group that could affect the results. Because all  $p$  values were greater than .05, there was a failure to reject the null hypothesis ( $H_0$ ). A one-way analysis of covariance (ANCOVA) procedure was conducted to help reduce bias, using the independent variable ASL, the dependent variable self-efficacy and the continuous outcome variable of age on the total post score. The results supported hypothesis 1 after statistically controlling for age as a covariant. Covariates are variables that the researcher controls for using statistics and that relate to the dependent variable, but do not relate to the independent variable. This adjustment allows for reduction of the variation between the groups caused not by the treatment itself but by variation of age (Creswell, 2005).

ID/SA mothers look at themselves as a failing parent and parenting difficulties increase when trying to end a drug dependency (Ashley, Marsden, & Brady, 2003; Coyer, 2001; Ehrmin, 2001; March of Dimes, 2006b). It is the efficacious parent who is likely to achieve parental competence (Hess, Teti & Hussey-Gardner, 2004). The study results demonstrated that the participants' self-efficacy was increased. The benefits of hypothesis 1 being supported will help the ID/SA mother in her parenting role because according to Bandura (1994) increased self-efficacy, increases the belief about one's capability to produce levels of performance that influence one's life. Literature reports that perceived self-efficacy is a predictor of substance use (Bandura, 1999, 1994); and

specifically targeting self-efficacy may enhance treatment (Hyde, Hankins, Deale, & Marteau, 2008). Confidence is one's ability to perform a task (parenting) successfully is a necessary condition for task mastery (Bandura, 1977). The class taught in this study provides each participant an opportunity to successfully complete a task that will provide an opportunity to increase her self-efficacy and nurture the belief that she can be a better parent.

### *Hypothesis 2*

ID/SA mothers who have participated in ASL will report lower levels of anxiety than those mothers who have not participated.

Results from the chi-square analysis again showed there were no demographic statistical differences between the experimental and the control group that could affect the results. Since all  $p$  values were greater than .05, there was a failure to reject the null hypothesis ( $H_0$ ). A one-way analysis of covariance (ANCOVA) was conducted using the independent variable ASL, the dependent variable State-Trait Anxiety Inventory (STAI) and the continuous outcome variable of age on the total post score. The results supported hypothesis 2 after again statistically controlling for age as a covariant.

High levels of stress can influence the way a woman approaches parenting (Brazelton, & Greenspan, 2000; Velez et al., 2004) and there is a need to teach parental skills to help reduce the anxiety from these stresses (Coyer, 2003). Literature reports that residential treatment programs for the ID/SA mother that specifically addresses her needs have proven to be beneficial (Ashley, Marsden & Brady, 2003); they facilitate mother infant interaction, improve communication skills and increase the mother's knowledge of self-care and relaxation (Porter & Porter, 2004). The study results demonstrated that the

participants' anxiety was decreased. The benefits of hypothesis 2 being supported, is important because parenting-related anxiety can produce maladaptive coping strategies, such as a relapse into drug use (Kelley, 1998; Velez, et al., 2004). Confidence in being a more effective parent will lower the vulnerability to stress and there is a need to teach parental skills to help reduce the anxiety from these stresses (Coyer, 2003). The literature review discussed difficulties in language and speech development for the infant exposed to ID/SA in utero (Bandstra et al 2002; Pulsif, Butz, O'Reilly & Belcher, 2008). This study provided a parenting class to learn ASL and supports the literature that it can facilitate communication allowing infants and young children to express their needs without frustration (Daniels, 2000) and further frustrating the parent.

#### *Purpose of the Study*

The purpose of this experimental study was to determine whether the use of American Sign Language (ASL) between a mother and her infant/child who are living in a residential treatment program for illicit drugs/substance abuse (ID/SA) is related to an increase in the mother's general self-efficacy and a decrease in her anxiety. The findings of this study supported both hypotheses showing an increase in the mothers' self-efficacy and a decrease in their anxiety. Parenthood places one into an expanded role which can be difficult for those lacking a sense of efficacy and can create a high vulnerability to anxiety (Bandura, 1994). Creating situations that will bring success for the ID/SA mother, as suggested by Bandura (1997), will help increase her belief about her capability to parent more successfully. Learning new parenting skills can increase a recovering mother's self-esteem, alleviate self-contempt and deepen the bond with her child (Bauer,

2003), and therefore help her to deal with feelings of guilt and shame and being a failure as a parent (Coyer, 2003; Ehrmin, 2001).

### Implications for Practice

This section provides a discussion of implications for practice (a) mother and infant/child (b) ID/SA rehabilitation programs, (c) educators/healthcare providers and (d) policy makers.

#### *Mother and Infant/Child*

There is a concern about difficulties in language and speech development for the infant exposed to ID/SA in utero (Lewis et al., 2004; Pulsif, Butz, O'Reilly & Belcher, 2008) and that communication between a mother and infant, which establishes a lasting foundation for the infant's physical, intellectual, emotional and spiritual health, can be affected (Garcia, 2004). Learning American Sign Language in the 4-week program as described in the methodology section of this study provides another avenue for improvement of the threatened developing skills of the infant. By the third session one of the mothers shared that her daughter was already using gestures from ASL. The daughter observed another child at the facility doing something she did not like and gestured in ASL to her mother "*not nice*". Education provides the best escape from substance abuse (Bandura, 2006); and parenting training through educational programs such as child development and family literacy can increase parental self-efficacy (Sanders, 1999; Tucker, Gross, Foss, Delaney & Lapporte, 1998).

ID/SA women have lower self-efficacy and higher levels of anxiety that can influence the way they approach parenting (Brazelton, & Greenspan, 2000; Velez et al., 2004; Washington, 2001). Raising self-efficacy creates feelings of serenity and therefore

deters anxiety (Pajares, 2002). This study demonstrated a decrease in anxiety scores for the experimental group. It supports Bandura's (1994) theory which states that a parent who is secure in her efficacy can navigate through the various phases of her child's development and is less vulnerable to stress (Bandura, 1994).

#### *ID/SA Rehabilitation Programs*

The program in the study consisted of 1-hour sessions that were conducted for 4 consecutive weeks. Sessions were interactive with demonstration from the instructor and application of what was learned from the participants to their infant/child. Each week a selected group of words was taught using ASL guidelines developed by Joseph Garcia (Garcia, 2006). Sessions were divided as follows: Session 1-people and food, Session 2-actions and feelings, Session 3-body and clothing, Session 4-colors and animals. In addition, each session included learning a children's song or poem also using ASL. The program is simple in design and low in cost, making it easy for program administrators to incorporate into existing rehabilitation programs. To maintain the ongoing practice of this new parenting skill, the staff of the rehabilitation facility can also be trained in the use of ASL. This would give the mothers additional time to practice their skills and provide them with positive reinforcement of what they have learned.

As demonstrated from the results of this study, the program has the ability to empower this at-risk population to increase their self-efficacy and decrease their anxiety. The ID/SA mother is more vulnerable to parental role difficulties as she struggles to end her own drug dependency and the added responsibility of a child often becomes overwhelming (Coyer, 2001; March of Dimes, 2006b). This research provides support for



Bandura's (1994) belief that a way to increase self-efficacy is to create situations that bring success.

Treatment programs that specifically addressed women's needs have proven to be beneficial (Ashley, Marsden & Brady, 2003). One of the important needs of the ID/SA mother is parenting skills. Adding parenting enhancement skills to an existing rehabilitation program has been shown to be successful (Porter & Porter, 2004). This research can support practices in adult education similar to educational programs in prisons (Wilson & Hayes, 2000). Much like the prisoners, the ID/SA mother is an active and knowing subject who can help develop curriculum. These ID/SA mothers come with their own experiences of parenting and also share similar effects of illicit drug and substance abuse. Educational practices are shaped by social conditions that include wider social relations (Wilson & Hayes, 2000). There needs to be a common goal and understanding when working towards the recovery efforts of the ID/SA mother.

#### *Educators/Healthcare Providers*

This study will help educators and health care providers better understand the diverse needs of ID/SA mothers and their infants/children. It raises awareness that there is a need to help the ID/SA mother work through feelings of guilt, shame and the perception of being a failing parent (Ashley, Marsden, & Brady, 2003; Ehrmin, 2001). This study, along with the literature research, provides a better understanding of the potential complications of the newborn that include low birth weight, withdrawal symptoms, distress and constant tenseness after going home (Bauer, 2003; Connors et al., 2003; March of Dimes, 2006b; Reider, 1990). Also discussed in the study are other health risks for the infant that include mental retardation, heart defects, an inability to respond to

another human face or voice and difficulties in language and speech development due to ID/SA exposure in utero (Bandstra et al., 2002; March of Dimes, 2006b; Pulsif, Butz, O'Reilly & Belcher, 2008;).

Not all healthcare programs provide a curriculum that deals with the issues of illicit drug and substance abuse and this makes it difficult to provide adequate care and education for this population. Using the data from this study will help provide educators and healthcare providers a better understanding of the ID/SA mother. Programs can be designed to not only increase the understanding of this population but guide the educator when developing curriculum and the healthcare provider when delivering care.

Expanding the length of the daily classes could provide the participants and educator the ability to allow for additional input if necessary. This will help provide the women more time to share many of their own life experiences and nurture a support system within the facility. Residential treatment programs for ID/SA mothers and their children provide an excellent opportunity to provide effective interventions (Finkelstein, 1994; Social Care Institute for Excellence, 2005) and this study provides another opportunity that can be part of ID/SA rehabilitation.

All of the participants attended each of the sessions in this study. However it would be interesting to note in further research if the number of times attending or not attending sessions had an effect on the results.

### *Policy Makers*

Some of the reasons a person does not seek help for ID/SA include no health coverage, no transportation, no existing program, not knowing where to go for treatment, or concern about the possibility it might cause neighbors/community to have negative

opinions and a concern about a negative effect on their job (SAMHSA/OAS, 2008). During pregnancy, some women who are chemically dependent do not seek proper prenatal care because of their chronic drug intoxication and the fear of how health professionals will treat them (Davis, 1997).

Although only 30 women were involved in the study, important data was captured that compares to national statistics. Sharing the results of this study can help the local county commission on substance abuse to be more aware of the needs of the community. Currently in the area where this study was conducted, the United Way works as a broad based substance use/abuse coalition dedicated to reducing substance use and abuse and all its devastating consequences on individuals, families, and communities. The commission develops and enhances integrated counter-drug efforts throughout the county and searches for innovative and effective ways to address the issue of substance use/abuse. This study provides information that can help allocate monies towards guiding the development of educational programs for the community. Educational programs can help the community be more aware and have a better understanding of the difficulties faced by the ID/SA mother such as her being afraid to seek prenatal care. Furthermore programs can be created for employers that would help alleviate the fear employees have concerning the negative effects on their job. There needs to be a better effort by the county commission to address the financial constraints and the possibility of the ID/SA mother not being able to reach existing programs. Incorporating the findings from this study into maternal or child health policies, calls for the attention of policy makers.

## Limitations of the Study

This section provides a discussion of limitations of the study for (a) size, (b) cross-contamination, (c) time issues, and (d) pilot study.

### *Size*

It is suggested to select as large a sample as possible to minimize sampling error (Creswell, 2005); however, access to a larger population was difficult given the limited number of rehabilitation facilities allowing infants/children to reside with their mothers. In addition, while getting ready to conduct this study, similar programs were eliminated due to the lack of government funding. When conducting experimental studies, however, having at least 15 members per group is adequate for statistical analytic purposes and the results can be generalized to a greater population (Creswell, 2005).

### *Follow-up Self Surveys*

Answering the GSE and STAI surveys at the completion of the fourth session made it easier to capture data at the end of the study. Trying to capture data at a later time to see if there is a lasting effect on self-efficacy and anxiety can often pose difficulties with this population. These difficulties can include, no follow-up address after leaving the program or a false address given, being asked to leave the program due to drug relapse, leaving the program because they do not want to continue and in extreme cases, death from suicide or overdose of drugs.

### *Cross-Contamination*

All classes were held in the rehabilitation facility making it convenient and easily accessible for the participants. Therefore, the possibility of cross-contamination to participants existed from the two groups. Several of the women shared living quarters or

resided in close quarters within the treatment facility. Some of the participants also had developed friendships with other residents before the study began. These friendships were also a source of support for the women. They had the ability to discuss their experiences with each other and therefore, possibly create a bias among the groups. The women were excited and talkative about learning American Sign Language and sharing it with their infants/children. However, because experimental procedure and program protocol were followed the way the study was designed, it is the judgment of the investigator that the increase in self-efficacy and reduction of anxiety in the experimental group was likely not due to extraneous things.

#### *Time Issues*

The 1 hour time slot for class occasionally created frustration for participants and the instructor. Often the participants felt they did not have enough time to speak and share experiences. The class time provided a safe environment for the women and it was agreed that the door would remain locked during class time. When the door was locked facility personnel did not have access to the group's discussion. Creating this type of environment allowed the participants to be more open. The women were able to safely share their own experiences of learning ASL and therefore created an even greater forum for learning. At the end of each class participants voiced a desire for more time to talk and share. It was frustrating for the instructor not to be able to provide more time.

#### *Pilot Study*

Besides colleagues, asking ID/SA mothers who are not participating in the study to review surveys for clarity of directions, grammar, complexity and ambiguity, will further assess if participants will be capable of understanding and completing the

instruments. It can also help to uncover unanticipated problems and determine how long it would take to complete a particular instrument.

Additional questions can be added to the demographic questionnaire. Knowing if participants are voluntary or court ordered to the facility and if they have previously been in a rehabilitation facility can provide a better understanding of any differences that may exist in the groups. Additionally, future research can assess if the participant was the primary care giver for any of her other children and how parenting was handled. Asking if the participant has any existing or previous support system may address additional needs. A section could be added for requests from the participants to address any other possible subjects of interest. From these requests future classes can be developed.

When replicating and extending the study, a mixed methods approach is recommended. Although more time consuming, both qualitative and quantitative data can provide a better understanding of a research problem (Creswell, 2003, 2005). Providing a deeper understanding rather than just proving something exists offers many different perspectives on the study topic and provides a more elaborate picture of the situation (Creswell, 2005).

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**APPENDIX A**

**DEMOGRAPHIC INFORMATION FORM**

**DIRECTIONS:**

Please answer the following questions for some background information.

**Remember all information is confidential.**

**Do you currently use American Sign Language?** Yes \_\_\_ No \_\_\_

**If YES, please stop here and see the investigator.**

How long have you been in this facility? \_\_\_\_\_ months

Which level you are currently at in the program?

1 \_\_\_ 2 \_\_\_ 3 \_\_\_ 4 \_\_\_

Have you ever been in this program before? Yes \_\_\_ No \_\_\_

1. Age? \_\_\_\_\_

2. Marital status?

Single \_\_\_ Married \_\_\_ Divorced \_\_\_ Widow \_\_\_

3. How many children do you have? \_\_\_\_\_

4. How many miscarriages and/or abortions have you had?

None \_\_\_ 1-2 \_\_\_ 3-4 \_\_\_ 5 or more \_\_\_

5. How many years of formal education have you had?

0-6 years \_\_\_ 7-12 years \_\_\_ Technical/Vocational \_\_\_

College \_\_\_ Graduate/ Degree \_\_\_

6. What is your yearly income?

\$10,000 or less \_\_\_ \$31,000-\$40,000 \_\_\_

\$11,000-\$20,000 \_\_\_ \$41,000- \$50,000 \_\_\_

\$21,000-\$30,000 \_\_\_ \$51,000-\$60,000 \_\_\_ \$61,000 and  
above \_\_\_

7. Racial or ethnic background:

Asian\_\_\_\_ Black\_\_\_\_ Hispanic\_\_\_\_ Native American\_\_\_\_  
White/Caucasian\_\_\_\_ Other (specify) \_\_\_\_\_

8. Do you practice a formal Religion?

Yes\_\_\_\_ No\_\_\_\_

9. What is your living arrangement?

Living alone with infant/child(children)\_\_\_\_

Living with spouse/significant other\_\_\_\_

Living with parents\_\_\_\_ Living with other relatives/friends\_\_\_\_

Homeless\_\_\_\_ Other (explain) \_\_\_\_\_

10. Where do you go for medical care?

Clinic\_\_\_\_ Private Doctor\_\_\_\_ Hospital/ER\_\_\_\_ Other (explain) \_\_\_\_

11. Do you receive some type of help from the government?

Food Stamps\_\_\_\_ Medicaid\_\_\_\_ WIC\_\_\_\_ No\_\_\_\_

Other (specify) \_\_\_\_\_

12. In the past, did you use street drugs?

Yes\_\_\_\_ (if no please go to question 13) No\_\_\_\_

If yes, how often did you use street drugs?

Daily (every day)\_\_\_\_ Weekly (minimum once a week)\_\_\_\_

Monthly (minimum once a month)\_\_\_\_ Occasionally (explain)\_\_\_\_

What type of street drugs did you use?

Marijuana\_\_\_\_ Cocaine\_\_\_\_ Crack\_\_\_\_ Heroin\_\_\_\_

Other (specify) \_\_\_\_\_

At what age did you first use street drugs? \_\_\_\_\_

When did you last use street drugs? Choose one answer.

Yesterday\_\_\_\_ Last week\_\_\_\_ 2 weeks ago\_\_\_\_

Last month\_\_\_\_ More than 6 months\_\_\_\_

13. In the past, did you use prescription drugs for non medical purposes?

Yes\_\_\_\_ (if no please go to question 14) No\_\_\_\_

If yes, how often did use prescription drugs for non medical purposes?

Daily (every day)\_\_\_\_ Weekly (minimum once a week)\_\_\_\_

Monthly (minimum once a month)\_\_\_\_ Occasionally (explain)\_\_\_\_

What type of prescription drugs did you use? Check all that apply.

OxyContin\_\_\_\_ Vicodin\_\_\_\_ Percocet\_\_\_\_ Percodan\_\_\_\_ Lortab\_\_\_\_

Lorcet\_\_\_\_ Tylox\_\_\_\_ Dilaudid\_\_\_\_ Librium\_\_\_\_ Valium\_\_\_\_

Xanax\_\_\_\_ Adderall\_\_\_\_ Concerta\_\_\_\_ Ritalin\_\_\_\_

At what age did you first use prescription drugs for non medical purposes? \_\_\_\_

When did you last use prescription drugs for non medical purposes? Choose one answer.

Yesterday\_\_\_\_ Last week\_\_\_\_ 2 weeks ago\_\_\_\_

Last month\_\_\_\_ More than 6 months\_\_\_\_

14. In the past, did you drink alcoholic beverages?

Yes\_\_\_\_ (if no please go to item15) No\_\_\_\_

How would you describe your level of drinking?

Moderate (1 drink per day)\_\_\_\_

Heavy (more than 1 drink per day)\_\_\_\_

Occasional (explain)\_\_\_\_\_

What type of alcoholic beverage did you usually drink?

Beer\_\_\_\_ Wine\_\_\_\_ Whiskey\_\_\_\_ Vodka\_\_\_\_

Other (explain) \_\_\_\_\_

At what age did you first have an alcoholic beverage? \_\_\_\_\_

When did you last have an alcoholic drink? Choose one answer.

Yesterday\_\_\_\_ Last week\_\_\_\_ 2 weeks ago\_\_\_\_

Last month\_\_\_\_ More than 6 months\_\_\_\_

15. Do/Did you smoke tobacco?

Never smoked\_\_\_\_

I did smoke but I stopped \_\_\_\_ ( when did you stop) \_\_\_\_\_

Yes\_\_\_\_ (if yes, please describe)

Cigarettes\_\_\_\_ Cigars\_\_\_\_ Pipe\_\_\_\_ other (explain)

\_\_\_\_\_

How much do you smoke a day? \_\_\_\_\_

At what age did you first use tobacco products? \_\_\_\_\_

16. Are you breast feeding your baby?

Yes\_\_\_\_ No\_\_\_\_ (if yes, how often do you typically breast feed your baby each day?)

1 time\_\_\_\_ 2 times\_\_\_\_ 3 times\_\_\_\_ 4 times\_\_\_\_ as often as needed\_\_\_\_

17. How was your baby delivered?

Natural childbirth/Vaginal\_\_\_\_ Cesarean\_\_\_\_ Forceps\_\_\_\_

18. Was your baby:

Full term\_\_\_\_ Premature\_\_\_\_

**Please add any comments you would like to share.**

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**Thank you for participating in this study.**



**All of the information will remain confidential.**

Code Number \_\_\_\_\_ Date Collected \_\_\_\_\_ Date Completed \_\_\_\_\_

Adapted from Porter & Porter 2004

## APPENDIX B

### The General Self-Efficacy Scale (GSE)

**INSTRUCTIONS:** Please rate how strongly you agree or disagree with each of the following statements by placing a circle around your number response.

1. I can always manage to solve difficult problems if I try hard enough.			
1 Not at all true	2 = Hardly true	3 = Moderately true	4 = Exactly true
2. If someone opposes me, I can find the means and ways to get what I want.			
1 Not at all true	2 = Hardly true	3 = Moderately true	4 = Exactly true
3. It is easy for me to stick to my aims and accomplish my goals.			
1 Not at all true	2 = Hardly true	3 = Moderately true	4 = Exactly true
4. I am confident that I could deal efficiently with unexpected events.			
1 Not at all true	2 = Hardly true	3 = Moderately true	4 = Exactly true
5. Thanks to my resourcefulness, I know how to handle unforeseen situations.			
1 Not at all true	2 = Hardly true	3 = Moderately true	4 = Exactly true
6. I can solve most problems if I invest the necessary effort.			
1 Not at all true	2 = Hardly true	3 = Moderately true	4 = Exactly true
7. I can remain calm when facing difficulties because I can rely on my coping abilities.			
1 Not at all true	2 = Hardly true	3 = Moderately true	4 = Exactly true
8. When I am confronted with a problem, I can usually find several solutions.			
1 Not at all true	2 = Hardly true	3 = Moderately true	4 = Exactly true
9. If I am in trouble, I can usually think of a solution.			
1 Not at all true	2 = Hardly true	3 = Moderately true	4 = Exactly true
10. I can usually handle whatever comes my way.			
1 Not at all true	2 = Hardly true	3 = Moderately true	4 = Exactly true

Schwarzer, R., & Jerusalem, M. 1995

Code Number \_\_\_\_\_ Date Collected \_\_\_\_\_ Date Completed \_\_\_\_\_



## APPENDIX C

### SELF-EVALUATION QUESTIONNAIRE STAI Form Y-1

Please provide the following information:

Name \_\_\_\_\_ Date \_\_\_\_\_ S \_\_\_\_\_  
 Age \_\_\_\_\_ Gender (Circle) M F T \_\_\_\_\_

**DIRECTIONS:**

A number of statements which people have used to describe themselves are given below. Read each statement and then blacken the appropriate circle to the right of the statement to indicate how you feel *right* now, that is, *at this moment*. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

NOT AT ALL  
 SOMEWHAT  
 MODERATELY SO  
 VERY MUCH SO

- |  |   |   |   |   |
|--|---|---|---|---|
| 1. I feel calm .....                                       | 1 | 2 | 3 | 4 |
| 2. I feel secure .....                                     | 1 | 2 | 3 | 4 |
| 3. I am tense .....  | 1 | 2 | 3 | 4 |
| 4. I feel strained .....                                   | 1 | 2 | 3 | 4 |
| 5. I feel at ease .....                                    | 1 | 2 | 3 | 4 |
| 6. I feel upset .....                                      | 1 | 2 | 3 | 4 |
| 7. I am presently worrying over possible misfortunes ..... | 1 | 2 | 3 | 4 |
| 8. I feel satisfied .....                                  | 1 | 2 | 3 | 4 |
| 9. I feel frightened .....                                 | 1 | 2 | 3 | 4 |
| 10. I feel comfortable .....                               | 1 | 2 | 3 | 4 |
| 11. I feel self-confident .....                            | 1 | 2 | 3 | 4 |
| 12. I feel nervous .....                                   | 1 | 2 | 3 | 4 |
| 13. I am jittery .....                                     | 1 | 2 | 3 | 4 |
| 14. I feel indecisive .....                                | 1 | 2 | 3 | 4 |
| 15. I am relaxed .....                                     | 1 | 2 | 3 | 4 |
| 16. I feel content .....                                   | 1 | 2 | 3 | 4 |
| 17. I am worried .....                                     | 1 | 2 | 3 | 4 |
| 18. I feel confused .....                                  | 1 | 2 | 3 | 4 |
| 19. I feel steady .....                                    | 1 | 2 | 3 | 4 |
| 20. I feel pleasant .....                                  | 1 | 2 | 3 | 4 |

## APPENDIX D

September 21, 2009

Ms. Bonnie J. Kissel, Doctoral Student  
Florida International University

Dear Ms. Kissel:

In response to your recent request, I am very pleased to give you permission to reproduce and use the State-Trait Personality Inventory (STPI) State-Anxiety scale in your research project, entitled:

**The effects of American sign language on general self-effacing  
and anxiety among mothers in a residential rehabilitation  
facility for illicit drug and substance abuse.**

It is my understanding that your research will be carried out at:

**A residential rehabilitation facility in Broward County, Florida**

This permission is contingent on your agreement to share your findings with us when your research is completed. I look forward to receiving further information about your procedures and the results of your study as this information becomes available.

Best wishes on your research project.

Sincerely,

Charles D. Spielberger, Ph.D., ABPP  
Distinguished Research Professor of Psychology  
Director, Center for Research in Behavioral  
Medicine and Health Psychology  
Phone (813) 974-2342; E-mail: [spielber@cas.usf.edu](mailto:spielber@cas.usf.edu)

## APPENDIX E



### Consent Form

**Title: The Effects of American Sign Language on General Self-Efficacy and Anxiety Among Mothers in a Residential Rehabilitation Facility for Drug Addiction and Substance Abuse.**

You are being asked to participate in a research study. The investigator of this study is Bonnie J. Kissel, a student at Florida International University. The purpose of this study is to look at the effects American Sign Language will have on general self-efficacy and anxiety while you reside in a residential rehabilitation facility for drug addiction and substance abuse with your infant/child. Your participation will include being part of a 1 hour class for four weeks with your infant/child. During the class you will learn words, phrases and songs/poems using American Sign Language and interact with your infant/child using this new skill. This program will provide the opportunity for you to learn skills that help increase parenting confidence, decrease anxiety and promote communication between you and your infant/child. The study will add to research concerning services provided to recovering illicit drug/substance abusing mothers in residence with their children and help educators further understand the needs of women with addiction problems. This form requests your permission as the mother along with your infant/child to participate in these classes.

No ill effects or complications are expected for the mother and infant/child. If you decide to be a part of the study, you will be asked some background information that will include the past use of illegal drugs or substances. You may refuse to provide information you choose. You will also be asked to fill out three surveys at the beginning of the study and two surveys at the end of the study.

There is no cost or payment to you as a participant. You may withdraw your participation at any time with no negative consequences. All information that pertains to this study will be numbered, locked in an office, and not identifiable to the investigator. The final reports will not use your name in any way. If you would like more information about this research study, you can contact Bonnie J. Kissel by email at [bkissel@fiu.edu](mailto:bkissel@fiu.edu). If you would like to talk with someone about your rights as a participant of this study, you may contact Dr. Patricia Price, the Chairperson of the FIU Institutional Review Board at 305-348-2618 or 305-348-2494. Your signature below indicates that all of your questions have been answered and that you agree to help in the study.

\_\_\_\_\_

Participant's Signature

Printed Name

Date

I have explained the research procedure, subject rights and answered questions asked by the participant. I have offered him/her a copy of this informed consent form.

\_\_\_\_\_

Witness

Date

## APPENDIX F

### COMBINED FREQUENCIES OF GROUP 1 AND GROUP 2

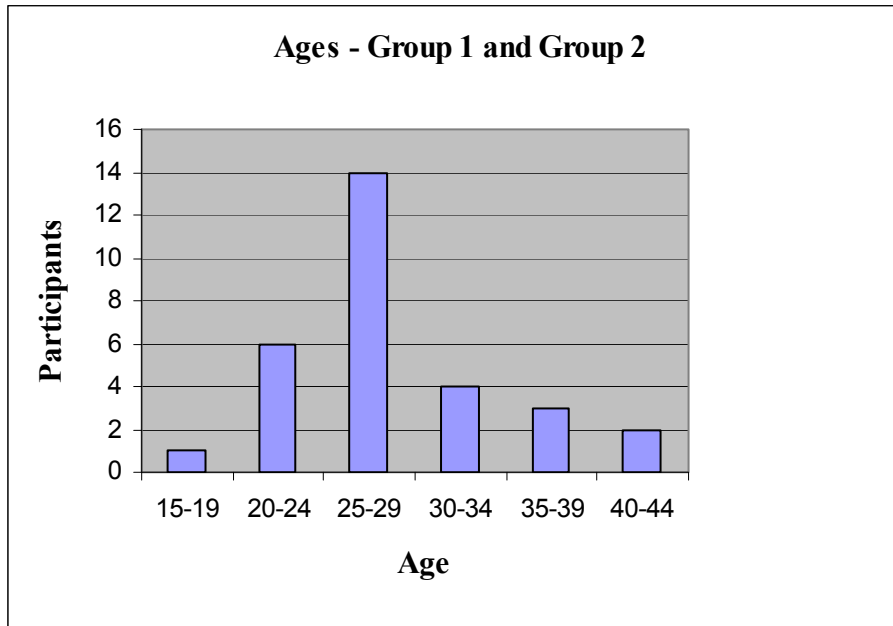


Figure 1. Age of participants from group 1 and group 2.

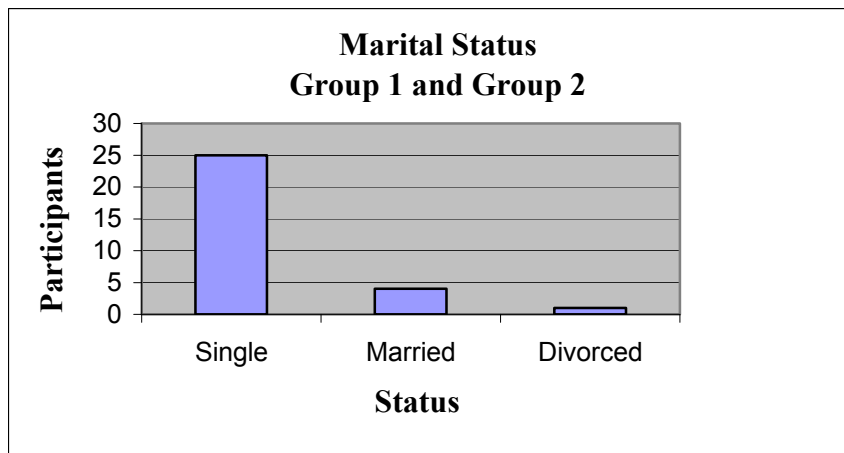


Figure 2. Marital status of participants from group 1 and group 2.

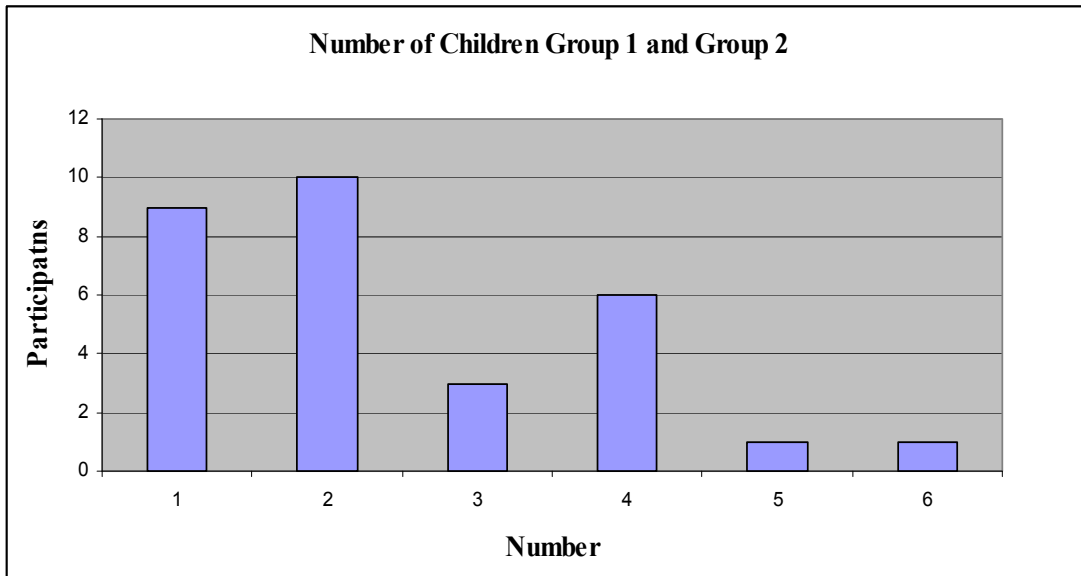


Figure 3. Number of children of participants from group 1 and group 2.

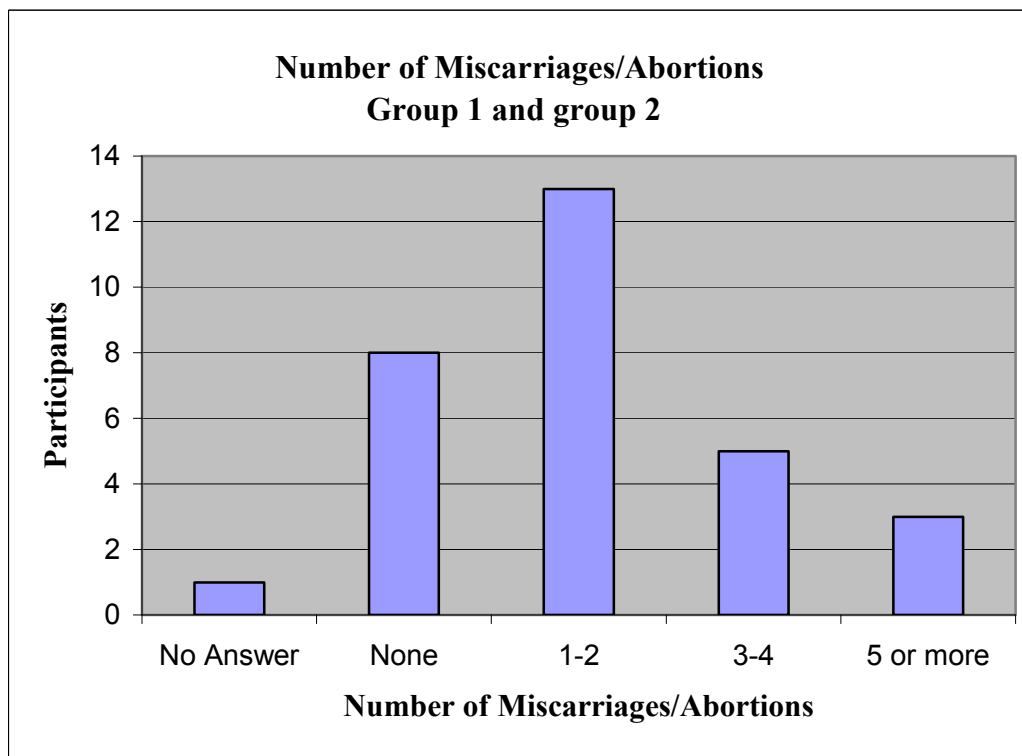


Figure 4. Number of miscarriages/abortions of participants from group 1 and group 2.

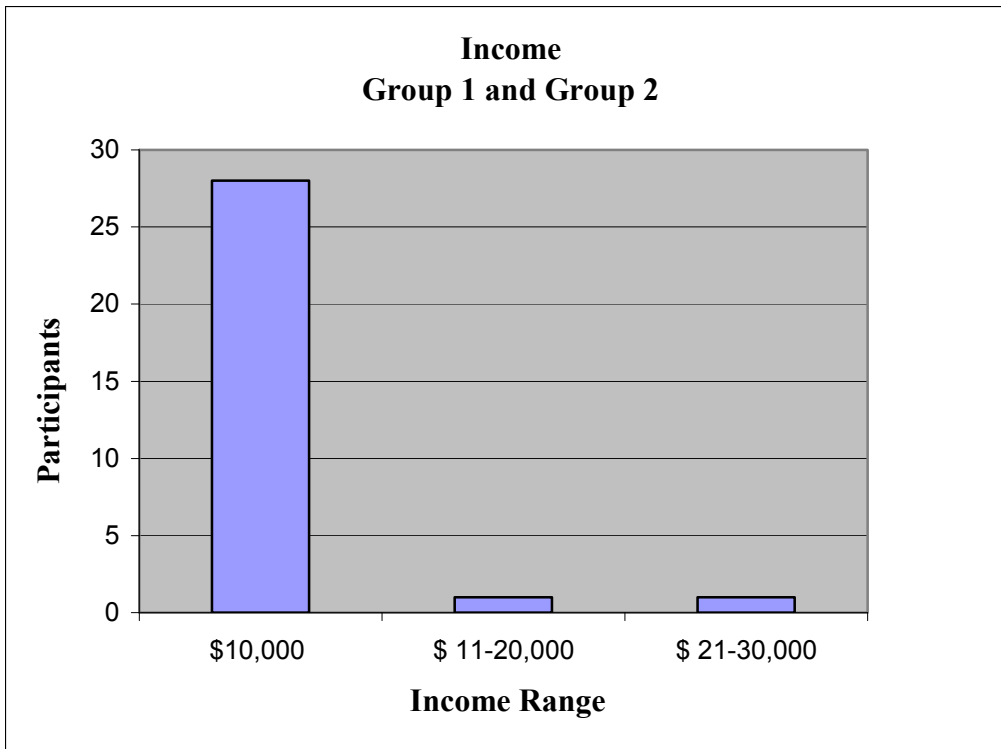


Figure 5. Yearly income of participants from group 1 and group 2.

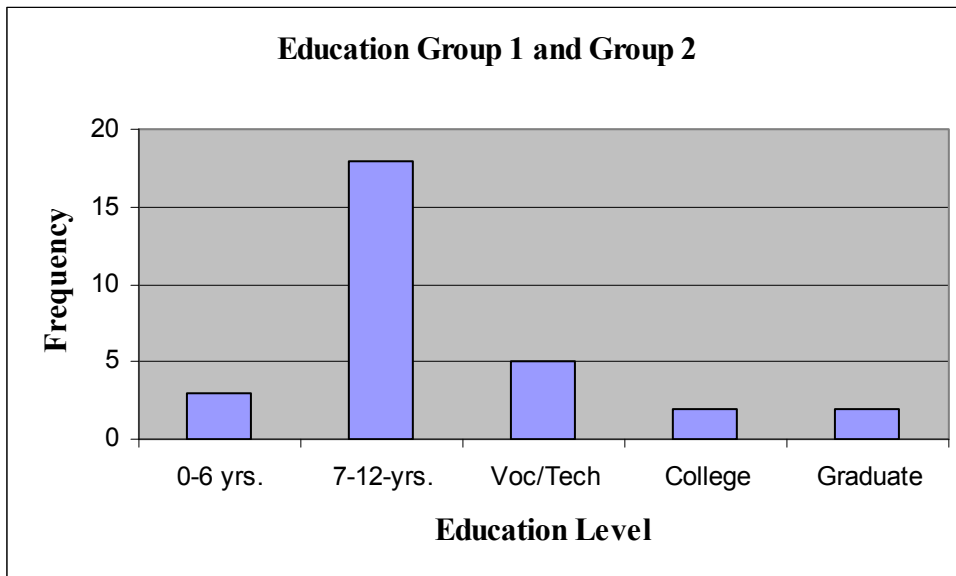


Figure 6. Educational Level of participants from group 1 and group 2.

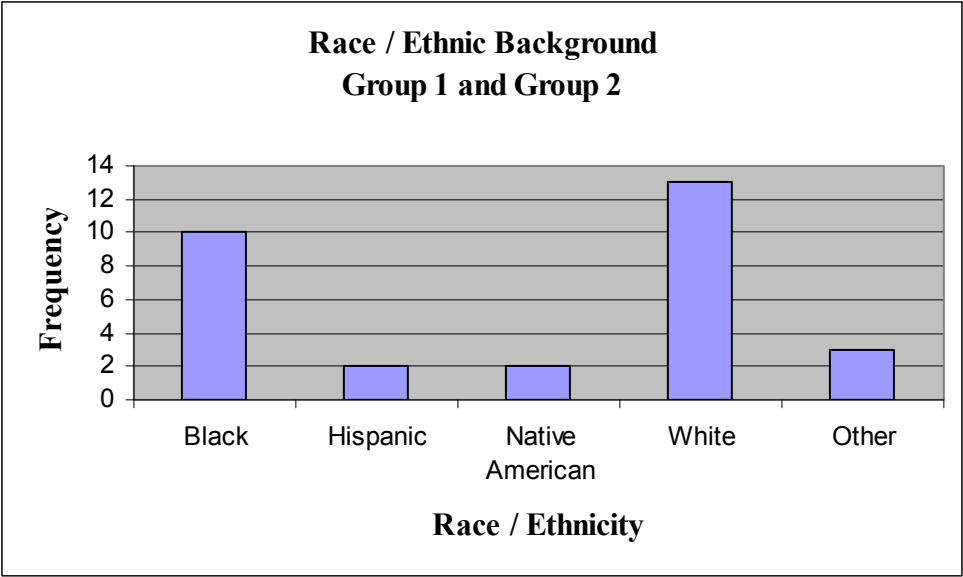


Figure 7. Race/ethnic background of participants from group 1 and group 2.

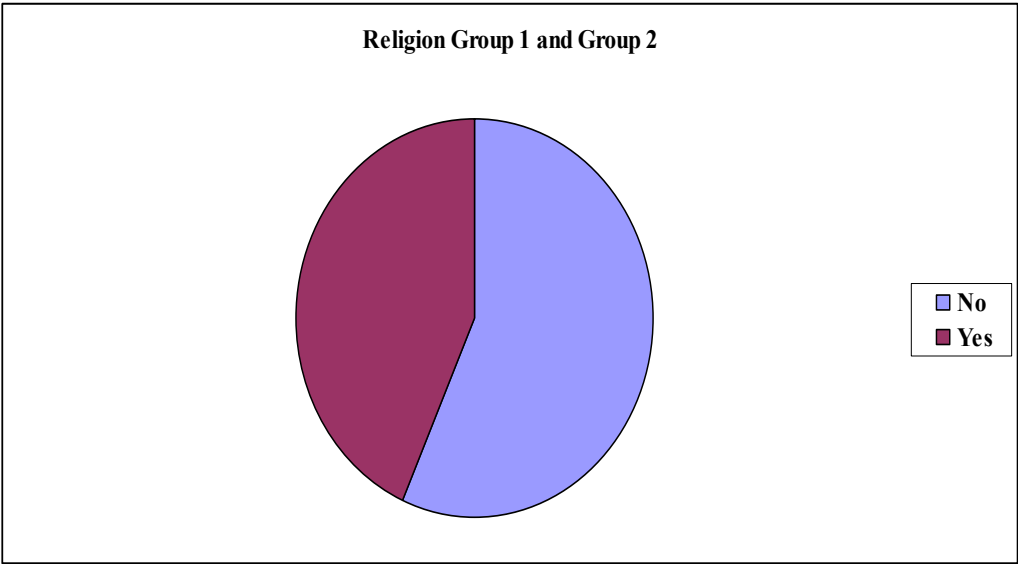


Figure 8. Religious practices of participants from group 1 and group 2.



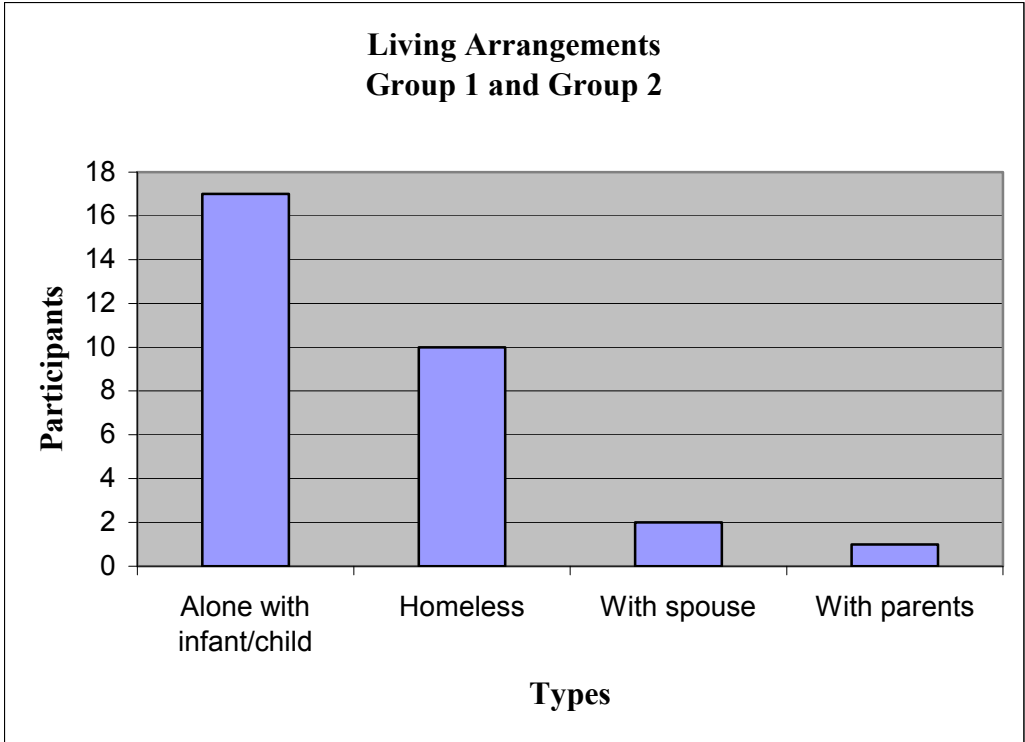


Figure 9. Living arrangements of participants from group 1 and group 2.

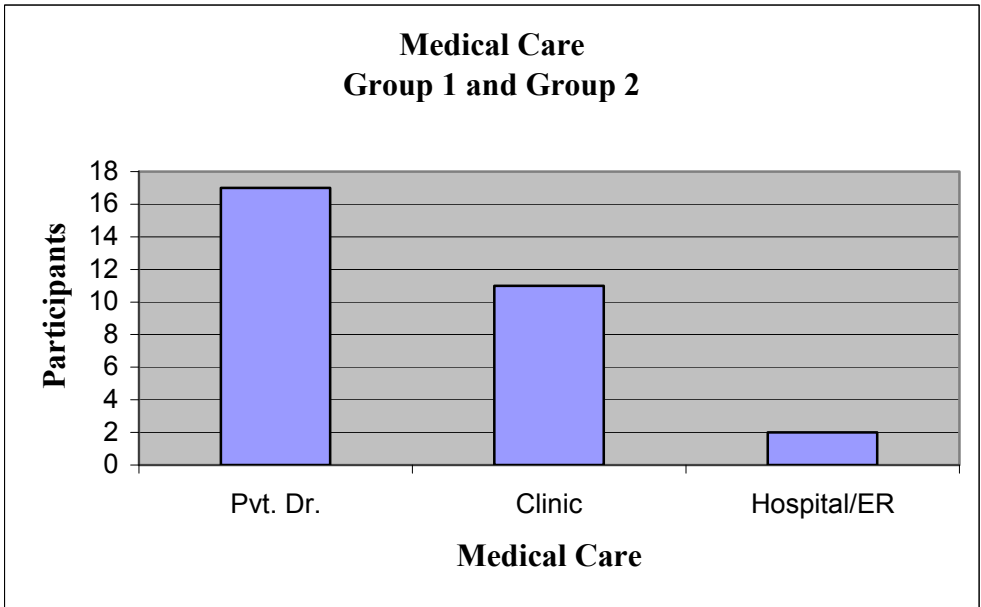


Figure 10. Medical care of participants from group 1 and group 2.

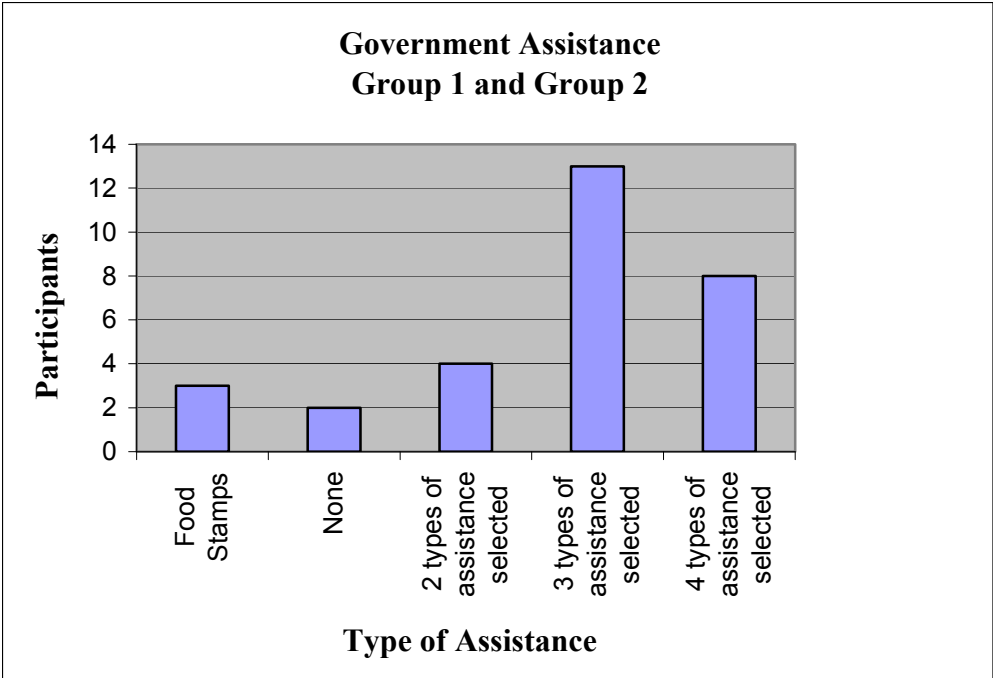


Figure 11. Government assistance received by participants from group 1 and group 2.

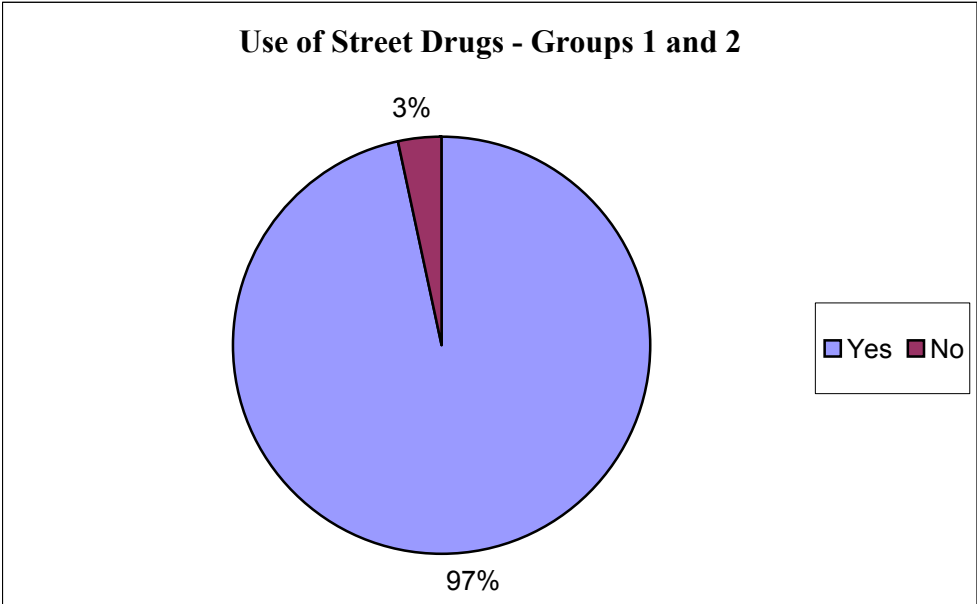


Figure 12. Use of street drugs by participants from group 1 and group 2.

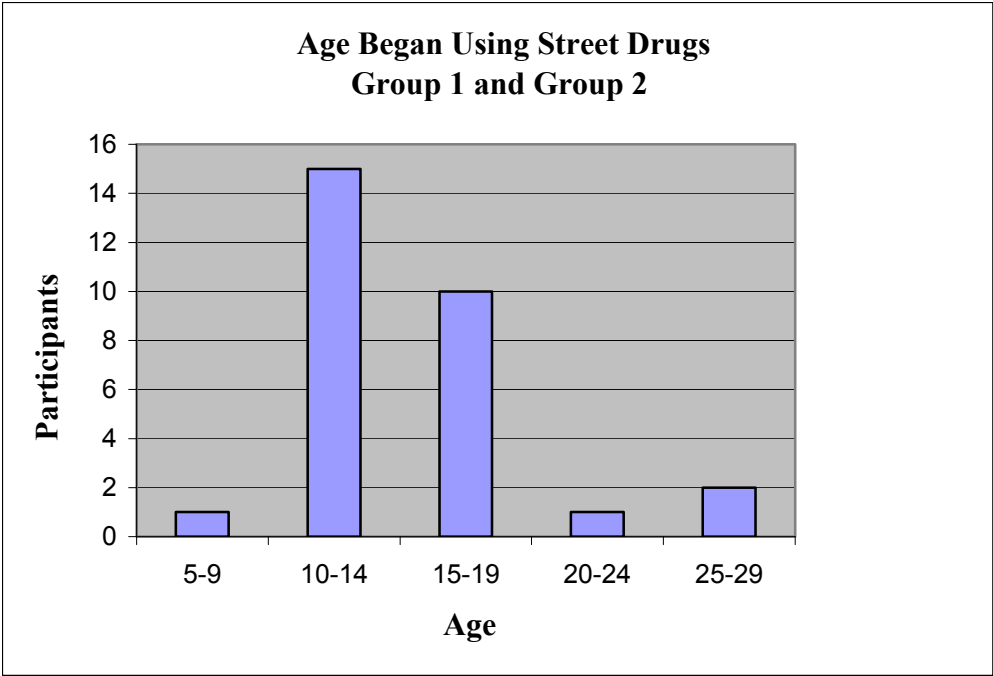


Figure 13. Age when participants from group 1 and group 2 began using street drugs.

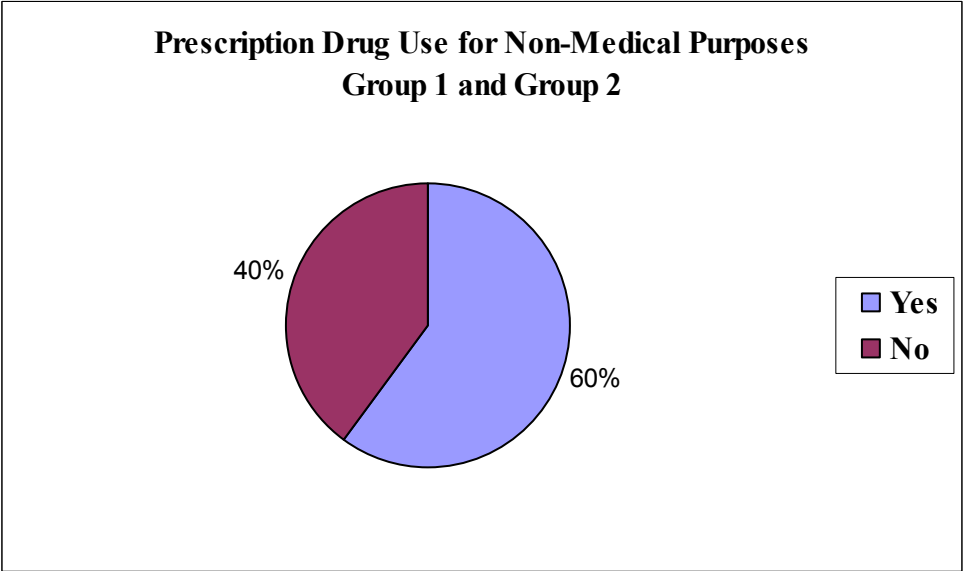


Figure 14. Prescription drug use for non-medical purposes by participants from group 1 and group 2.

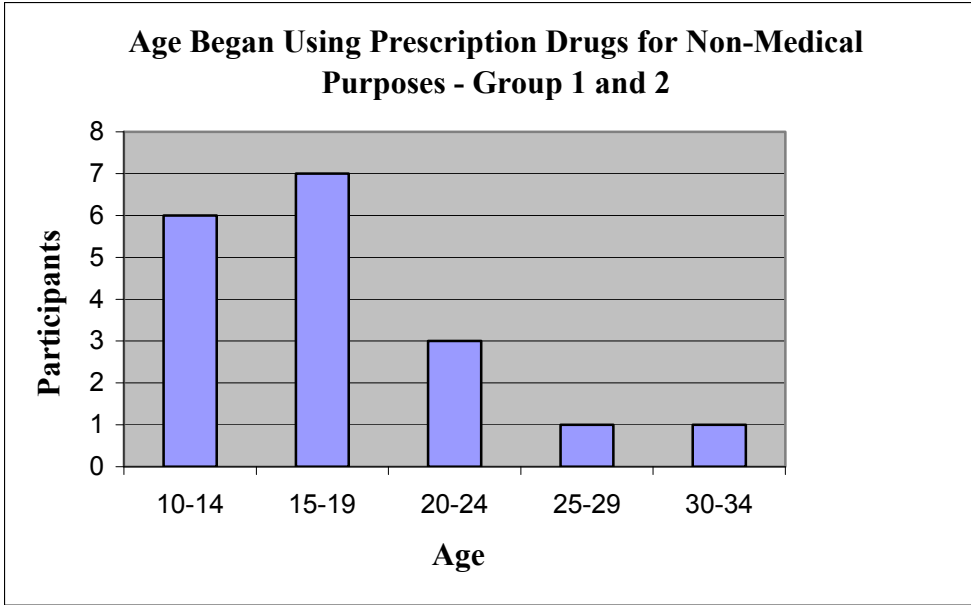


Figure 15. Age when participants from group 1 and group 2 began using prescription drugs for non-medical purposes.

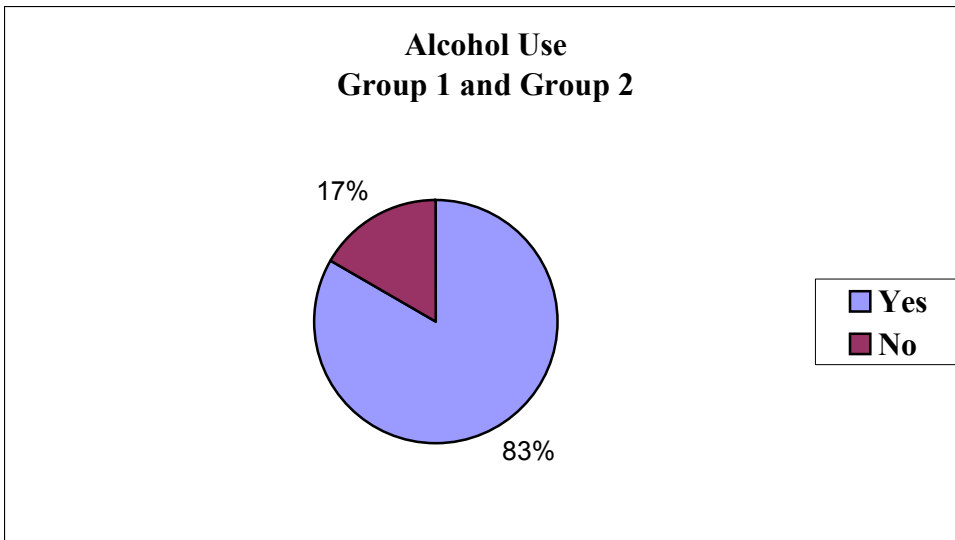


Figure 16. Alcohol use by participants from group 1 and group 2.

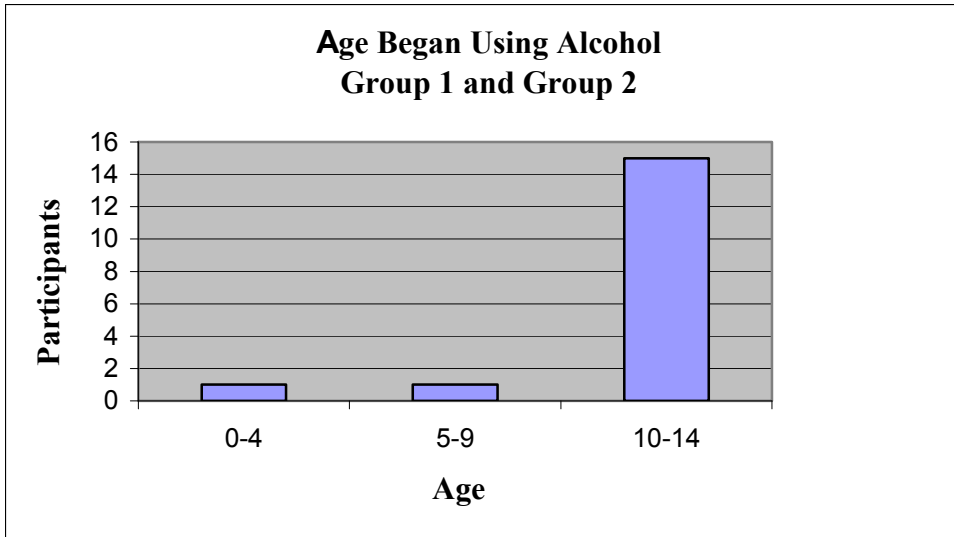


Figure 17. Age when participants from group 1 and group 2 began using alcohol.

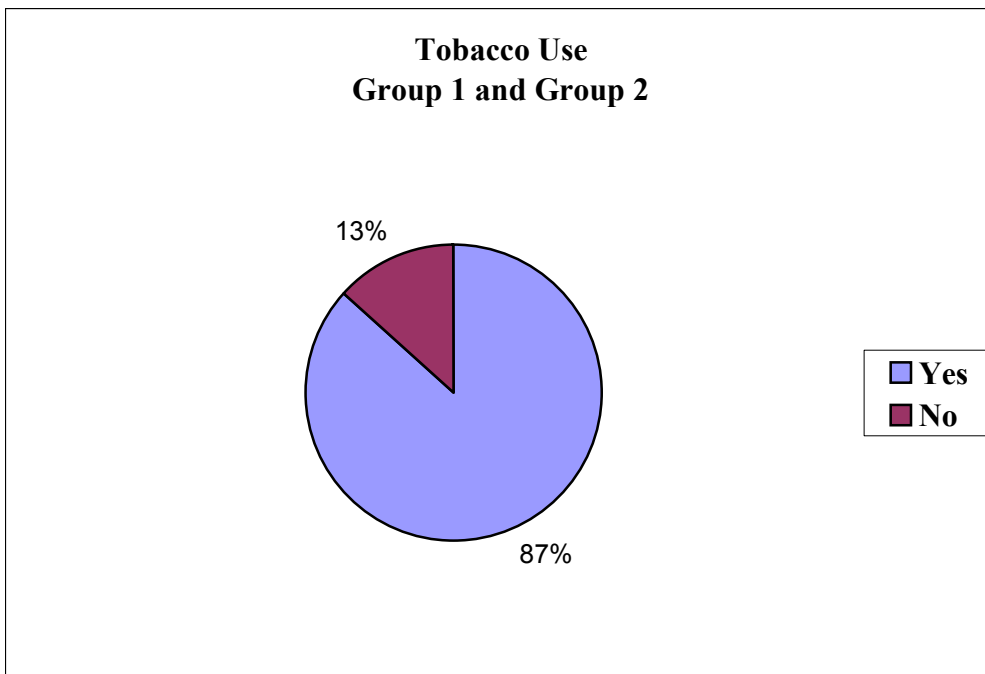


Figure 18. Tobacco use by participants from group 1 and group 2.

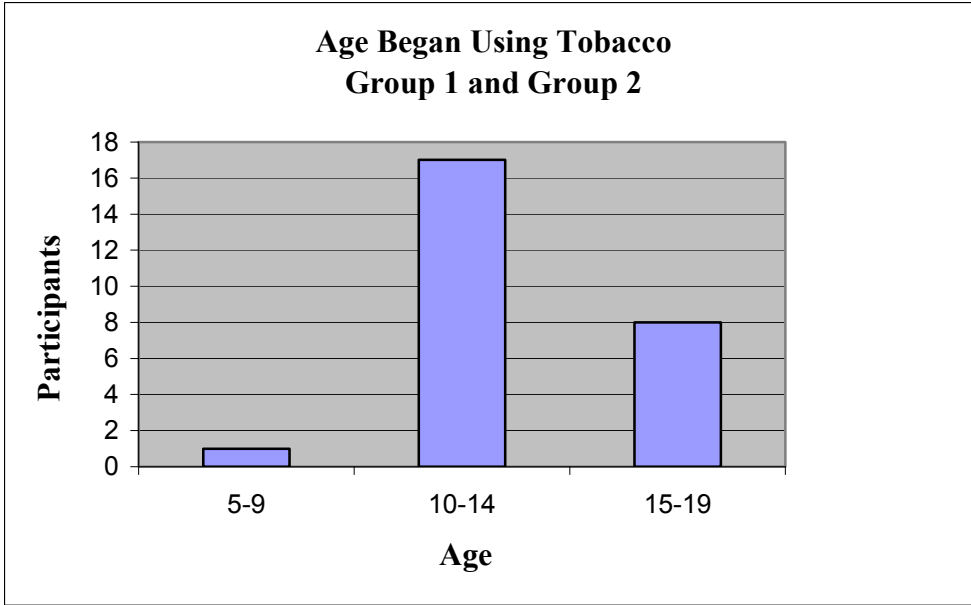


Figure 19. Age when participants from group 1 and group 2 began using tobacco.

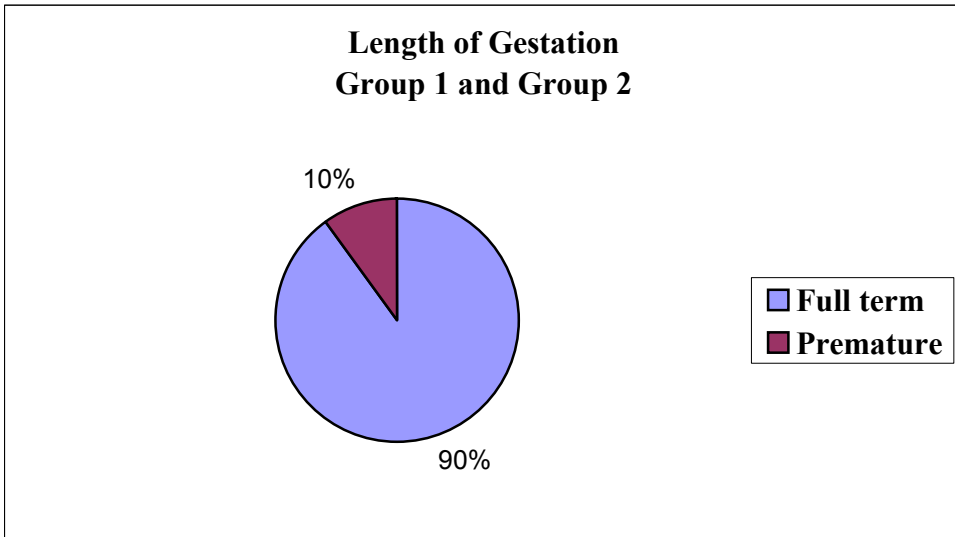


Figure 20. Length of gestation for participants from group 1 and group 2.

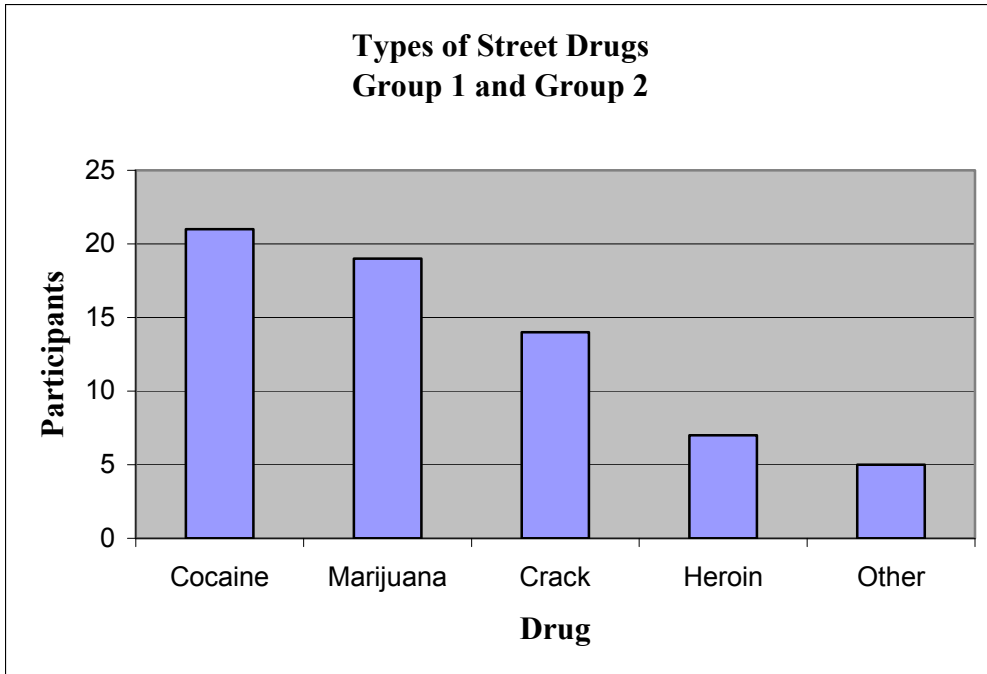


Figure 21. Types of street drugs used by participants from group 1 and group 2.

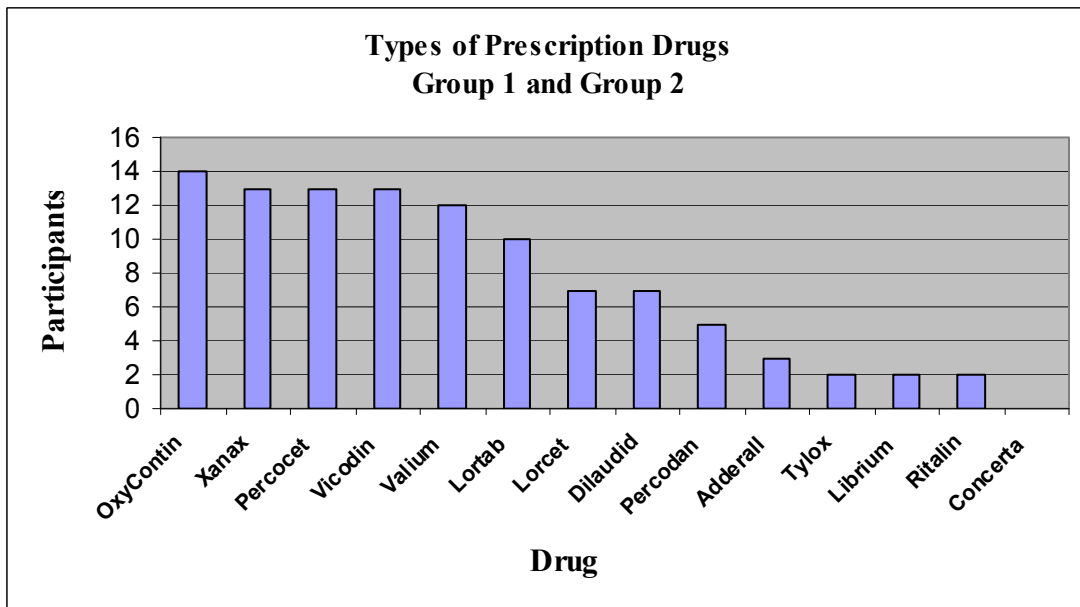


Figure 22. Types of prescription drugs used by participants from group 1 and group 2.



Figure 23. Types of alcohol used by participants from group 1 and group 2.



VITA

BONNIE J. KISSEL

Place of Birth	Chicago, Illinois
1985-1998	Emergency Room Nurse Memorial Regional Hospital, Hollywood, Florida
1988	Bachelor of Nursing Science Florida International University, Miami, Florida
1991	Advanced Registered Nurse Practitioner Florida International University, Miami, Florida
1991	Certified Infant Massage Instructor International Association of Infant Massage Instructors, Tampa, Florida
1994	Master of Nursing Science Florida International University, Miami, Florida
1989-2006	Licensed Massage Therapist Memorial Healthcare System, Hollywood, Florida Retention and Recruitment Program
2000 – Present	Training Center Faculty – American Heart Association
2005-2009	Educator, Grant for Dr. Porter’s Study Florida International University, Miami, Florida
2006- Present	Lead Licensed Massage Therapist Memorial Healthcare System, Hollywood, Florida

## PUBLICATIONS AND PRESENTATIONS

- Bango-Sanchez, V., Kissel, B. and McDade, R. (2010). "Touchy Subjects": Dealing with Sensitive Populations In Research. *Symposium presentation at The Ninth Annual College of Education and Graduate Student Network Research Conference*. Miami, Florida: Florida International University.
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