

**The Effects of Alcohol On the Classroom:
Fetal Alcohol Syndrome and Fetal Alcohol Effects**

by

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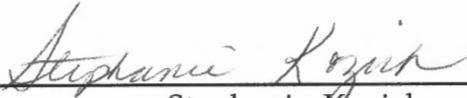
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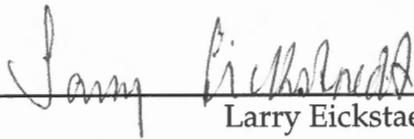
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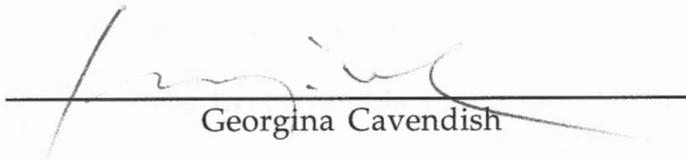
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ABSTRACT

Research concerning the relationship between fetal alcohol syndrome/fetal alcohol effects and the educational system is limited in the literature. The present study is conducted to determine the type and amount of information that educators in Washington State possess concerning FAS and FAE. A review of related literature provides an overview of the syndrome including: historical, medical, social and educational aspects.

Information to determine the accessibility, training and extent of educator knowledge is obtained through a survey data collection method. Results of the survey demonstrate that educators within Washington State have limited training in the field of FAS/FAE. Follow-up phone interviews are conducted to further determine the amount of information concerning FAS/FAE that educators possess. Phone interview responses confirm that educators have limited information and accessibility to data concerning FAS/FAE, and that the information they do have comes mainly from trial and error as well as intuition. Participants, 12, in the study express that none of their information is obtained through formal training.

Recommendations created as a result of the survey include, 1) formation of a research action group for educators to discuss special education concerns with emphasis on FAS/FAE, 2) setting up a FAS/FAE database on the Internet, and 3) more formal training on FAS/FAE to be offered by Educational Service Districts, local school districts, and individual schools.

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GLOSSARY OF MEDICAL TERMS

ACETALDEHYDE: "A volatile, colorless, water-soluble liquid....having a pungent, fruit-like odor; used chiefly in the silvering of mirrors and in organic synthesis" (Flexner and Hauck, no date provided).

AGENESIS: "The complete or partial absence at birth of an organ or component of the body, caused by failure of development in the embryo" (Clayman, 1989, p. 74).

ACIDOSIS: "A disturbance of the body's *acid-base* balance in which there is an accumulation of acid or loss of alkali (base). There are two types of acidosis: metabolic and respiratory" (Clayman, 1989, p. 6).

ANOMALY: (In reference to cardia, craniofacial, and joint) "A deviation from what is accepted as normal, especially as a result of a birth defect such as a limb malformation" (Clayman, 1989, p. 112).

CORPUS CALLOSUM: "A great band of deeply situated transverse white fibers uniting the two halves of the cerebrum in humans and other mammals" (Flexner and Hauck, no date provided).

CYTOTOXIC (Drugs): "A group of drugs that kills or damages cells; a type of *anticancer drug*. Cytotoxics primarily affect abnormal cells but they can damage or kill healthy cells, especially those that are multiplying rapidly. For example, they may affect noncancerous cells in bone marrow, causing anemia and increasing susceptibility to infection" (Clayman, 1989, p. 331).

FETAL ALCOHOL EFFECTS: "FAE generally refers to abnormalities presumed to be related to maternal drinking during pregnancy, sometimes expressed as 'possible FAE' or 'presumed FAE,' since low birth weight and other malformations may be due to other causes. In other cases, the term FAE has been used to describe birth defects that satisfy two of the three FAS criteria and are more certainly a product of maternal drinking. Because more subtle manifestations of FAE...can only be demonstrated in large statistical studies relating pregnancy outcome to maternal alcohol intake, it is often impossible to say with any certainty that a particular isolated abnormality in a child resulted from its mother's drinking" (Blume, 1992, p. 11).

FETAL ALCOHOL SYNDROME: "Maternal alcohol abuse during pregnancy is the most important cause of drug induced teratogenesis. The most serious consequence is severely mental retardation, due to impaired brain development. Affected infants have growth retardation and are microcephalic. Multiple malformations may occur-microphthalmia, short palpebral fissures, midfacial hypoplasia, abnormal palmar creases, cardiac defects, and joint contractures; no single finding is pathognomonic. The mental retardation is felt to be part of ethanol teratogenesis since infants of alcoholic women are often retarded even if raised in foster homes.

FAS has been diagnosed in infants born to chronic alcoholics who drank heavily throughout pregnancy. Lesser degrees of alcohol abuse result in less severe manifestations of FAS. Because it is not known when during pregnancy ethanol is most likely to harm the fetus, or whether there is a lower limit of ethanol use that can be considered safe, pregnant women should be advised to avoid all alcohol intake. When a child is affected, the mother's other children should be examined carefully for subtle manifestations of FAS" (Berkow & Fletcher, 1987, p. 1887).

HIPPOCAMPUS: "An enfolding of cerebral cortex into the lateral fissure of a cerebral hemisphere, having the shape in cross section of a sea horse" (Flexner and Hauck, no date).

HYPOPLASIA: "Defective development of tissue" (Taber, 1963, p. M-52).

HYPOXIA: "An inadequate supply of oxygen to the tissues" (Clayman, 1989, p. 564).

ISOENZYMES: "Any of the genetically variant forms of certain enzymes that catalyze the same reaction but that may differ in activity, composition or physical properties" (Flexner and Hauck, no date provided).

MAXILLARY HYPOPLASIA: (Maxillary) "One of a pair of bones that forms the upper jaw. At their base the maxillas carry the upper teeth and form the roof of the mouth; at the top they form the floor of the orbits (the sockets that contain the eyes). Each bone contains a large air-filled cavity that is connected to the nasal cavity. (Hypoplasia) Failure of an organ or tissue to develop fully and reach its normal adult size" (Clayman, 1989, pp. 668, 561).

MENTAL RETARDATION: "Impaired intellectual function that results in an inability to cope with the normal responsibilities of life. To be classified as mentally retarded, a person must have an IQ below 70 and impairment must be present before the age of 18. Within this group there are various degrees of severity, resulting in different levels of handicap" (Clayman, 1989, p. 678).

MICROCEPHALY: "An abnormally small head, usually associated with mental retardation. Microcephaly may occur if the brain is damaged before birth by congenital *rubella* or if the mother is exposed to X rays during early pregnancy. It may also be the result of brain damage during birth, or of injury or disease in early infancy. Microcephaly may also occur if the skull bones fuse too early" (Clayman, 1989, p. 684-685).

MULTIPAROUS: "Having borne more than 1 child. 2. Producing more than 1 child at birth" (Taber, 1963, p. M-52).

PALSY (CEREBRAL): "A term applied to certain forms of paralysis" (Clayman, 1989, p. 765).

PALPEBRAL FISSURES: "Concerning an eyelid. The opening bet, the eyelids" (Taber, 1963, p. M-52).

PATHOGNOMONIC: "Indicative of a disease, esp. of 1 or more of its characteristic symptoms" (Taber, 1963, p. M-52).

TERATOGENIC: "An agent that causes physical abnormalities in a developing embryo or fetus. Examples of teratogens include the *rubella* virus and the drug *thalidomide*. For a drug to be categorized as a teratogenic, there must be evidence that taking the drug during pregnancy causes an increased incidence of congenital abnormalities that cannot be explained by other factors. Many chemicals that are known to be teratogenic in some species (such as rats) have not been proved to be teratogenic in humans. Drug-regulating agencies usually refuse to license drugs for use during pregnancy if they have been found to be teratogenic for any species" (Clayman, 1989, p. 971).

PREFACE

For many years this writer was exposed to the field of special education through the work of her grandmother, a special educator for 36 years. From a very young age I knew that I wanted to help students who were exceptional, but in what capacity I was unsure. When I chose to enter a graduate program in education it seemed only logical to study and work in the field of special education.

I would like to give my thanks to all those who encouraged me in my work. Many thanks to The people at the Office of the Superintendent of Public Instruction who directed me to connections necessary to obtain information. I would also like to thank those administrators and educators whose interest in FAS/FAE and dedication to the field of teaching enabled me to conduct my survey. Moreover, I wish to acknowledge the various people at the Child Development and Mental Retardation Center at the University of Washington who allowed me to observe the diagnostic process. In addition, thank you to Diane Bailey and Diane Davis for the information, as well as their words of encouragement. I must acknowledge my colleagues Patrick Boyce and Susan Waterworth who allowed me access to their research work. My heartfelt gratitude to Janet Graham, Stella Jordan and Sue Pittman for all of the time spent reviewing my thesis work. Thanks to my three readers, Stephanie Kozick, Larry Eickstaedt, and Georgina Cavendish, without whom this would not have been possible. Finally, my husband Daniel Reed

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CHAPTER ONE: INTRODUCTION

Over the past twenty years researchers have conducted extensive studies in the field of Fetal Alcohol Syndrome (FAS) and Fetal Alcohol Effects (FAE). This syndrome is as old as alcohol itself, but it was not given the title Fetal Alcohol Syndrome until 1973 when Dr. Kenneth L. Jones and Dr. David W. Smith published their observations of alcoholic mothers. Since the observations of Smith and Jones were published, the health care profession has made a great deal of progress in identifying children who exhibit FAS/FAE. The updated research in the medical field has identified many children who are now entering the educational system. Although there have been milestones in the medical field, the educational system is having difficulties coping; educators are finding themselves with a lack of knowledge and accessible resources on how to deal with students exhibiting FAS/FAE.

In Western Washington where the leading research in the field is conducted there is potentially direct access to information needed by educators, but it is not easy to obtain. The time that it takes to gain formal training, or research information is too great for most educators to spare. Successful methods that are being used to educate children with FAS/FAE are not widely published in the literature. Educators continue to rely on guess work concerning ways to educate students who exhibit FAS/FAE. Sometimes teachers are effective, but more often than not educators become frustrated and give up on these students.

In order for students who exhibit FAS/FAE to have the education that they need to survive in today's world, methods in use in the educational system must change. Teachers who have limited training and are unable to recognize students who exhibit FAS/FAE. As a result, children who exhibit FAS/FAE are often looked upon as simply having behavior disorders and treated as such. In turn, these same students are missing out on their right to an education because of the limited knowledge within the educational system about the handicapping condition of FAS/FAE. This thesis presents proposals that offer solutions to the problems facing educators of students who exhibit FAS/FAE.

CHAPTER TWO: REVIEW OF LITERATURE

A review of the literature to date reveals various studies that identify problems hindering the education of students exhibiting FAS/FAE. In order to understand classroom needs, it is important to examine the literature in four main sections: historical, medical, social, and educational. As a result of this review strategy, educators may gain an understanding of the whole child and not just small parts of her/him. In this review of the literature the subject of, "alcoholism" is not the primary consideration. This study focuses on the lifelong effects of alcohol on the fetus and the subsequent impact on the educational system.

EARLY LITERATURE ON THE EFFECTS OF ALCOHOL AND PREGNANCY

"Now then, drink no wine or other fermented drink and do not eat anything unclean...." (Judges 13:3-7, cited in Thompson, p. 258). The effects of alcohol on the fetus were referred to as far back as biblical times and continued to be discussed throughout history. The Old Testament (Judges 13:3-7), stated that women should not drink during pregnancy (Dorris, 1989; Blume, 1992; Light, 1988). Aristotle who also warned against drinking during pregnancy (Dorris, 1989; Blume, 1992; Light, 1988). Jones and Smith (1973), Blume (1992), Davis (1994) and Goodwin (1981) referred to ancient Carthage and the laws which forbid, "drink for fear of producing a defective child" (Goodwin, 1981, p. 55). In 1734 during the English "Gin Epidemic" doctors noted that children of women who drank were "weak and feeble" (Dorris,

1989; Blume, 1992). However, Abel (1987 cited in Dorris 1989), argued that these laws of ancient Carthage must be reviewed in the historical context in which they were implemented in order to fully understand their meaning.

One of the first scientific studies of females who drank during pregnancy was conducted by Dr. William Sullivan (1899) who found numerous conditions among women at a Liverpool jail.

...the (perinatal) mortality rate was more than twice as high as that among the offspring of these women's female relatives who did not drink during pregnancy. Sullivan observed that successive pregnancies in alcoholic women had poorer survival rates, except that the alcoholic women who abstained during pregnancy gave birth to normal infants, even after having previously given birth to damaged children while drinking. In one of the first scientific studies of this subject, Sullivan concluded that alcohol was toxic to the fetus (Sullivan, 1899, cited in Blume, 1992, p. 4).

The repeal of prohibition in 1933 ended the thoughts of alcohol as a toxin. Previously, prohibition had, "maintained that alcohol was the root cause of virtually all of the nation's social, economic, and health problems," and as a result, "people viewed ideas about the dangers of alcohol with skepticism after Prohibition's repeal" (Blume, 1992, p. 4-5). Instead, the

effects of alcohol on the fetus were blamed on a variety of environmental factors (The Harvard Mental Health Letter, 1990; Blume, 1992).

In 1968 Dr. Paul Lemoine and colleagues were the first to point out the commonalities among children whose mothers drank during pregnancy (cited in Streissguth, LaDue, Randels, 1988; Dorris, 1989; Blume, 1992; and Rementeria, 1977). However, the journal, "Oest Medical", in which Lemoine's research was published, was not widely circulated and therefore the article did not receive much attention. In 1973 Dr. Kenneth L. Jones and David W. Smith (1973), gave the commonalities described by Lemoine the name Fetal Alcohol Syndrome.

MEDICAL INFORMATION

RESEARCH

Following the 1973 Jones and Smith article that labeled this syndrome, medical research increased tremendously. Between 1973 and 1984, 1,165 articles in twenty languages were published on Fetal Alcohol Syndrome and Effects (Abel, 1990). In 1985, "the annual rate of FAS-related professional documentation had increased to almost 2,000 articles" (Dorris, 1989, p. 143). These scientific reports confirm, "that alcohol is a teratogenic drug capable of producing lifelong disabilities after intrauterine exposure" (Streissguth, et al, 1991, p. 30).

MEDICAL DIAGNOSIS OF THE SYNDROME

In order to obtain a diagnosis of FAS, a patient must exhibit three distinct physical traits as well as be diagnosed by a physician trained in birth defects. The diagnosis is most accurate if made between "6 months and 3 years when the facial characteristics are most noticeable" (Streissguth, 1991, p. 202). Leading researchers in the field list the physical characteristics as, 1) growth deficiency--low weight and/or short length at birth and continuing during childhood, 2) a characteristic pattern of facial features and other physical abnormalities, and 3) central nervous system dysfunction-which may be manifested as microcephaly (abnormal smallness of the head) and/or neurobehavioral dysfunction (e.g., hyperactivity, motor problems, attention deficits, cognitive disabilities). Generally, there must also be some evidence of maternal drinking (Burgess and Streissguth, 1992, p. 24).

In order to gain a better understanding of the characteristic facial features which are identified as common among people who exhibit character, a short list is provided. Some of the characteristics include, microcephaly, short palpebral fissures, flat midface, thin upper lip, low nasal bridge, short nose.

Although there is a medical diagnosis, FAS is not simple to identify because,

Many of these points, of course, are hard or next to impossible to calculate. What constitutes "normal" size or growth within the human species? How can genetically inherited features such as nose shape and eyelid formation be compared between members of one race and those of another (Dorris, 1988, p. 148)?

Diagnosis of fetal alcohol syndrome (FAS) is assisted through observations of physical characteristics in combination with maternal drinking history and central nervous system damage. A less obvious form of FAS is fetal alcohol effects (FAE). FAE is used to describe patients who do not exhibit all the characteristics of FAS and only, "infers" that the fetus is exposed to alcohol (Rosett, Weiner, and Morse, 1978; Streissguth, 1990). In addition, Burgess and Streissguth (1992) note that FAE is not a medical diagnosis. FAE is much more difficult to identify because there is generally limited or lack of, physical features accompanying cognitive disability that are caused by central nervous system damage.

Although FAE may not physically appear to be as detrimental, Olson, Burgess and Streissguth (1990) and Burgess and Streissguth (1992) explain that, "...children and adolescents with FAE may be just as severely affected cognitively as those with FAS" (Burgess and Streissguth, 1992, p. 24). The difficulty in diagnosing FAS and identifying FAE leads researchers to believe that there are approximately twice as many births exhibiting FAE than exhibiting FAS, because of the difficulty in diagnosing FAE patients

(Streissguth, 1988). Whitten and Lipp (1994) believe that there is limited proof that FAE exists, "when we look at the evidence for FAE at the low doses of alcohol associated with light, regular wine drinking, we discover very weak and inconsistent findings" (p. 84). Furthermore, Sokol and Clarren (1989) state that:

This term is sometimes used by individuals in the treatment and prevention community as a basis for obtaining benefits for an individual or in support of public health policy. The term FAE, as its usage has evolved is ambiguous. (p. 598)

A further complication is the lack of a definitive biochemical test which causes the diagnosis of FAS/FAE to be based purely upon the judgement of the physician. Unfortunately, the number of physicians who are able to accurately diagnose FAS/FAE is limited, and according to Sande Randels, the doctor's waiting lists are long (Henderson, 1992). A biochemical test would aid in early diagnosis which is essential to a successful life for the child who exhibits FAS/FAE (Agarwal and Goedde, 1990; Kleinfeld and Wescott, 1993; Burgess and Streissguth, 1992; Blume, 1992).

Without a diagnosis, children who are clinically FAS/FAE are often misdiagnosed with other handicapping conditions and singled out for only one deficiency instead of identifying all of the characteristics of FAS/FAE. "An incorrect diagnosis could lead to inappropriate advice about the risk of malformation in future children" and limit the possibility of early

intervention (Jones and Smith, 1973, p. 1001). The possibility of misdiagnosis causes Streissguth (1992), to question the number of children who may be reported as exhibiting FAS/FAE.

CHARACTERISTICS OF FAS/FAE

PHYSICAL CHARACTERISTICS

The term fetal alcohol syndrome is applied by Jones and Smith (1973) to patients who have similar physical, mental and social features including, growth deficiency and central nervous system abnormalities. Over the years many people have expanded the definition of FAS to include more specific indicators. The Criteria Committee of the National Council on Alcoholism, (cited in Rementeria, 1977) lists the following as being common among 50% of the initial patients:

prenatal onset growth deficiency, postnatal growth deficiency, mental retardation, fine motor dysfunction, microcephaly, short palpebral tissues, maxillary hypoplasia, joint anomalies, altered palmar crease pattern, and cardiac anomalies. (p. 158)

In order to understand the differences between some developmental patterns of FAS/FAE children and those displayed by typical children two developmental stage profiles are compared in table 1. The developmental stages are structured in order to aid the reader in an exercise in comparison.

TYPICAL DEVELOPMENT

(Davis, 1994, p. 23-24)

PRESCHOOL

1-2 years: Walks alone, climbs stairs, drinks from cup, uses spoon, turns pages of a book, has vocabulary of 3-200 words and is able to say short sentences, may begin to use the word "NO!" as he is beginning to learn to assert his independence, shows strong feelings of anger and frustration, still needs help getting dressed and undressed.

3 years: Walks and runs easily, asks "Why?" frequently, begins to understand number concepts, vocabulary is now 800-900 words, starts to recognize and identify colors, begins to understand cause and effect, can ride a tricycle, is beginning to be able to put clothes on and take them off with limited help.

4 years: Is able to cooperate when playing with two or three others, understands simple reasons for things, has a vocabulary of approximately 1,500 words, knows her age, knows how to compare, can be argumentative, dresses self.

EARLY SCHOOL YEARS

5 years: Understands rules and can explain them to others, can now play in larger groups, knows name and address, drawings become more recognizable, frequently asks "How?" and "Why?," very physical-likes to dance, jump, skip, climb, and run.

6-10 years: Continues to be very active in play, enjoys group play but begins to choose one or two "best friends,"

FAS/FAE DEVELOPMENT

(Lucero, no date provided)

INFANCY: 1) Small, scrawny appearance at birth. 2) Often tremulous and irritable. 3) Have a weak sucking reflex. 4) Hypotonia (weak muscle tone). 5) Failure to thrive. 6) Feeding difficulties. 7) Sleep patterns may be erratic, with poor differentiation of sleep/wake cycles. 8) Slow to master motor milestones. 9) Slow to start to say words.

PRESCHOOL YEARS: 1) FAS child is usually short and elf like in manner and appearance. 2) Flit from one thing to another moving with "butterfly-like" movements. 3) More interested in people than objects. 4) Expressive speech may be delayed. 5) Excessively talkative and intrusive, which gives the superficial appearance that speech is not impaired. 6) Hyperactivity is most pronounced during preschool. 7) At home, they may be "into everything." 8) First preschool experience is often difficult because they "can't sit still a minute." 9) Often fearless and don't respond well to verbal restrictions. 10) Need closer supervision.

EARLY SCHOOL YEARS: 1) May be held back a year with the idea that "they'll catch up." 2) Referrals for special education occur during this time. 3) Reading and writing skills during the first two years may not be noticeably delayed. 4) Arithmetic is usually more of a problem for children with FAS than spelling and reading. 5) They appear to be achieving quite well relative to their IQ scores. 6) Attentional deficits become more

learns to better control temper and handle frustrations, modesty increases, awareness of gender differences increases.

MIDDLE SCHOOL/ADOLESCENCE

11-12 years: Adolescence begins. Mood swings, preoccupation with body development, argumentative, rebellious towards parents, strong need to conform with peer group, prefers to be with peers rather than with family or alone, sexual attraction is beginning.

manifest during this time as the demands for classroom attention increase. 7) Emotional lability is also more pronounced. 8) Poor impulse control, memory deficits, and social intrusiveness are also observed. 9) Poor peer relations and social isolation may be noted in the more functional children. 10) Excessive demands bodily contact often continue during this period. 11) Interest in sexual exploration with other children.

MIDDLE SCHOOL YEARS: 1) School achievement usually reaches the maximum point with reading and spelling often being superior to arithmetic skills. 2) Increased difficulty maintaining attention, completing assignments and mastering new academic skills. 3) School attendance becomes more of a problem. 4) Good verbal skills, superficially friendly social manner and good intentions often continue to mask the seriousness of the situation. 5) Psychological evaluation and remedial placement is usually necessary at this time. 6) At risk for increased truancy and school dropout.

ADOLESCENCE: 1) Increased truancy, school refusals, and school dropouts. 2) Increase in behavioral disruption in the classroom. 3) Need to re-evaluate the classroom and educational expectations. 4) Not a consistent pattern toward improved performance with increasing age. 5) Reading comprehension is poorer than word recognition. 6) Mean spelling level is at the 3rd grade 7th month. 7) Arithmetic is the most difficult task. 8) Poor arithmetic scores reflect poor memory, poor abstract thinking. 9) FAS/FAE students are

often thought to be brighter and more alert than the test scores indicate, causing both caretakers and teachers to perceive them as lazy, stubborn, and unwilling to learn. 10) Academic functioning appears to peak at around ages 12-15 and grades 6-8. 11) More constructive focus on teaching vocational, survival, and daily living skills.

(Table 1)

Features common among children who exhibit FAS/FAE are most noticeable during childhood. However, many features are still obvious throughout the life of a person who exhibits FAS. Growth deficiency which is, "the most commonly reported effect associated with prenatal alcohol" (Abel, 1990, p. 55), is evident from birth and is generally detectable throughout the life of a person who exhibits FAS (Wilsnack and Beckman, 1984).

CENTRAL NERVOUS SYSTEM CHARACTERISTICS

Central nervous system damage may cause the most problems for the person who exhibits FAS or FAE (Kleinfeld and Wescott, 1993; Olson, Burgess, and Streissguth, 1992). A review of the literature on this factor shows that damage to the central nervous system creates various problems which may include, but are not limited to, visual, auditory, gross motor deficits, hyperactivity, attention deficits, social behavior, ability to reason, distinguishing right from wrong, learning disabilities, and information processing deficits. Information processing deficits represent:

learning disabilities in four domains: input, integration, memory, and output. Input represents the recording of information from the senses. Memory represents the storage of information for later use. Integration is the process of interpreting the input. Output requires appropriate use of language and motor skills (Kleinfeld and Wescott, 1993, p. 32).

Many of the above problems have been observed in animal studies which have shown that alcohol affects very specific areas of the brain. For instance, problems with the hippocampus are identified as causing learning and memory deficits, and damage to the cerebellum results in a lack of motor control (West, Goodlett, and Brandt, 1990, cited in Kleinfeld and Wescott, 1993).

RATE OF INCIDENCE

Diagnosing FAS and FAE is compounded by the difficulty of mothers of FAS/FAE babies to honestly describe their alcoholic consumption patterns on a referral sheet, thus causing the numbers of children who exhibit FAS/FAE to be misrepresented (Wescott, 1990; Goodluck, 1992).

Blume (1992) is also concerned with the difficulties of identification, and extends her argument to include the need for a general reporting system of the number of cases of FAS/FAE in order to get a clear idea of how many people are actually affected with the syndrome. Physicians are required to report some diseases and data is also collected at the hospital level regarding others, but, in the case of FAS/FAE there is not a required reporting system. However, reporting requirements are changing. Since 1989 state health departments have been required to file annual reports on, "the incidence of fetal alcohol syndrome as a part of their responsibilities under the Maternal and Child Health Block Grant" (Parr and Krupski, 1993, p. 3).

Nonetheless, a lack of general reporting system causes estimates on the rate of live births displaying FAS to vary greatly. For example, Davis (1994) reports that there is approximately 1 case of FAS in every 500 to 700 births and that "one in 300 to 350 has Fetal Alcohol Effects" (p. 4). While The Harvard Mental Health Letter (1990) estimates that the probability of siblings of FAS children having FAS "is 100 to 400 times higher than in the general population" (p. 4). According to one study FAS occurs in 1.9 per 1,000 births and FAE occurs approximately three to four times as often (Abel and Sokol, 1987, cited in Kleinfeld and Wescott, 1993). Still, this may be an underestimate primarily because the cases which are reported are only those which are, "ironclad" (Dorris, 1988, p. 164). Gomberg, White and Carpenter (1982) judge these estimates as too high; they state the rates at "1 per 2000" (p. 237). Whereas, Whitten and Lipp (1994) in their Wayne State University study estimate that only, "3 out of every 10,000 babies may show evidence of FAS. Thus, of every 800 malformed babies born in the United States, only three-tenths to four-tenths of 1 percent are the result of maternal alcohol abuse" (p. 83).

EFFECTS OF ALCOHOL ON THE FETUS

AMOUNT OF ALCOHOL AND EFFECTS ON THE FETUS

The amount of alcohol that will cause damage to the fetus is disputed in the literature. The severity of the syndrome depends upon the amount of alcohol consumed and at what period of time during the pregnancy

consumption takes place (Streissguth,1990). As the Harvard Mental Health Letter quotes, "The amount of alcohol needed to damage the fetus is disputed because of ambiguous definitions of damage, insufficient information, and individual variations in vulnerability" (p. 5).

The Surgeon General of the United States (1981, cited in Wilsnack and Beckman, 1984), states that no amount of alcohol is safe for the fetus. The policy most of the leading researchers follow is complete abstinence from alcohol use during pregnancy. The recommendation of abstinence is a result of studies which point out that light consumption (approximately two drinks per day) is shown to cause low birth weight and increase the possibility of miscarriage (The Harvard Mental Health Letter , 1990; Wilsnack and Beckman, 1984). The Harvard News Letter (1990) states that, "35 to 40 percent of women taking three ounces of absolute alcohol (six drinks) a day throughout pregnancy will give birth to a child with full developed FAS" (p. 5). Wilsnack and Beckman (1984) and Abel (1990) refer to a study done by Kaminski et al. (1976) which shows an increase of stillbirth among women who drink three drinks on a daily basis. In contrast, Sokol (1980), Rosett et al. (1978), and Plant (1985), all fail to find significant increases in stillbirths (Abel, 1990; Wilsnack and Beckman 1984).

There are still those who believe that light consumption will not affect the fetus. Whitten and Lipp (1994) advocate for the consumption of small amounts of wine (one or two four ounce glasses) during pregnancy.

They state that:

As long as she is drinking wine in a light, regular fashion, a young mother need not worry any more about the possible toxic effects of wine upon her unborn baby, or the infant at her breast, than about any other part of her diet. (p. 91)

When looking at the facts that Whitten and Lipp (1994) present, it is important to understand their perspective. In a portion of To Your Health (1994) they refer to the alcohol beverage industry as a reliable source concerning the effects of alcohol on the fetus. "...the alcohol beverage industries maintain that the vast majority of people drink in a 'normal,' controlled, moderate fashion and will suffer no significant adverse consequences as a result of their consumption" (Whitten and Lipp, 1994). This quote emphasizes the importance of questioning their premise for writing the book.

PHYSIOLOGICAL EFFECTS OF ALCOHOL ON THE FETUS

When a pregnant woman consumes alcohol she is not only affecting herself, but she is also impacting the unborn child. With consumption, alcohol passes through the placenta directly to the unborn child and the blood alcohol level of the fetus rises to the same level as the mother's (Kleinfeld and Wescott 1993; Washington State Substance Abuse Coalition, 1989; Rementeria, 1977). At this stage of alcohol ingestion the body begins to break down the alcohol, but the fetus' capability to process the alcohol is limited.

Hence, the fetus absorbs more alcohol and it remains in the baby's system for a longer period of time. In a fully formed body the alcohol is metabolized and "(it is) converted initially into acetaldehyde, a substance that is highly toxic to cells. Normally acetaldehyde is fairly quickly metabolized further to less toxic chemical substances" (Blume, 1992, p. 15). However, as Kleinfeld and Wescott (1993) point out, the organs of the fetus are not fully formed and therefore cannot completely process the acetaldehyde and some of the toxic chemical remains in the cells of the fetus.

Alcohol is also shown to affect the growth, chemical, and migration patterns of cells necessary for normal human development. For example, the consumption of alcohol during pregnancy causes problems with the cell membrane and the ability of some cells to migrate to, "the appropriate location during fetal development" (Blume, 1992, p. 15). The migration of cells is necessary in the formation of the cerebral cortex, which generally occurs during the first half of pregnancy. The Harvard Mental Health Letter (1990), refers to studies in which a pregnant animal is fed ethanol until the fifth week of pregnancy. The brain cells of the animal fetus become scrambled and are similar to those found in children who exhibit extreme FAS. Rementeria (1977) refers to research that was conducted on the brain of an affected child who died shortly after birth, "the cerebral cortex was incompletely developed, and there was agenesis of the corpus callosum" (p. 160).

The period of time during the pregnancy that a woman consumes alcohol may be an important factor in the effects of alcohol on the fetus.

During the second half of pregnancy alcohol affects items such as the myelin, "the size and shape of the brain....and the capacity of the fetus to synthesize and break down neurotransmitters" (The Harvard Mental Health Letter, 1990, p. 5). Wilsnack and Beckman (1984) also refer to animal studies which show that alcohol effects the central nervous system of the fetus throughout pregnancy, and therefore it can be assumed that alcohol may cause cognitive damage at any time. Light (1988) sums up how alcohol causes fetal damage:

(1) direct cytotoxic insult to the fetal tissues, (2) direct cytotoxic damage to fetal tissues by one or more metabolites such as acetaldehyde, (3) impairment of normal cell division and migration during early embryonic life, and (4) direct damage to fetal tissues due to hypoxia, acidosis, and other metabolic states in both the maternal and fetal compartments. (p. 124)

When discussing the effects of ethanol on the cells it is vital to examine the way a body absorbs the alcohol. There are variables affecting the absorption of alcohol including:

Concentration of ethanol, blood flow at site of absorption, irritant properties of ethanol, rate of ingestion, type of beverage, food, emptying of the stomach, protein deficiency, body

temperature physical exercise, and menstrual cycle (Agarwal and Goedde, 1990, p. 7).

Female biology plays a significant role in the way in which a body absorbs alcohol. The "blood alcohol concentration" is based on the amount of alcohol that passes freely through the tissues (Agarwal and Goedde, 1990). However, fatty tissues do not "freely exchange water." Since women have a higher percentage of fatty tissues than men, it leads to "higher alcohol concentration in tissues fluids" (p. 8). In other words, after consuming the same amount of alcohol, the blood alcohol level of a woman is generally higher than that of a man.

Not only does research point out that gender biology plays a role in the absorption of alcohol, but Zeiner et al. (1977) and Farris and Jones (1978) (cited in Agarwal and Goedde, 1990) have also found that differences in race may cause varying effects. Numerous studies show evidence that, "compared with Caucasians a greater percentage of Orientals (Mongoloid ancestry) and American Indians respond to a mild dose of ethanol with marked aversive reactions" (Agarwal and Goedde, 1990, p. 54).

Dr. Bert Vallee (1980, cited in Milam and Ketcham, 1981) found that a difference in genetic make-up causes a variation in the isoenzymes which break down ethanol, and therefore affects the absorption rate. However, the results found in Vallee's research may have been caused by the variances in

genetic make-up, but environment, nutrition, and drugs may also produce the varying metabolic rates (Reed, 1978, cited in Agarwal and Goedde, 1990).

Since we know that alcohol is passed freely through the placenta, that alcohol affects the development of cells in dramatic ways and that blood alcohol concentration tends to be higher in women, it is logical to conclude that alcohol is passed on to the fetus causing teratogenic effects.

GENETICS AND THE EFFECTS OF ALCOHOL ON THE FETUS

Various factors such as genetics, nutrition, the number of pregnancies, and maternal age may all play a part in the effects of alcohol on the fetus. When discussing FAS/FAE it is important to determine what role if any genetics play in relationship to the effects of alcohol on the fetus. Various studies dispute the significance of genetics and the effects of alcohol on the fetus. According to the Joint Committee to Study the Definition and Criteria for the Diagnosis of Alcoholism and the National Council on Alcoholism and Drug Dependence and the American Society of Addiction Medicine (1993, cited in Kleinfeld and Wescott, 1993), genetics do play a role in the effects of alcohol on the fetus. "There (is the) suggestion, that genetic factors in mother or child may influence outcome" (Wilsnack and Beckman 1984, p. 163). In support of the theory that genetics may affect the outcome of drinking during pregnancy, Blume (1992) reports on a pair of fraternal twins who both have been exposed to alcohol in utero. In this study the effects of alcohol are greater for one child than for the other. Blume (1992) qualifies the greater

impact of alcohol on one child as genetically related. Nevertheless, many "geneticists do not accept this evidence as conclusive" (Gomberg, White, and Carpenter, 1982, p. 6). As support against genetics impacting the effects of alcohol on the fetus, Rementeria (1977) cites a case of three siblings all who exhibit FAS. In this particular case the birth mother previously conceived two children who had no signs of FAS/FAE. The birth mother began consuming alcohol after her first two children were born. She continued consuming alcohol for the next twelve years during which time she bore three children who all exhibited signs of FAS. The children had different fathers which would limit a genetic reason for FAS/FAE. Rementeria (1977), cites this research as a basis for, "evidence that this disorder is not genetically related but rather the result of some toxic effect of the maternal alcoholism. The relationship between variability of expression and duration of maternal alcoholism further supports this theory" (p. 163).

MATERNAL FEATURES AND EFFECTS OF ALCOHOL ON THE FETUS

Davis, 1994 and Abel, 1988 relate the work of Dolan who points to maternal alcohol consumption in conjunction with the number of pregnancies as a possible factor in the risk of producing a fetus with FAS or FAE.

Women who continue to drink with each pregnancy seem to have children who will show more and more signs of their mother's drinking and the clinical expression of the Fetal

Alcohol Syndrome with each subsequent pregnancy (Davis, 1994, p. 151).

A woman who has a child who exhibits FAS and continues drinking during subsequent pregnancies has a seventy-seven percent chance of having a second child who displays FAS (Abel, 1988). S. Astley at the Child Development and Mental Retardation Center at the University of Washington attributes the increase in risk with the number of pregnancies to the amount of time the female eggs have been bathed in alcohol (personal communication, August, 1994).

Blume (1992), Wilsnack and Beckman (1984) expand upon the common characteristics of women who give birth to children with FAS or FAE. They include, "the age and reproductive history of the mother; their [sic] habits and lifestyle, nutrition, smoking, and other drug use; her particular metabolic and biochemical make-up; and the genetic heritage" (Wilsnack and Beckman, 1984, p. 162).

Abel (1990) elaborates on the commonalities among women who give birth to children who exhibit FAS/FAE:

(She consumes) more than 10 drinks per day on an average. She is 30 years or older, multiparous, and has a history of spontaneous abortions and a low prepregnancy weight. She comes from a low socioeconomic background, she consorts with men who are heavy drinkers, and her health is poor. (p. 96)

The commonalities that Abel lists may be a result of a stigma that is attached to low socio-economic women (see section, "Stigmas").

The literature states that nutrition does not necessarily change the outcome of alcohol consumption during pregnancy. Blume (1992) points out that malnutrition alone does not cause the "characteristic facial abnormalities of FAS" (p. 15). In a study of the effects of alcohol on the fetus of rats Tze and Lee (1975), conclude that the effects are not due to nutrition, but are a result of alcohol (Rementeria, 1977).

PATERNAL FEATURES AND EFFECTS OF ALCOHOL ON THE FETUS

The role of the father in the causation of FAS/FAE is still very questionable. In a study, Drs. Ruth Little and Charles Sing (1986, cited in Blume, 1992 and Abel, 1990) have found that a father's alcohol consumption prior to conception may affect the sex cell which produces the offspring. Little and Sing also note that there is a "decrease in birth weight" when a father consumes alcohol before conception (Abel, 1990, p. 94). As further proof that paternal alcohol consumption affects the fetus, an animal study shows that a male rat who is given large doses of alcohol produces rats which are, "lower in birth weight and lethargic" (Littrell, 1991, p. 264). A human study by Dul'nev (1965) concludes that paternal alcoholism during conception, "affects the child's higher nervous-system function" (p. 168). Soyka and Joffe (1980) and Badr and Badr (1975, cited in Wilsnack and

Beckman, 1984), cite the possibility of a genetic malformation as well as an alteration in the male reproductive organs as a cause for the above problems.

OTHER ASSOCIATED EFFECTS

STIGMAS

In many cases when patients who exhibit FAS/FAE are not recognized it is not the medical limitations, but the result of a social stigmas concerning alcoholism. The lack of social recognition of FAS/FAE is due to the "social and emotional taboos about alcohol and alcoholism" (Burgess and Streissguth, 1992, p. 24). The social difficulties in recognizing FAS/FAE are due to society's misinformed view of alcoholism.

The stereotype is dangerous. It exists in part to meet the need of the dominant culture-uncomfortable professionals and the general population-to have a focus for the problem, an identifiable group on whom to focus for the considerable anger, frustration, and moral indignation generated by this hot topic (Kleinfeld and Wescott, 1993, p. 260).

Light (1988) considers this point by reviewing the social idea that drinking is good. He states that if society believes that drinking is accepted, then *not* drinking must *not* be condoned.

Kleinfeld and Wescott (1993), further Light's point by including in their work an argument regarding the oversights which have been formed about birth mothers of FAS/FAE children. They state that many pregnant

women are not identified as consuming alcohol primarily because they are pregnant. This may be caused by the fact that society gives certain types of "protection" to women who are pregnant (Wilsnack and Beckman, 1984). Society has great difficulty in believing that a pregnant woman would do anything, knowingly or unknowingly, to harm the fetus. Therefore, not only are we condoning their drinking patterns, but we are justifying their denial (Light, 1988).

On the other hand, throughout history, women have been stigmatized for drinking. In most cultures it is not as acceptable for a woman to drink as it is for a man. Historically, women who drank were considered, "loose, immoral, sexually indiscriminate, and generally unclean" (Kleinfeld and Wescott, 1993, p. 261), or that they were:

primarily white middle-class housewives who successfully hid their drinking from others (including family friends, and survey researchers); that most were sexually promiscuous, especially when drinking; that they were "sicker" or more psychologically disturbed than male alcoholics; and that they had poorer treatment outcomes than their male counterparts (Wilsnack and Beckman, 1984, p. ix-x).

As a result, women are more likely to be "lone, secretive drinkers" (Corrigan, 1980, p. 3). The "loose and immoral" stereotype results in guilt, shame, and depression for many women. For this reason, women are

reluctant to seek treatment and may continue drinking during pregnancy.

Kleinfeld and Wescott (1993) examine the idea that due to stigmas the diagnosis of many children who exhibit FAS/FAE may be neglected. In fact many people do not believe that FAS/FAE exists, but that it is just an excuse for inappropriate behavior (Kleinfeld and Wescott, 1993). This belief that FAS/FAE does not exist falls in line with the idea that children who exhibit FAS/FAE will go through life unsuccessfully; contrary to that belief, there are numerous success stories (Kleinfeld and Wescott, 1993). FAS/FAE is not only a problem of the family, but of the community and most importantly the school system and educators (Dougherty, 1988).

ENVIRONMENT

The environment can make a difference in the success of the child who exhibits FAS/FAE. As Davis (1994) states,

(children with FAS/FAE) may be handicapped not only by the alcohol their mothers drank during pregnancy, but also by the trauma and upheaval they have gone through because of the environments they have been exposed to....They are often victims of physical, emotional and sexual abuse.... (p. 35)

According to Dorris (1994) children who exhibit FAE generally remain with their biological parents. However, those who exhibit FAS are often removed from their natural home. Removing children who exhibit FAS from the home may be a result of death among women who give birth to

children who exhibit FAS/FAE. In a study conducted by Streissguth, Clarren, and Jones (1985, cited in Streissguth and Giunta, 1988), "38% of the mothers whose whereabouts were known were dead before the children were six years old" (p. 35). In an alternate study done by Streissguth, LaDue and Randels (1988) the researchers asked, "Why are the biologic mothers no longer caring for these patients" (p. 22). Streissguth et al. discovered that the biological mothers were no longer caring for the FAS/FAE children because 69% of the 51 women studied were deceased. When children who exhibit FAS/FAE remain with their biological mother, "(they) vary the most in their progress. Some families are able to make changes, but others, deep into denial and the disease of alcohol, do not have the power to give the children care and intelligent attention" (Kleinfeld and Wescott, 1990, p. 133). A factor which causes variation in progress may be that women who drink during their pregnancy tend to continue drinking after the birth of their child causing the environment to be unstable. According to The Harvard Mental Health Letter (1990) and Kleinfeld and Wescott (1993), women who continue to drink have difficulty taking care of children who do not exhibit handicapping conditions, let alone children who exhibit FAS/FAE. The environment will not change the "neurological damage," but it can change the outcome that awaits the child (Aronson, 1985, cited in Kleinfeld and Wescott, 1993).

CULTURAL DIFFERENCES

The factors that really make a difference have to do with ephemeral things: strong family and community support for abstinence, access to good prenatal care and chemical dependency treatment, clear and widespread information on the dangers of drinking during pregnancy. And it's here that Native American women are at a severe disadvantage (Dorris, 1994, p. 89).

According to various sources, including Chaves, Cordero, Becerra, and Leading (1989), Native American groups have the highest incident rate of FAS/FAE of any cultural group. Chaves et. al. (1989), in Facts and Figures on American Indians and Native Alaskans, say that "(FAS) is 33 times higher in American Indians than in Whites" (p. 206-209). Substance Abuse Trend in Washington State (Parr and Krupski, 1993) reports that the rate of incident is 16 times higher than the "general population" (p. 3). The problems of alcohol among Native Americans may be caused by factors which relate to genetics. However, Hanna (1976, cited in Agarwal and Goedde, 1990) believes that it is more than just genetics that affect the alcoholism rate among Native American groups. Hanna (1976) contributes the high number of alcoholics among Native Americans to both biological and social patterns. The ideas he presents are reinforced by various other authors including Snyder et. al. (1982, cited in Agarwal and Goedde, 1990) and Goodwin (1980, cited in Agarwal and Goedde, 1990), who attribute an increased alcoholism rate among Native

Americans to religion, social stress, and the family system. Brod, (1975) Evertt et al. (1976), Whittaker (1979), Westmeyer (1983) (cited in Agarwal and Goedde, 1990) expand on the argument of effects of the environment on the rate of alcoholism by stating, "that the genes affecting drinking patterns are not the 'cause' of drinking, which has evolved as a cultural phenomenon, but that these genes influence the direction in which drinking patterns will develop" (p. 65).

The drinking patterns of Native Americans are important to note primarily because the fertility rate among Native American cultures is "twice as high as the general U.S. rate" (Washington State Substance Abuse Coalition, p. 5). The high rate of fertility in combination with the alcohol consumption offers an explanation for the high rates of FAS/FAE among Native American cultures.

Nonetheless, the statistic concerning Native Americans may be biased based on the fact that, "...the white, middle class, educated women is most underidentified, and according to research, most at-risk" (Kleinfeld and Wescott, 1993, p. 260). FAS/FAE may occur among women in any ethnic group (Burgess and Streissguth, 1992). Stigmas affect the reporting system making it difficult to determine how many children and from what cultural backgrounds, are affected with FAS or FAE.

SOCIETAL EFFECTS

COST

For the community, the economic implications of FAS/FAE are astronomical. Statistical information proves that it is more expensive to provide 24-hour care for a person who exhibits FAS/FAE than someone who is afflicted with cerebral palsy (Abel, 1990). It is sad to note that it is cheaper to provide prenatal/maternal education than it is to care for a baby who exhibits FAS/FAE (Wescott, 1990). Streissguth (1991) estimates the lifetime cost to be \$596,000 per FAS/FAE child. While Dolan (cited in Kleinfeld and Wescott, 1993) and Streissguth (1990), estimate the cost of medical treatment for children who exhibit FAS to be approximately \$320 million per year in the United States. Further estimates approximate the cost for one "severe" child to be "several hundred million dollars."

...The cost for children with the milder alcohol-related disabilities may be several times as high. The situation is likely to become worse as cultural sanctions against women's drinking fail and more women with FAS or FAE become mothers themselves (The Harvard Mental Health Letter, 1990, p. 4).

The cost of caring for a child who exhibits FAS/FAE is overwhelming, but if prevention were society's main focus we could save an immense amount of money (Blume, 1992).

PROBLEMS WITH THE EDUCATIONAL SYSTEM

The nature of the disability means that these children will need assistance and support throughout their lifetime. Students who exhibit FAS/FAE will need people who will act as advocates for them as they make their way through this world (Olson, Burgess, and Streissguth, 1992). Students who exhibit FAS/FAE as well as their families will have to overcome many obstacles because of the nature of the system. One of those obstacles is the current educational system. According to Kleinfeld and Wescott (1993):

parents of alcohol-affected children are up against two things. First, they must face the barriers in the individual usually the teacher or the administrator who does not understand the nature of the child's problems. Second, they must deal with the structure of an educational system that is designed to meet the needs of the average student. (p. 91)

These students and their families are up against a system which does not have enough money or services to accommodate their needs (Kleinfeld and Wescott, 1993). Students who have an IQ which will not qualify them for special services generally fall through the cracks (Streissguth, 1990).

The accessibility of educational services for children who exhibit FAS/FAE is changing. Section 504 (1973), part of the Rehabilitation Act to protect the civil and constitutional rights of people with disabilities, is a step in the right direction. Section 504 defines appropriate education as,

“providing services and/or classroom modifications for some of these students” (Will and Blaine, 1991, p. 24). Section 504 states that:

A free appropriate education is one provided by the public elementary or secondary school which includes regular or special education and related aids and services that (i) are designed to meet the individual educational needs of persons with disabilities as adequately as the needs of nonhandicapped persons are met, and (ii) are based upon adherence to evaluation, placement and procedural safeguard requirements.

(LDA Pamphlet)

The needs of the parents of students who exhibit FAS/FAE must begin to be heard by the educational system. In turn, the schools must adapt teaching methods to the needs of students who are entering the system. Most importantly, we must all begin to grasp the needs of the child who exhibits FAS/FAE. As Dorris (1994), puts it,

...educators can tackle the needs of the here and now, of the tens of thousands of FAS and FAE men, women, and children who exist on the margins of society. We can devise effective curricula, learning regimens, humane models for dependent care. (p. 97)

IMPLICATIONS TO THE EDUCATIONAL SYSTEM

According to Wescott (1990) drinking alcohol during pregnancy is the leading cause of mental retardation; within that category the leader is FAS.

As a result, it is important to look at the implications of the effects of alcohol on the fetus to the educational system. Considering the various behavior characteristics that are listed throughout the literature by Dorris (1989), Burgess and Streissguth (1992), and Kleinfeld and Wescott (1993), the need for our educational system to address ways to educate students who exhibit FAS/FAE is a real one.

FAS/FAE AND EDUCATION

EDUCATIONAL DILEMMAS

The stigmas that are referred to in this study in the section entitled, "Other Associated Effects" are also apparent in the educational system. Within the educational system, students who exhibit FAS/FAE are often mislabeled and inappropriately placed because of the limited knowledge and a lack of understanding of FAS/FAE (Dorris, 1994, 1988; Bangsund, 1993). If the educational system learns to understand these students it will recognize that their at times, inappropriate behavior is not willful, but a result of their, "low cognitive pace, symptoms of learning problems;" and that their behaviors may be the way that these children attempt to communicate their needs (Kleinfeld, 1993, p. 301, p. 213; Burgess and Streissguth, 1992).

Cognitive problems present multiple dilemmas for students who exhibit FAS/FAE in the education system. The I.Q. range among students who exhibit FAS/FAE may be as little as 16 and as high as 112. Various studies have resulted in a wide range of documented I.Q. levels. In a study of

twenty patients, Streissguth, Herman, and David (1978) note I.Q. levels as low as 20. Stoddard quotes Dr. Kenneth Rosenbaum (no date available) as reporting I.Q. levels as high as 112. Streissguth, LaDue and Randels (1992, cited in Burgess and Streissguth, 1992) rank the average I.Q. of children who exhibit FAS/FAE as between 65 and 70. Rosenbaum (quoted in Potomac News) places the average I.Q. between 60 and 75. In order to qualify for special services, generally, students must have an I.Q. that falls below 70 (Streissguth, Aase, Clarren, Randels, LaDue, and Smith, 1991). This results in a large percentage of students who exhibit FAS/FAE not qualifying for desperately needed services.

The placement of students in special programs based on I.Q. alone is only one of many educational obstacles that the student who exhibits FAS/FAE will encounter. Davis (1994) and Kleinfeld and Wescott (1993) identify the inability to retain information as another major problem for children who exhibit FAS/FAE. Extreme memory deficits cause students to remember something one day and forget it the next, thus repeating the same behavior over and over regardless of how often they are told to modify their behavior. Bangsund (1993) and Olson (1994) note that students who exhibit FAS/FAE have difficulty understanding cause and effect, "they may not readily understand why they are being disciplined, placed in time out, or even rewarded or praised" (Olson, 1994, p. 22). Often, when students do not understand why they are being disciplined educators attempt to reconvey

their demands. The students become overloaded and their already poorly developed cognitive skills limit their ability to sort out the information that is being directed at them. This tactic of repeating information overstimulates students and frustrates them to a point where they eventually shut down (Kleinfeld and Wescott, 1993). When students become overloaded and are unable to sort out information, "adults should avoid making accusations such as 'Weren't you listening?' or 'Why did you do that?' The child is listening and does not know why things are not working" (Kleinfeld/Wescott, 1993, p. 303). As referred to in the section on "Educational Implications," children who exhibit FAS/FAE are not willfully misbehaving, but they have "difficulty processing information" (Will, 1992, p. 8).

Furthermore, FAS/FAE students may display multiple behavior conditions. In a study of 61 adolescents and adults who had previously been identified as "suffering from alcohol teratogenesis," Streissguth, et al. (1991) observed that "attention deficits and problems with judgment, comprehension and abstraction were most frequently reported behavior problems" (p. 1966). Additional difficulties which may affect the education of students who exhibit FAS/FAE include:

stay(ing) on task.....refrain(ing) from being disruptive, work(ing) independently for long periods of time, distinguish(ing) right from wrong.....control(ing) their impulses (Davis 1994, p. 39).

A major developmental concern affecting the education of children who exhibit FAS/FAE is the inconsistency in the development of their expressive language as compared to their receptive language. Children who exhibit FAS/FAE may be able to repeat every direction given; however, Will (1992), Wilsnack and Beckman (1984), and Kleinfeld/Wescott (1993), note that receptive language is generally not as well developed as expressive language:

...the child with FAS/FAE is one whose expressive language skills are more highly developed than his receptive language skills....(he/she) can tell you what he's supposed to do but for some reason cannot seem to complete the task, who can read the words but not understand the paragraph (Will, 1992, p. 9).

Often, as a result of underdeveloped receptive language, children who exhibit FAS/FAE express what the teacher wants to hear, but when they are unable to complete the task students are chastised for their limitations. This causes frustration for students who exhibit FAS/FAE and educator/student conflict might increase because teachers have either overestimated or underestimated a student's capabilities. It is no wonder that these children display behaviors which teachers find inappropriate. Often, high expressive language capabilities cause teachers to believe that students who exhibit FAS/FAE are not working up to their potential and as a result they are repeatedly defined as lazy (Blume, 1992). By the time students who exhibit FAS/FAE reach 18 years of age teachers' expectations are often much higher

than the students are able to perform (LaDue, 1993). On the other hand, Kleinfeld and Wescott (1993,) state that because of their social tendencies, teachers often think of students who exhibit FAS/FAE as, "small, cute, sociable children" (p. 234), and hence, limit their expectations of the students. Students with FAS/FAE can be shown to be at both behavioral extremes.

All of the above behaviors make it difficult for children who exhibit FAS/FAE to function in a regular education classroom. As we move toward an inclusion model it becomes more and more difficult to meet the educational needs of students who exhibit FAS/FAE (Davis, 1994; Blume, 1992; Kleinfeld and Wescott, 1993).

Unfortunately, many students with FAS/FAE tend to have problems learning and behaving when they are placed in regular ed classrooms. (Davis, 1994, p. 60)

Inclusion may cause difficulties in dealing with the varying problems that confront students who exhibit FAS/FAE. Clinical reports express these fluctuations in learning patterns among children who exhibit FAS/FAE :

Children with FAS/FAE vary considerably in their skills, in how they respond over time to treatment, and in whether they use feedback to regulate their behavior. They have a wide range of deficits, especially in how they process both object-related and social information (Giunta and Streissguth, p. 25).

These variations produce the extreme difficulties that arise in teaching students who exhibit FAS/FAE. "The child is just as confused as the adults about what makes learning so frustrating" (Smith, 1980, cited in Kleinfeld and Wescott, p. 301). When knowledge and access to information in the educational system is insufficient to educate students who exhibit FAS/FAE the frustration level increases (Burgess and Streissguth, 1992; Kleinfeld and Wescott, 1993). David Sokup, chairman of the Governor's Task Force on Fetal Alcohol Syndrome in Washington State, is quoted as stating, "the needs of children with fetal alcohol syndrome are not recognized by the schools....There is no training for teachers...." (Witmer, 1990-1991, p. 3). Training is a necessity in order to address the dilemmas confronting students who exhibit FAS/FAE (Giunta and Streissguth, 1988). Based on the idea that the abilities of these students vary from person to person, leading researchers consider developing a rigid curriculum for these students a possible hinderance in the learning process. There needs to be a more general look at students' educational needs and the information obtained must be applied to develop educational strategies for students who exhibit FAS/FAE (Burgess and Streissguth, 1992).

EDUCATIONAL ENVIRONMENT

One of the most important aspects in educating children who exhibit FAS/FAE is the environment of the classroom. There are very specific considerations that need to be addressed concerning the classroom because of

the central nervous system dysfunction that children who exhibit FAS display. Children who display FAS/FAE have a very difficult time blocking out stimulation which occurs in most typical classroom settings. It is essential that the number of distractions are limited, "most testing situations provide the student with FAS/FAE with the type of environment they function best in--a quiet place with few distractions and one-on-one supervision" (Davis, 1994, p. 40). The classroom setting should be established in order to give children who exhibit FAS/FAE the best education possible (Kleinfeld and Wescott, 1993). Students who exhibit FAS/FAE require a structured and consistent environment is necessary. A structured environment gives the students, "control over their world" (Kleinfeld and Wescott, 1993, p. 193). According to Kleinfeld and Wescott (1993) a structured environment may be achieved by, "(using) the same staff consistently, avoiding the use of different support. Limiting visitors and reducing classroom interruptions is also helpful. Some teachers have found soft background music on the radio calms alcohol-affected children" (p. 211). Davis (1994) further describes the ideal classroom as:

self-contained, there is minimal change, positive reinforcement is used, curriculums allow the student to be successful the majority of the time, students' feelings are acknowledged and there is a plan for them to be expressed in appropriate ways, communication between teachers and parents is clear and open. (p. 38-39)

It is equally important that the class size is small with a great deal of one-on-one attention, and that visual aids are incorporated into the environment to remind the students of the classroom rules and routine.

EDUCATIONAL STRATEGIES

The first step to the successful education of children who exhibit FAS/FAE is understanding the disability. The following section gives information which can help students who exhibit FAS/FAE to become successful in school and subsequently better able to cope with life's demands. Of primary importance is the inclusion of the family in all aspects of the students' education. Consistency is so important to children who exhibit FAS/FAE. If parents and the classroom teacher communicate, strategies that are used successfully at home can be used in the classroom and vice versa (Davis, 1994). Parents understand the needs of their children better than anyone; they are an irreplaceable resource. A troubled family is no excuse for denying the child the benefits of a teacher/family partnership in learning.

Children who exhibit FAS/FAE will always have damage from alcohol. The sooner we can begin teaching students who exhibit FAS/FAE the more time that they have to gain skills that will facilitate their ability to process information. Early intervention may be a key to success (Kleinfeld and Wescott, 1993; Burgess and Streissguth, 1992).

Students who exhibit FAS/FAE have difficulty with verbal language; therefore, Kleinfeld/Wescott (1993) recommend using a great deal of visual

cues, including body language during communication. These authors continue to point out that visual cues not only help students to understand what is happening in the classroom, but they also model appropriate social behavior.

Next when planning educational instruction for children who exhibit FAS/FAE consideration must be made for varying, student cognitive abilities. "What works with one child may not work with another child" (Will and Blaine, 1991, p. 24). Therefore, as Blume (1992) explains, strategies must be developed on a "trial-and-error basis" (p. 65).

As our understanding of the nature of the disability improves, our approach to teaching also changes. Rather than relying on the standard teaching method that emphasizes verbal learning, activity-based learning becomes more important. Using all of the senses for learning increases the likelihood of successful input (Kleinfeld and Wescott, 1993, p. 34).

The first reaction of many teachers is to utilize a behavior modification approach. Many researchers, including Kleinfeld and Wescott (1993), concur that behavior modification is not appropriate and may be ineffective. The memory deficits that afflict many of these students interferes with the practice of behavior modification. If they cannot remember that the behavior is inappropriate, how can they modify it? Instead, Kleinfeld and Wescott suggest that the students be redirected and reinforced with visual aids for

appropriate behavior. The information must also be direct, simple and repetitious in order to "force the information into the long term memory" (Will, 1992, p. 10).

School systems focus efforts primarily on academics, while ignoring that another purpose of an education should be to allow the student to gain the tools necessary to function as best as they can in society. A narrowly focused academic curriculum will not necessarily help students who exhibit FAS/FAE to function in society (Davis, 1993 and Kleinfeld and Wescott, 1993). Life skills should be emphasized because "98% cannot handle money wisely and 50% need help with basic hygiene. FAS/FAE is a lifelong handicap" (Davis, 1994 p. 30). Life skills instruction offers a direct connection between what the students are learning in school and what they will need outside the classroom.

Davis (1994) provides an important list for educators to refer to as they search for strategies to enable students who exhibit FAS/FAE to be successful in the educational system. Her list of strategies include:

1. Educators need to become educated about FAS/FAE, keeping in mind that parental input can often be just as valuable as classes and workshops on this topic.
2. Schools need to set up Screening and Intervention Teams to deal with the needs of students with FAS/FAE.
3. Teachers need assistance in the classroom when they have students with FAS/FAE. This assistance may come from student teachers, aides, parent volunteers, tutors, basic skills teachers, instructional assistants, etc.

4. In addition to academics, students with FAS/FAE need to be taught basic living skills, social skills and in the upper grades, vocational skills. Anger management is also recommended for those with anger problems.
5. Students with FAS/FAE benefit from smaller classrooms, minimal change, constant supervision one-on-one attention, and consistent positive reinforcement.
6. Schools can play a key role in networking with other community agencies and professionals to build programs and provide counseling for students with FAS/FAE and their families.
7. Schools provide an excellent environment for teaching prevention. FAS and FAE are birth defects that are totally preventable.
8. School personnel can be powerful lobbyists for more funding for school programs tailored for students with FAS/FAE, and for re-writing laws that determine who is eligible for special services. (p. 63-64)

We must remember that in order to overcome their handicapping condition students who exhibit FAS/FAE need understanding and help from informed educators (Giunta and Streissguth, 1988).

PREVENTION

If we can prevent women from drinking during their pregnancies, research shows that we will be able to prevent the leading cause of mental retardation, FAS/FAE. But, Dorris (1988), and Wescott (1990), both point out that prevention efforts up to this point have not worked. To what extent can society attempt to control the drinking behavior of pregnant women? Dorris (1988), cites examples of women on Native American reservations who were

jailed for their nine month period in order for them to remain abstinent.

Forced sterilization is even considered as a preventative method.

Blume (1992), documents use of jail time as well as mandatory reporting by health care professionals to prevent women from drinking during pregnancy. But both Blume (1992) and Dorris (1988) state that treatment is not provided during jail time to help the mother overcome the problems facing her. Therefore, a woman may abstain from drinking during one pregnancy, but what about subsequent pregnancies when jail time is not enforced? Without treatment, jail time is a temporary not to mention an extremely personally invasive solution to a much greater problem. These approaches to solving the problem of drinking during pregnancy have focused on punishment rather than prevention. This point is argued through U.S. Senate Bill #414 which would require, "involuntary treatment for severe alcoholics" (Wescott, 1990). La Due was quoted in the University of Washington Health Science Centers, In The News as saying, "legislation making it illegal for pregnant women to drink is not the answer." At what point do you take away the right of the woman to drink for the betterment of society? Blume (1992) goes further by presenting research which concludes that the majority of these solutions is applied primarily to people of lower socio-economic status; it must be noted that previous sections of the present research expressed the fact that FAS/FAE may affect any woman of any socio-economic status. Many women who give birth to children exhibiting

FAS/FAE are afflicted with it themselves and might not profit even if treatment were available to them (Dorris 1988).

Prevention has a great deal to do with the prenatal care given by doctors, but most doctors have limited, if any, knowledge of FAS/FAE (The Harvard Mental Health Letter, 1990; Kleinfeld/Wescott, 1993). Without knowledge of FAS/FAE, doctors are unable to identify women who might be at risk of conceiving children who will exhibit FAS/FAE. In order to prevent the primary cause of mental retardation, it is necessary for physicians to inquire about the patients' alcohol patterns throughout pregnancy.

"Unfortunately, doctors and other health care providers often feel uncomfortable talking about alcohol abuse and wrongly suppose that women will be offended if they mention it" (The Harvard Mental Health Letter, 1990, pp. 5-6). In fact, "alcohol and substance use and abuse is the most underidentified condition in the obstetricians office" (Kleinfeld and Wescott, 1993, p. 261). Therefore, the amount of alcohol intake that is reported to physicians is inaccurate (Wilsnack and Beckman, 1984). The fact is that, "women want information but hesitate to bring up the subject themselves" (The Harvard Mental health Letter, 1990, p. 5-6). Once again the stigma of alcohol interferes with the process of diagnosis and prevention. In order to overcome this immense problem we must look at what is best for the fetus and not our own comfort level with the topic of alcohol consumption.

In 1988, the government took a step toward preventing FAS/FAE by creating the Anti-Drug Abuse Act. This act required that labels on alcoholic beverages contain a warning, which states, "GOVERNMENT WARNING: According to the Surgeon General, women should not drink alcoholic beverages during pregnancy because of the risk of birth defects..." (Anti-Drug Abuse Act, 1988, cited in Rivinus, 1991, p. 341). However, "despite national, state and local public education campaigns, there is no indication that these efforts have reduced FAS" (Abel, 1984 cited in Abel, 1990, p. 105). Preventing FAS/FAE will only be achieve through "public awareness, professional education, and public services" (Streissguth, 1990, p. 35).

CHAPTER THREE: METHODS

INTRODUCTION

The previous review of literature provided research which showed that students who exhibit FAS/FAE are continuing to enter the educational system at an alarming rate. There has been a limited amount of information dealing with the effects of alcohol on the education system. In response to this lack of research, a survey (Appendix 1) was designed and conducted in order to assess the type and degree of information that educators in Washington State have available to them regarding this syndrome. During the data collection process an ongoing dialogue with experts in the field was conducted in order to measure the accuracy of information was obtained through the survey. For example, interviews were conducted with several people at the Office of the Superintendent of Public Instruction in Olympia, Washington concerning information available to teachers. Conversations were conducted with Susan Astley, Diane Davis, Diane Bailey, and Rose Quinby.

SURVEY

DESIGN

A survey was designed in the form of a questionnaire to accommodate a large sample of educators.

Surveys are typically used to determine not only the distribution of variables that are impossible or difficult to observe, but also when the population under consideration is relatively large.

Survey data may be collected by means of questionnaires or by interview (Crowl, 1993).

The survey was conducted in two parts. The first section was a written questionnaire consisting of twenty questions and the second section was a voluntary phone interview. The design of the written survey was in the form of a foldover, self mailer to facilitate efficiency and ease of reply on the part of the participant. Each survey was stamped with a return address printed on the form. The survey consisted of a one page set of questions and a release form (Appendix 2). The questions were accompanied by sets of answer selections to avoid personal interpretation and to aid the analysis of data. It was estimated that a respondent could complete the questionnaire in approximately 10 minutes. As an incentive to complete the survey a bag of tea was attached to each form. The main purpose of the survey was to test a sample of Washington educators' knowledge about FAS/FAE.

DISTRIBUTION

Students who are affected with FAS/FAE vary in age and come from all socio-economic levels, therefore the survey was conducted at both the primary and secondary levels in two school districts in rural and suburban settings in the state of Washington. Specific sites were chosen for the following rationale: Shelton, Washington provided a rural educational setting one in which information about FAS/FAE was predicted to be of limited access to educators; Olympia, Washington, the state capitol, a city with a population of 33,729, was chosen primarily because educators easy access to the Office of the Superintendent of Public Instruction and Educational Service District 113 located in that city, and their availability of resources concerning FAS/FAE. These sites were chosen in order to identify whether or not this close access to vital information made a difference in the knowledge accrued.

Surveys were distributed to six schools; an elementary, middle, and high school in both Shelton and Olympia. Among the six schools 282 surveys were hand delivered to the principals along with release form (Appendix 3) for the administrators to sign. Principals were asked to distribute the surveys to teachers on a volunteer basis only.

In order to obtain the information in a reasonable amount of time, the surveys were distributed to five of the six schools during the first and second weeks of May, 1994. Due to a delay in administration permission, surveys at the sixth school were distributed during the second week of November, 1994.

COLLECTION AND ANALYSIS PLAN

Of the 282 surveys distributed 76 were received, a return rate of 27%. The survey asked the participants to identify their school and district. As a result, the data showed that 41 (54%) were returned from Olympia and 35 (46%) from Shelton. In order to maintain anonymity each survey was given a number at the time of receipt. The names of the participants were then logged with their assigned number into a Wordperfect 2.1 program and password protected. Using the assigned numbers the answers of each individual survey were compiled into EXCEL for the Macintosh. A separate spreadsheet was used to assess and graph each individual question.

INTERVIEW

DESIGN

The aforementioned survey inquired if the participant would be interested in taking part in a phone or personal interview. Of the 76 survey responses, 30 (43%) agreed to participate in a phone/personal interview. The questions for the phone interview (Appendix 4) were created after an assessment of the results of the survey was completed. The phone interview was used to further clarify the educators knowledge base as well as identifying

the source of their information. The interviews took, on average, ten minutes each. The participants were asked various questions concerning their specific knowledge of FAS/FAE. The interview questions were arranged into two formats. Question 1 of the survey, which inquired whether the educator had dealt with a student who had a diagnosis of FAS or FAE, determined which format would be used. A comparison of the knowledge of a participant who had dealt with students who exhibited FAS/FAE with those who had not was not possible using this format system.

DISTRIBUTION

During the months of June, August, September, November, and December, 1994, the participants were telephoned to set up an interview time. Thirty respondents agreed to participate in the phone/personal interview. Three attempts to contact each of the participants resulted in interview times with 13 (30%) of the teacher participants. Educators were given the choice of a personal meeting or participating in an interview over the phone. All participants chose to conduct the process by telephone.

COLLECTION AND ANALYSIS PLAN

The numbers which were assigned to the surveys during the first part of the process were maintained to identify the interview. The participants' phone numbers were logged into a password protected database with the corresponding survey numbers to maintain anonymity. The responses were input into Wordperfect 2.1 verbatim as the participant was interviewed. They

were saved under the number which was assigned to their original survey. The information was then assessed for commonalities and entered into EXCEL for Macintosh.

SCORING PROCEDURES

The questions that were asked during the interview allowed the participant to give open ended responses. In order to graph the responses it was necessary to place the answers into selected categories. If one answer was given by more than one participant, a label was created. However, if only one participant responded with a specific answer it was placed in the, "other" category and noted as such in the results. If the question was intended to be answered with a yes or a no, and the participant responded with more detail, it was also calculated in the "other" category and noted in the results.

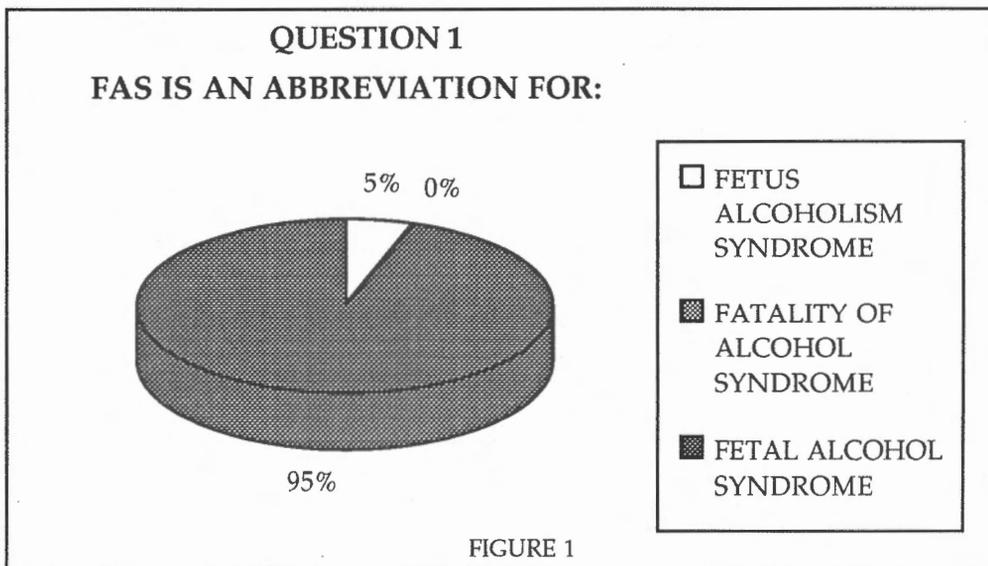
CHAPTER FOUR: RESULTS

SURVEY

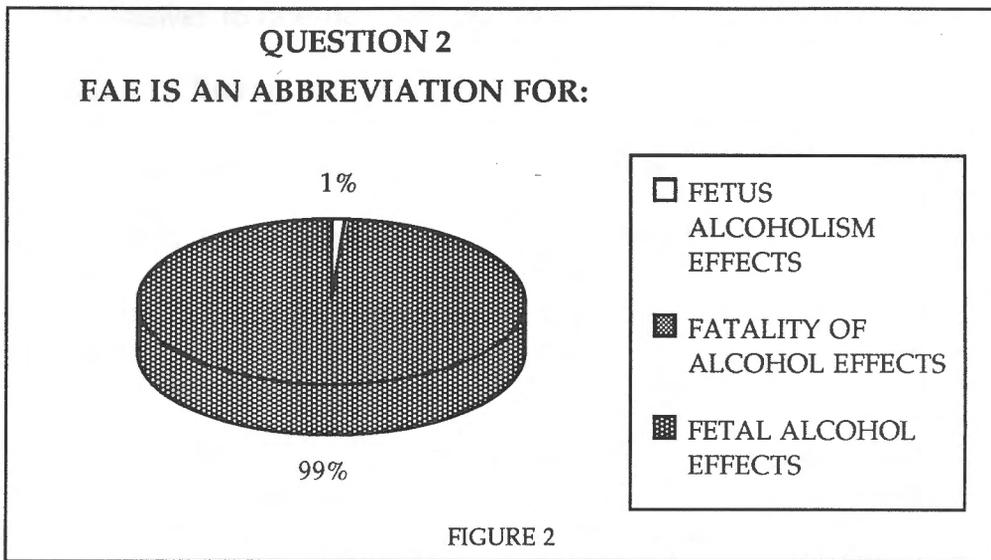
The results revealed that educators answered the survey questions with a higher percentage of correct answers than expected. It was important to note that many of the participants' answered with common knowledge and as a result a great deal of emphasis was placed on question 19 which inquired about the number of hours of training that the participant had received.

The average score was 64%, Olympia had an average score of 67% and Shelton averaged 63%. Of the surveys that were returned two were completely invalid because they were filled out by staff other than teachers. Five had multiple questions left blank. However, these had no bearing on the results of the surveys. A discrepancy in the number of responses was due to the fact that respondents failed to answer some questions. For example, 76 surveys were returned, but some questions were only answered 74 times. Numerous surveys were returned with written comments stating that the participants felt that they did not have enough knowledge to answer a particular question.

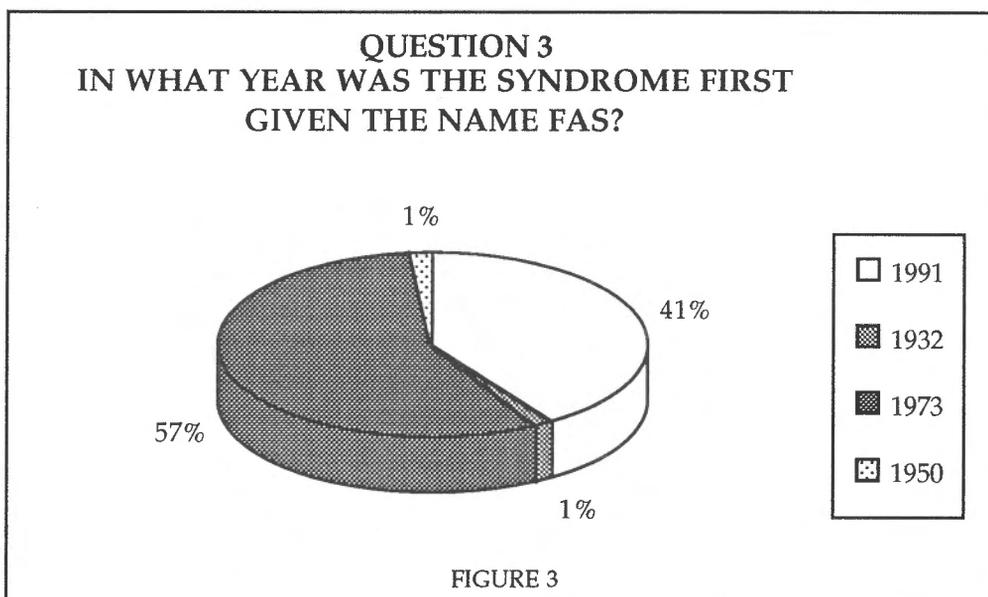
In question 1 (Figure 1), there were 74 valid responses, of those only 5% chose Fetus Alcoholism Syndrome while the majority of the participants, 95%, identified correctly that the abbreviation FAS stood for Fetal Alcohol Syndrome.



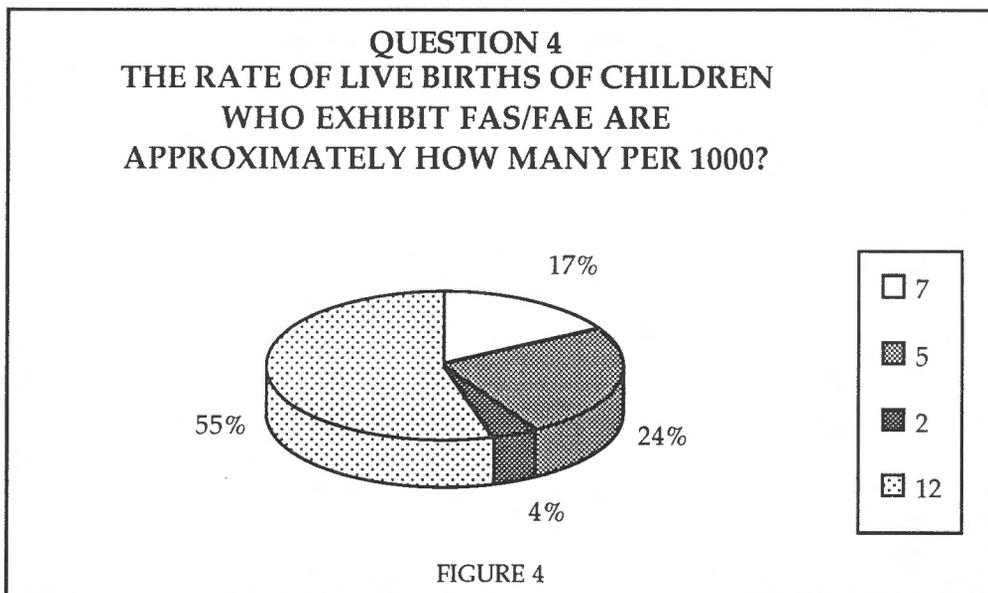
Question 2 (Figure 2) had 72 participants of which 99% answered correctly with the response Fetal Alcohol Effects. Only 1% was unable to correctly answer that question.



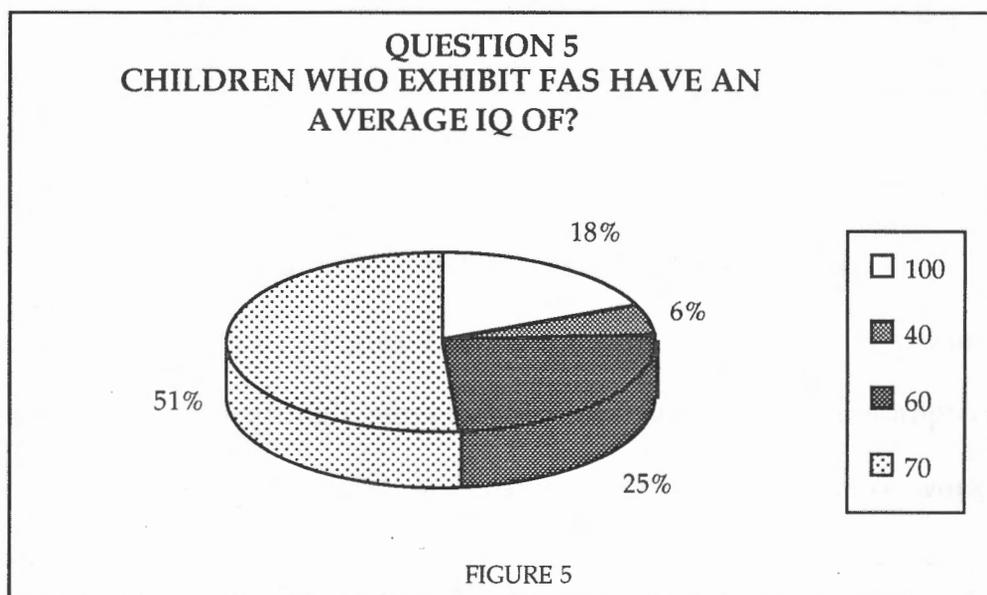
The answers received in question 3 (Figure 3) were more equally divided. Of the 69 participants 57% responded with the appropriate answer of 1973. Whereas, 41% chose 1991, 1% selected 1950 and 1% answered with 1932.



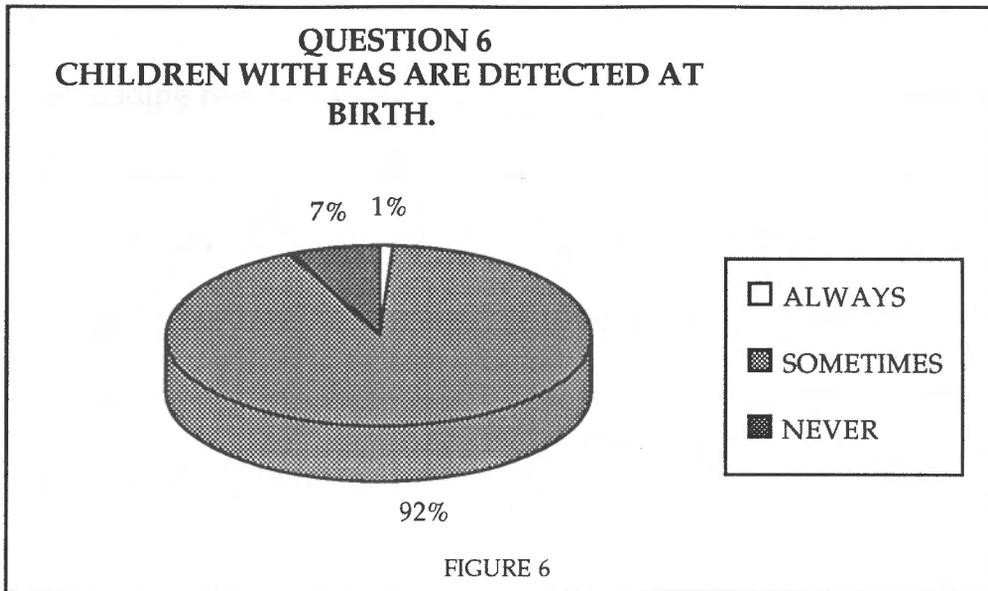
The answer to question 4 (Figure 4) was more vague because, as noted in the review of literature, the rate of incidence of children who exhibit FAS/FAE was clearly debated. The majority of the research estimated between 1.0 and 2.0 live births per 1000 which exhibited FAS. The research stated that the rate of FAE occurred three to four times more than FAS. Since it was difficult to approximate the rate of incidence either 5 or 7 per 1000 was considered as a correct answer. The answers to this question varied a great deal. The majority of the participants, 55%, approximated the rate of incidence at 12 per 1000. The estimates then followed with, 24% who approximated 5 per 1000, 17% estimated 7 per 1000 and 4% chose 2 per 1000. Thus a total of 41% chose one of two correct answers



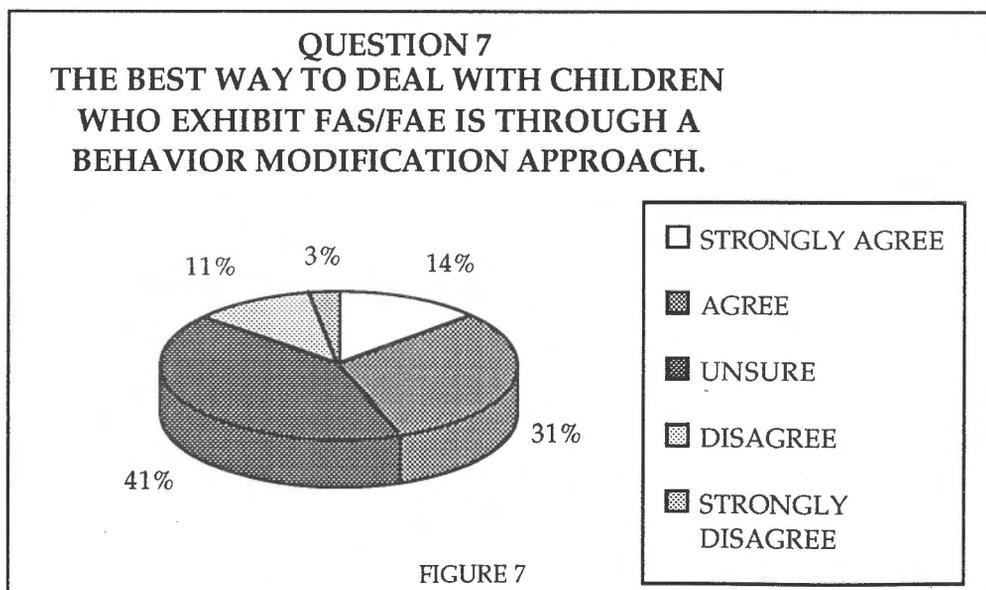
The literature rated the average IQ between 60 and 70. The majority of the question 5 (Figure 5) participants chose one of the above two answers. There were 72 participants of which 51% stated that the average IQ was 70, 25% chose 60. Hence, 76% responded with one of the two correct answers. Only 18% elected 100 and 6% selected 40.



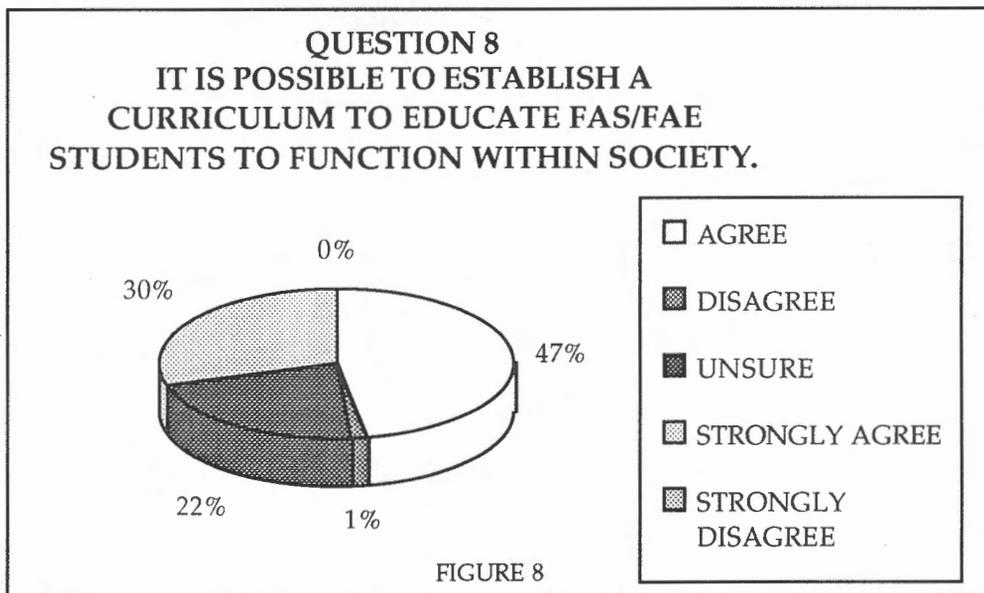
The review of literature noted that specific characteristics were detected "sometimes" at birth. The majority of question 6 (Figure 6) participants, 92%, concurred with the literature and responded that children are, "sometimes" detected at birth. Only 7% stated that children were, "never" detected at birth and 1% selected "always."



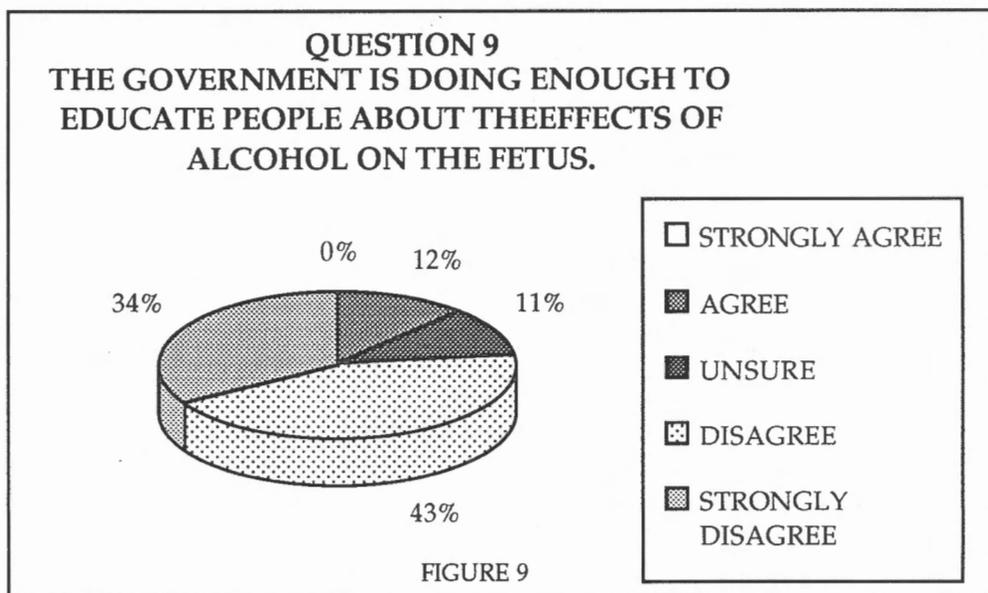
The research expressed the fact that a behavior modification approach does not work with children who exhibit FAS/FAE. There were 74 participants in question 7 (Figure 7) of which 41% were unsure of the answer, 31% agreed and 14% strongly agreed that a behavior modification approach would work. Only 14% stated that behavior modification does not work.



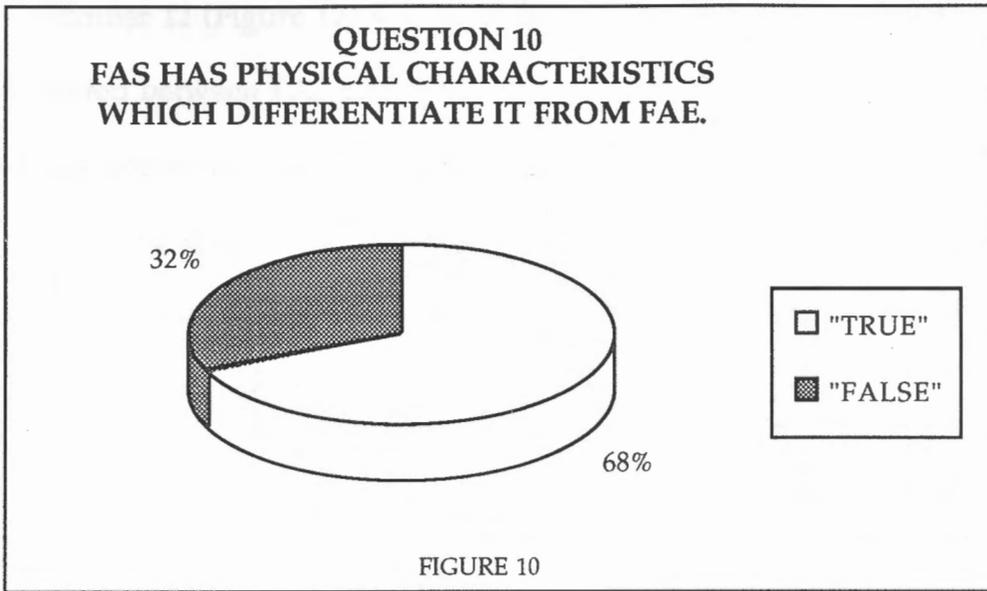
The leading research stated that it was almost impossible to establish a curriculum because children who exhibit FAS/FAE vary such a great deal in their abilities. There were 74 participants who responded to question 8 (Figure 8), 47% agreed and 30% strongly agreed that it was possible to establish a curriculum. There was a total of 22% who were unsure of the answer, 1% disagreed and 0% strongly disagreed that it was possible to establish a curriculum.



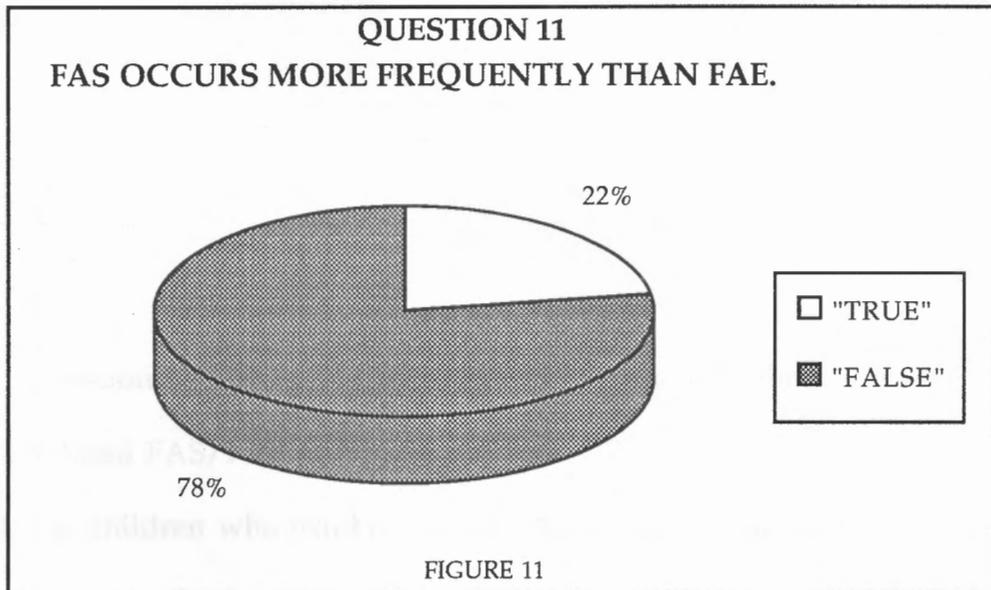
In question 9 (Figure 9), of the 74 participants, 77% disagreed that the government was doing enough to educate people concerning FAS/FAE. Only 12 % agreed the government was doing enough and 11% were unsure.



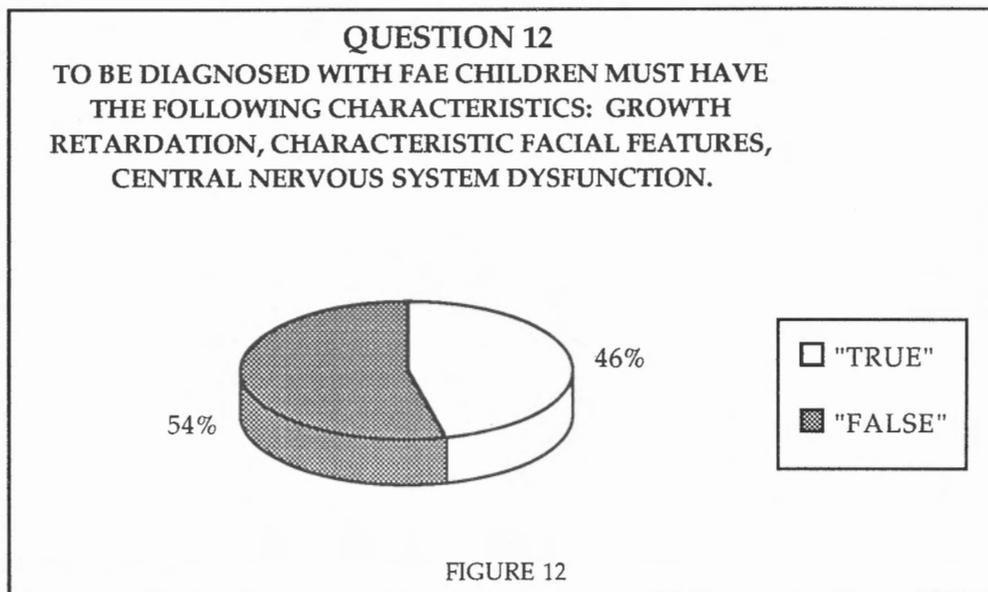
Question 10 (Figure 10) referred to the diagnosis of FAE. FAE was labeled in the review of literature as, "a term describing patients who do not exhibit all the characteristics of FAS..." (p. 7). There were 69 participants of which 68% stated that FAS had physical characteristics which differentiated it from FAE. The remaining 32% participants stated that question was, "false."



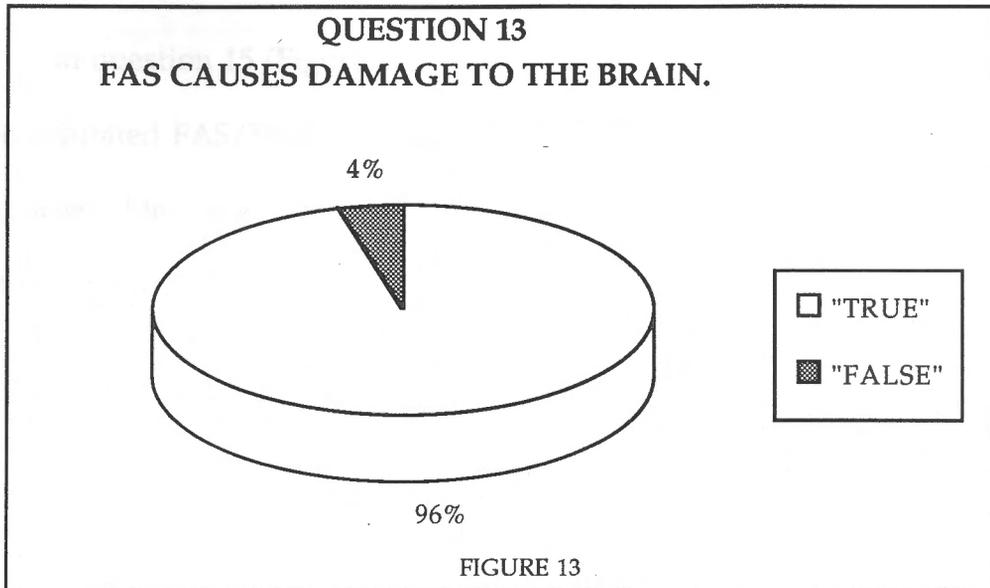
Question 11 (Figure 11) had 67 participants of which 78% identified that FAE occurred more frequently than FAS. Only 22% believed that FAS occurred more frequently than FAE.



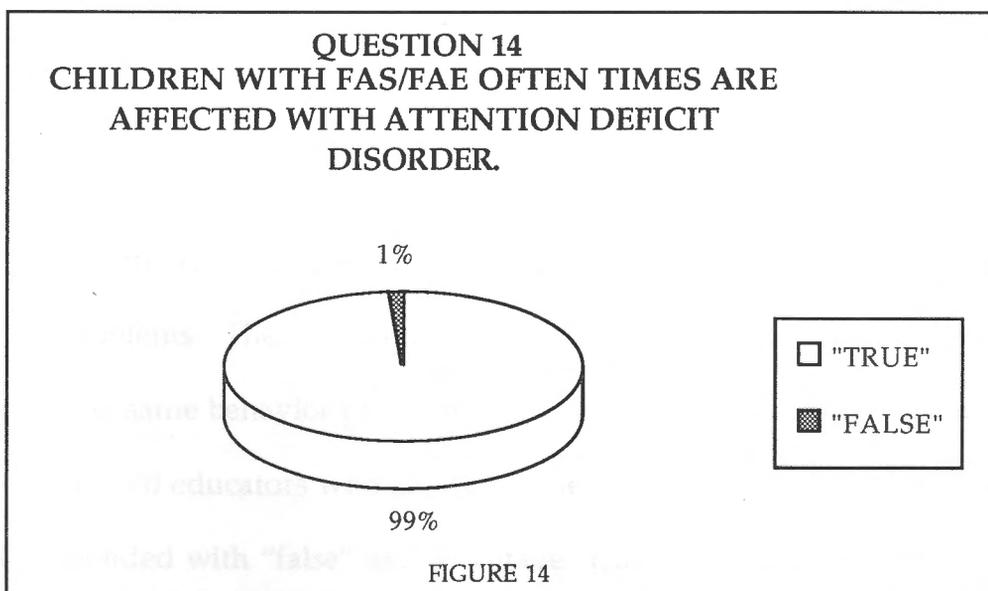
Number 12 (Figure 12) was used to discover if the respondents differentiated between FAS and FAE. The physical characteristics which were listed were appropriate for a diagnosis of FAS, however, the question asked if a person needed the characteristics to receive a diagnosis of FAE. As question 10 pointed out that was not the case. The responses were almost equally divided with 52% choosing, "false" and 48% selecting, "true."



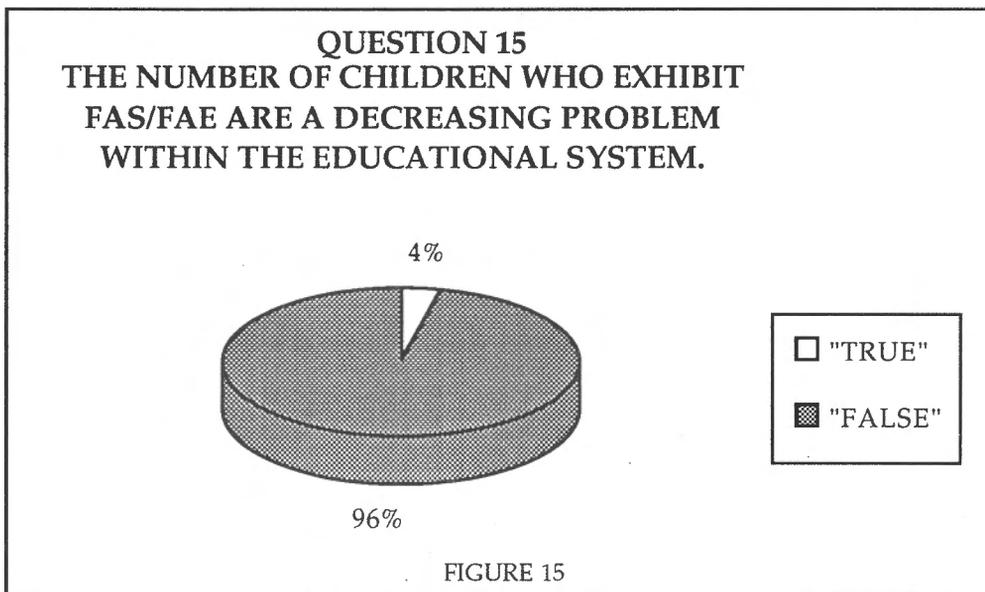
Question 13 (Figure 13) asked the 73 participants whether or not people who exhibited FAS/FAE had brain damage. The review of the literature noted that children who exhibited FAS/FAE had brain damage of the central nervous system dysfunction. By an overwhelming majority 96% said that it was, "true" and only 4% found it to be "false."



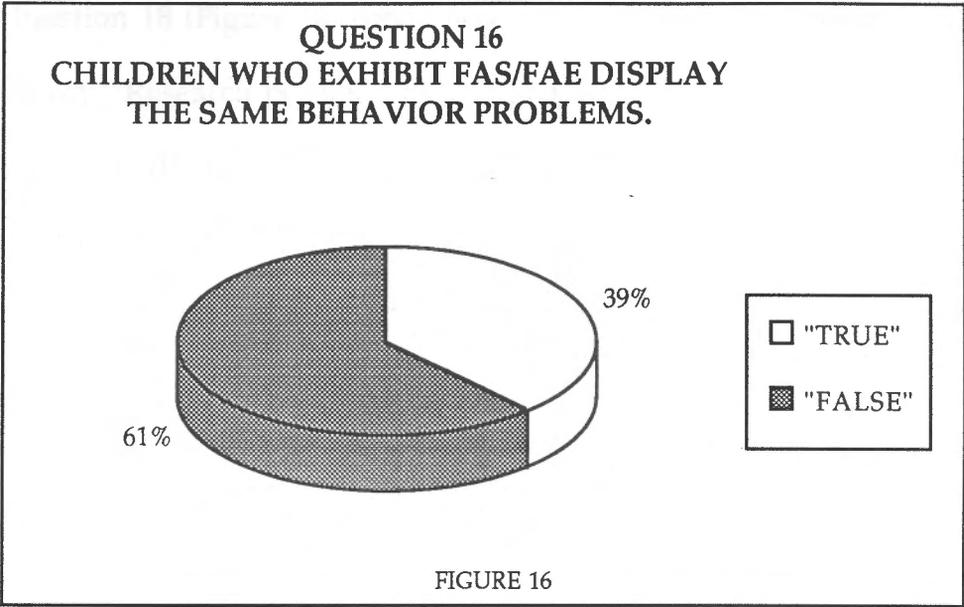
The research described ADD as a characteristic common among children who exhibited FAS/FAE. As question 14 (Figure 14) showed, this characteristic was well known, because, of the 73 participants, 99% responded with, "true" and only 1% selected "false."



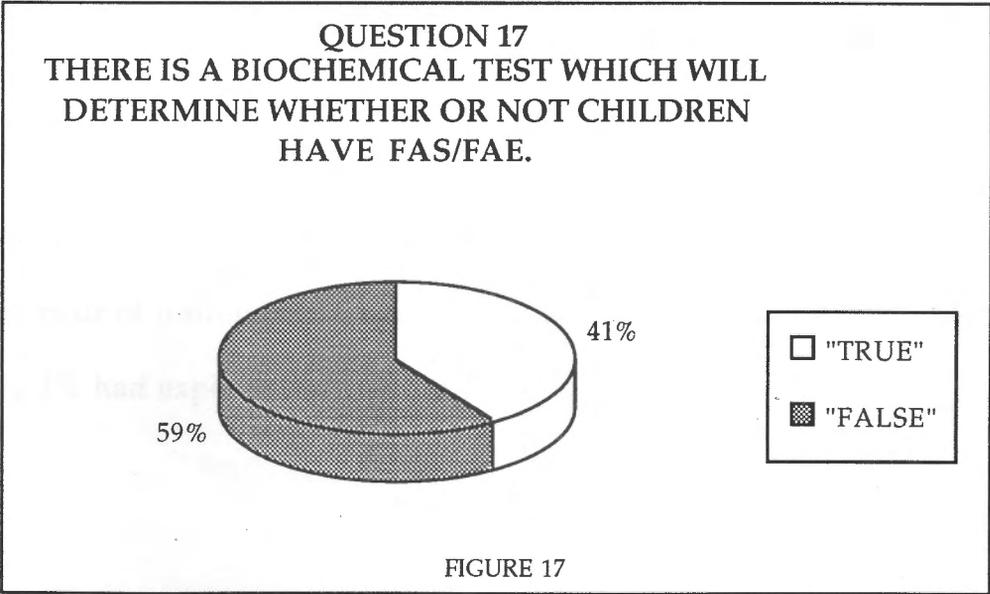
In question 15 (Figure 15), 73 respondents, 96% believed that students who exhibited FAS/FAE were a problem that had increased and not decreased. Only 4% responded that the number of students who exhibited FAS/FAE was not a problem that had increased.



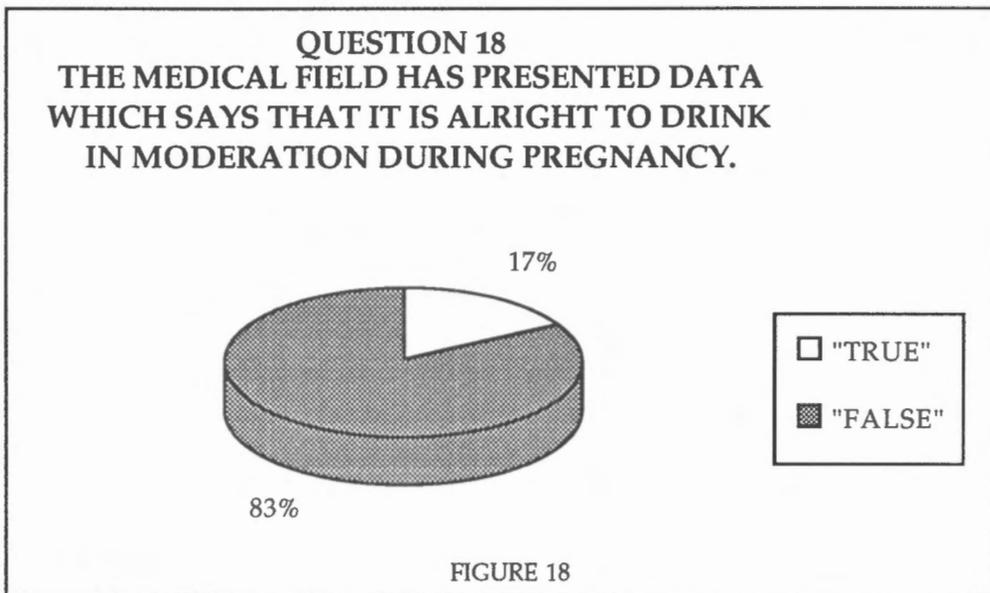
The literature showed that children who exhibited FAS/FAE had varied problems. Therefore, the statement, "children who exhibit FAS/FAE display the same behavior problems" in question 16 (Figure 16) was false. There were 70 educators who answered the question and of those participants, 61% responded with "false" and 39% gave "true" as an answer.



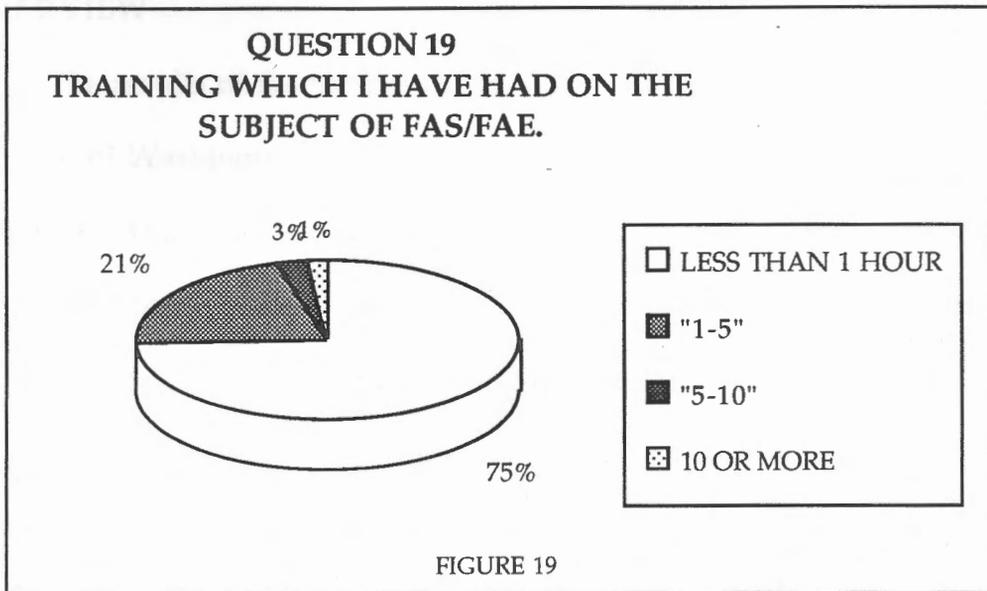
Question 17 (Figure 17) had 61 participants who were equally divided as to whether or not there was a biochemical test. Of the 61 participants 59% answered, "false" and 41% answered, "true." Unfortunately, there is not a biochemical test for FAS/FAE.



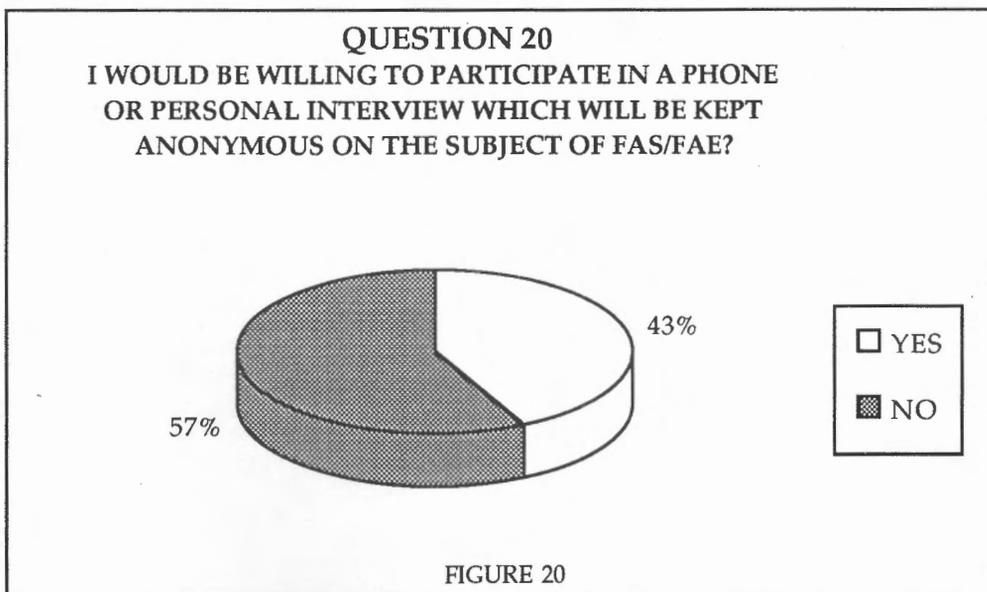
Question 18 (Figure 18) concerned one of the most controversial issues in the survey. Research pointed out that people in the medical field had recently presented data which stated that it did not harm the fetus if the mother drank in moderation. Nevertheless, 83% of 70 participants were not aware of the research and responded with "false" only 17% agreed that the statement was "true."



In question 19 (Figure 19) 70 participants answered that 75% had less than one hour of training, 21% had 1-5 hours, 3% participated in 5-10 hours and only 1% had experienced 10 or more hours.



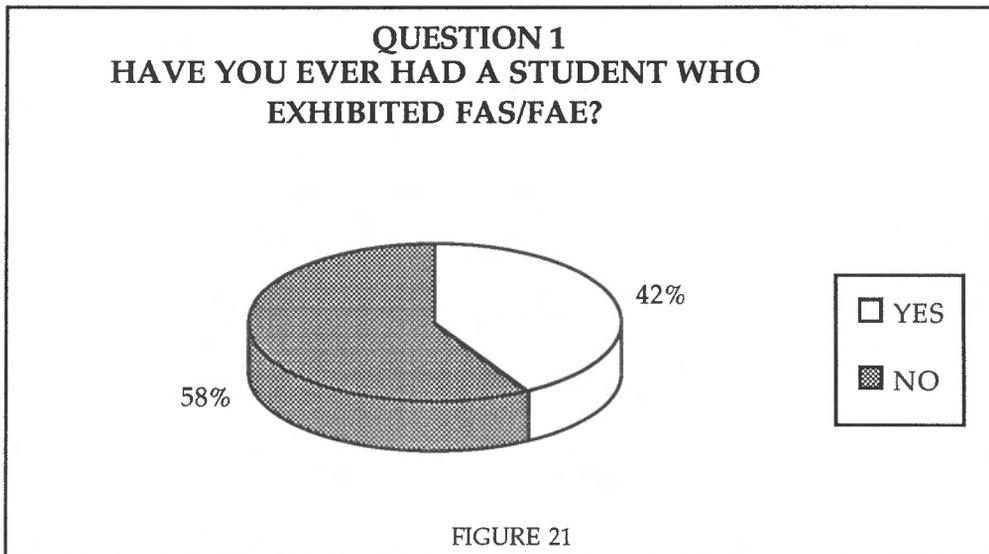
Finally, question 20 (Figure 20) had 68 participants of which 57% did not agree to a phone interview, however, 43% were willing to participate in a phone or personal interview.



INTERVIEW

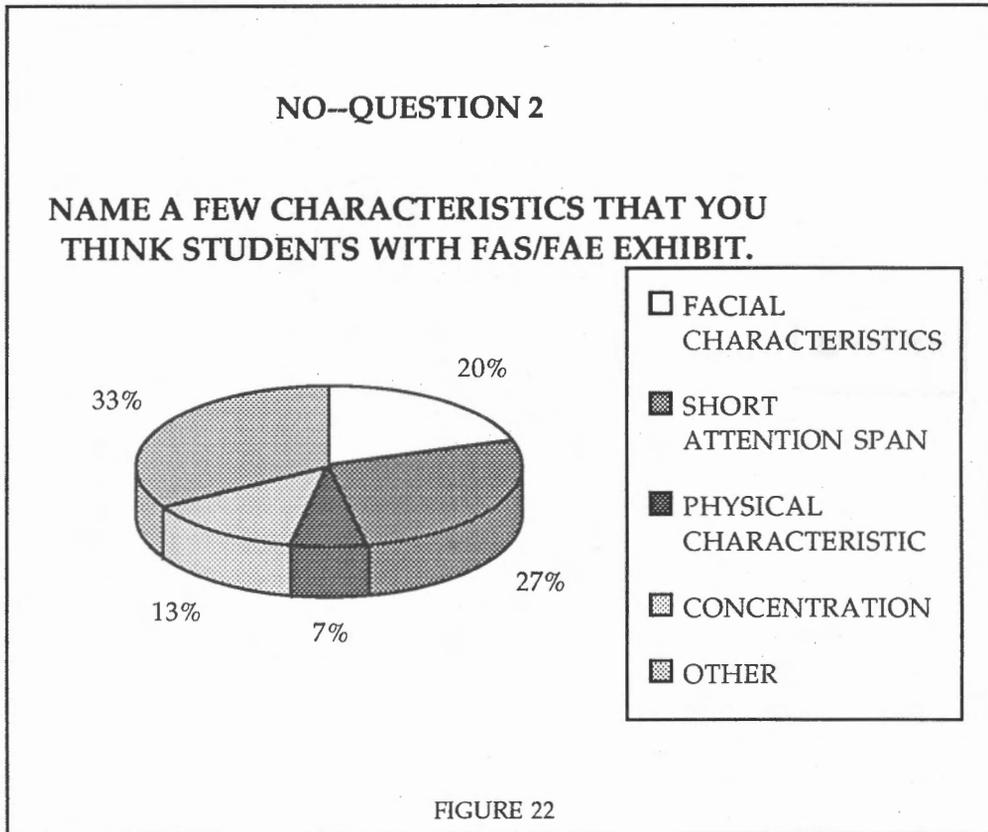
The results of the interview concluded that a sample of educators in the state of Washington had limited accessibility to information concerning FAS/FAE. The interview resulted in data that placed intuition and trial-and-error as the primary tools used among educators in the state of Washington to teach students who exhibited FAS/FAE. The results of the phone interview also indicated that of the educators surveyed none had received any training from the Educational Service District in their area and only one participant had received formal training.

Question 1 (Figure 21) was used to determine which interview would be conducted. There were 12 participants of which 5 (42%) responded that they had a student who exhibited FAS/FAE and 7 (58%) responded that they had not had a student who exhibited FAS/FAE.

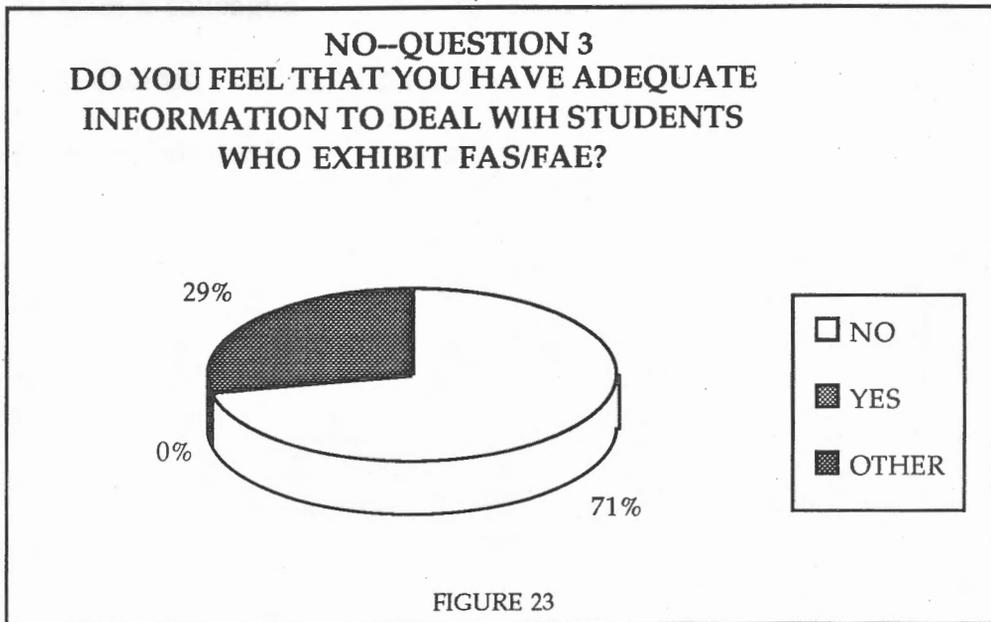


NO RESPONSES

If the response was, "no" to question 1 (Figure 21), question 2 (Figure 22) asked educators to list characteristics that they thought could be attributed to FAS/FAE. As listed above, the feature was specifically registered only if it was mentioned on more than one survey. If not it was listed in the category of "other." The participants noted the following characteristics: facial features 20% (3), short attention span 27% (4), physical characteristics 7% (1), concentration 13% (2), and other 33% (5). Listed in the other category were, ADHD, cause and effect, poor motor skills, quick behavior changes.

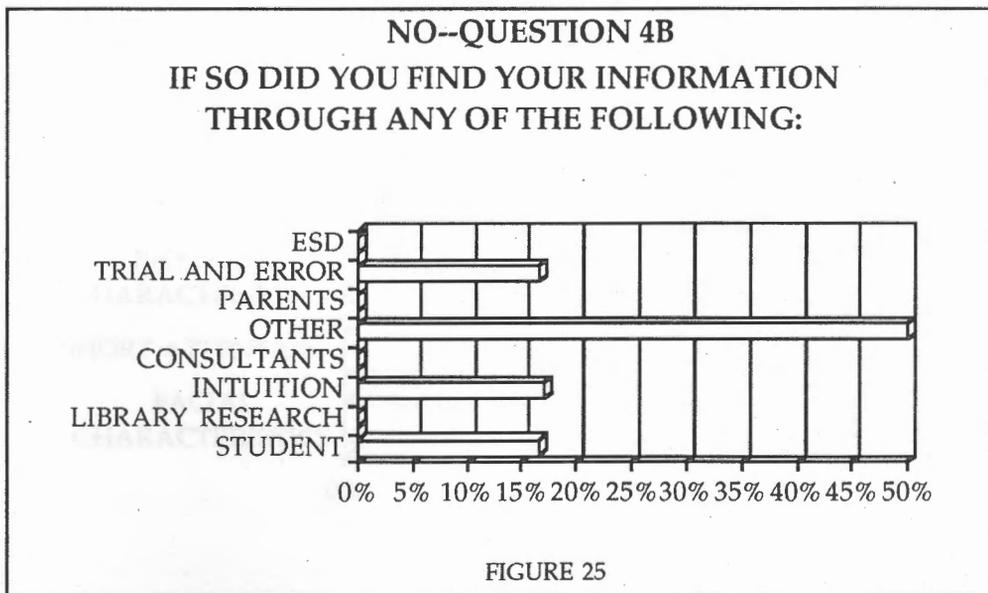
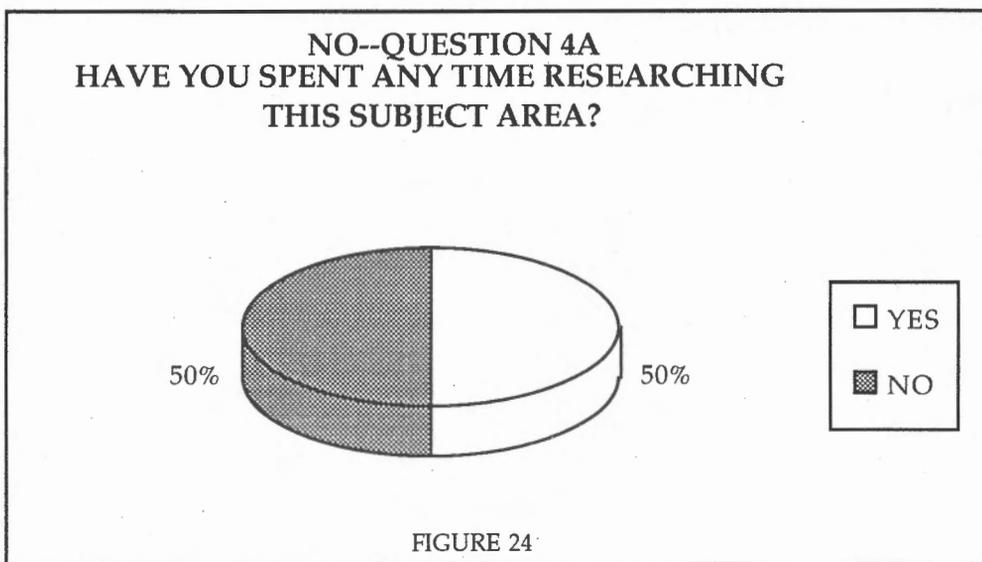


Question 3 (Figure 23) was important in order to find out if educators felt that they had adequate information to deal with students who exhibited FAS/FAE. It was noted that of the 7 participants, 71% (5) felt that they had not had enough information and 29% (2) responded with something other than, "yes" or "no" including: information from reading and data from a special education teacher. None of the participants replied, "yes."



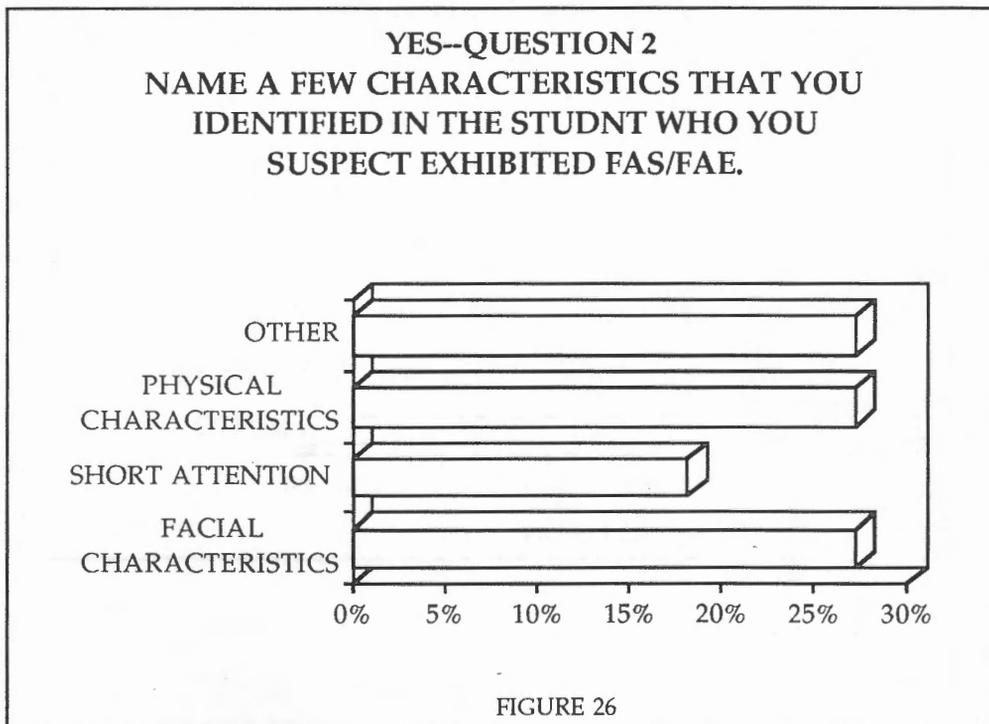
Question 4 was graphed on two charts. The first chart, 4A (Figure 24), inquired whether or not the participants had spent anytime researching FAS/FAE. The 6 participants responded equally, 50% with yes and 50% no. If the participants responded in anyway to 4A (figure 24) they were charted as a, "yes" response. If they did not respond to 4A they were charted with a, "no." Those participants (3) who had done some research were asked to describe where their information came from. Some of the participants gave more than one answer. Question 4B (Figure 25) gave the respondent 8 selections which included: student (17%), library (0%), consultants (0%), parents (0%), trial and error (17%), intuition (17%), ESD (0%)workshops (0%). One teacher who had not had direct experience with a student who exhibited FAS/FAE answered trial and error and intuition as a result of information she had

gained from a colleague. Three participants (50%) gave reasons other than the listed choices. The participants listed ADHD training and news articles as other forms of research. None of the participants listed library research, consultants, parents, ESD, or workshops in the interview.

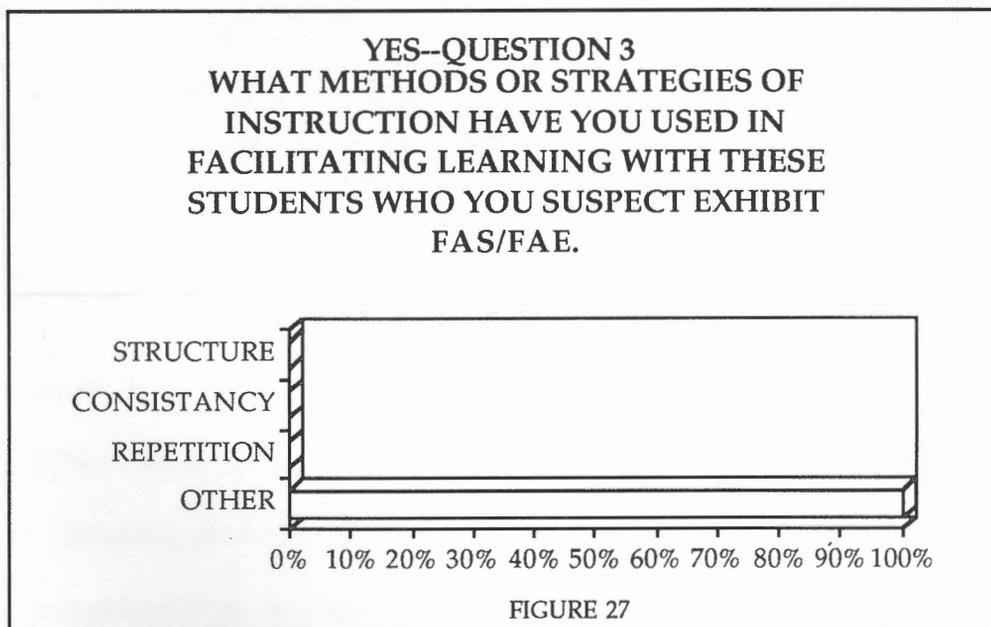


YES RESPONSES

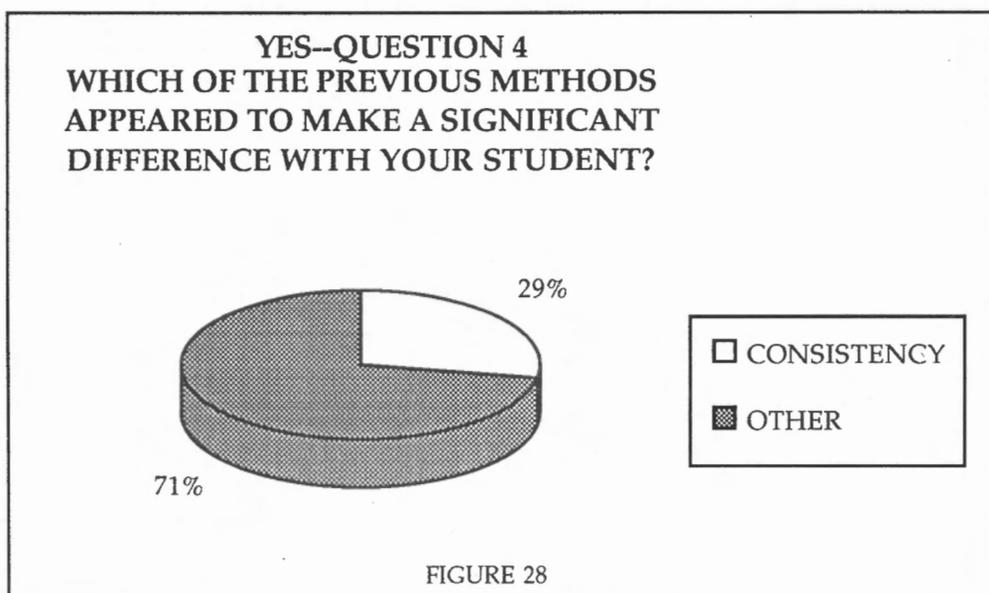
If the participant answered, "yes" to question 1 they were asked an alternate set of questions. Question 2 (Figure 26) asked the participants to list characteristics that they had identified in the students that they had taught. Again, it was only listed as a specific characteristic if it was mentioned more than once. There were 11 responses (making note again that a participant may list more than one characteristic.) Facial characteristics as well as physical characteristics were each referred to 3 times (27%). Participants also listed short attention span twice (18%). Other characteristics referred to by three participants (27%) were, mental retardation, erections, memory problems, social skills, musical talent, similar to ADD, impulsive, rapid behavior change, violent, learning difficulties, difficulties with eye contact,



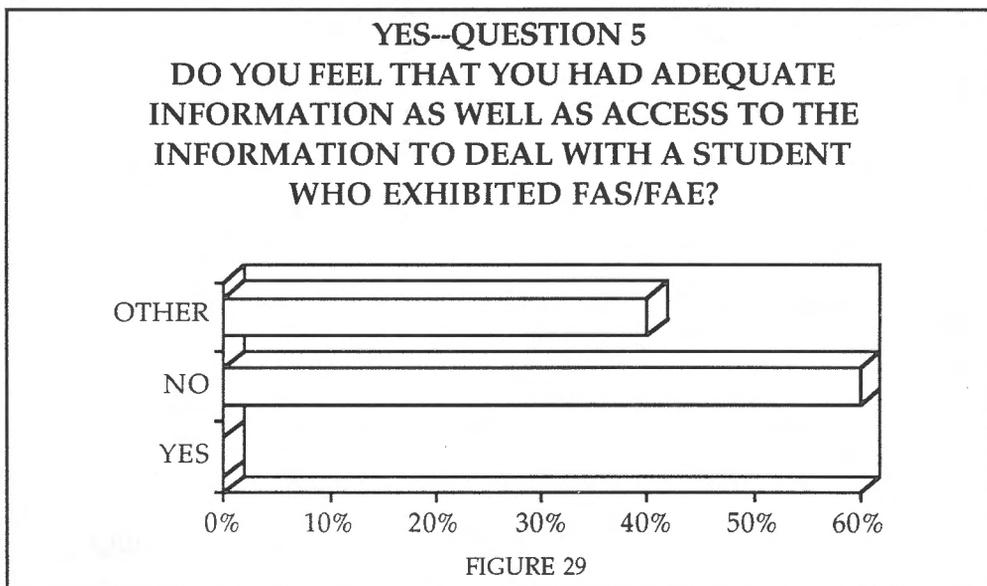
In question 3 (Figure 27), the participants were asked to list methods or strategies of instruction which they had used in educating students who exhibit FAS/FAE. (Multiple answers were possible). The 5 participants listed multiple methods, however, none were listed more than once (these answers were represented on the graph at 0%). The strategies included in the "other" category were, minimal written instruction, limit verbal cues, one direction at a time, modeling, training for regular education, safe environment, praise, lots of drill, working with parents, different expectations, modified math, behavior modification, reward system, and choices.



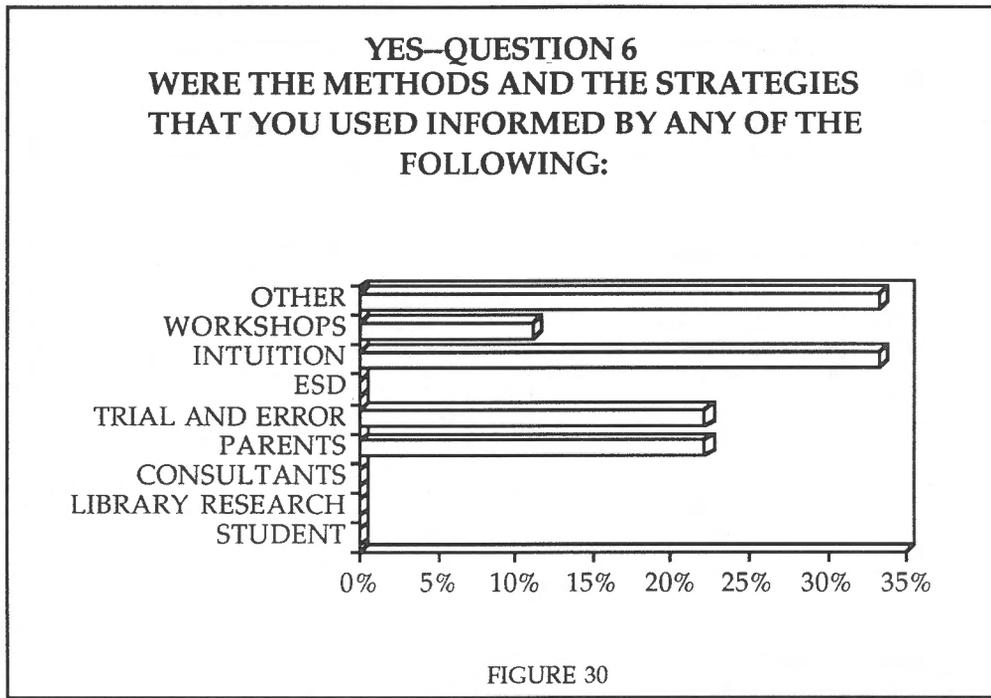
Question 4 (Figure 28) asked the participants to list methods and strategies that they felt worked with students who exhibited FAS/FAE. The only method listed multiple times was consistency (29%), the remaining strategies named included: small group, reminding, behavior modification, reward, structure, clear expectations, verbal cues, breaking instructions into small segments, definite transition periods, peer coaching, one behavior to work on at a time, state behaviors very specifically.



Educators that had experience with students who exhibited FAS/FAE were asked in question 5 (Figure 29), whether or not they had adequate information or access to information to teach students who exhibited FAS/FAE. Of the 5 participants 3 (60%) stated that they did not have enough information or access to it, 2 (40%) replied that they had information, but they were not specific as to whether or not the information was enough.



In question 6 (Figure 30) participants were asked if they had gained any of their methods or strategies from the list of eight choices. The list was the same as in question 4B. Educators listed intuition as the primary method used (32%) followed by parents (22%), trial and error (22%) and workshops (11%). Students who exhibit FAS/FAE, library research, consultants, and ESD were not referred to. In the other category, 33% of the participants listed one or more items which included: a California medical facility, texts, and team members. One participant went as far as saying that training had been a joke.



Questions 5 (no) and 7(yes) (Figure 31) was asked of all of the 12 participants regardless of their first answer. As a result of the lack of training found in the primary survey, the participants were asked if they would be interested in being involved in a research action group where ideas concerning the education of children with FAS/FAE could be expressed. The majority of the participants, 60% to be exact, were interested in the possibility, only 17% stated, "no." Twenty percent were interested, but they had stipulations such as time and one participant said if she had an FAS student she would be interested.

**NO--QUESTION 5/YES--QUESTION 7
WOULD YOU BE INTERESTED IN
PARTICIPATING IN A INTEREST/RESEARCH
ACTION GROUP TO DISCUSS AND SHARE
IDEAS ABOUT MEETING YOUR NEEDS AS A
TEACHER OF CHILDREN WHO EXHIBIT
FAS/FAE...**

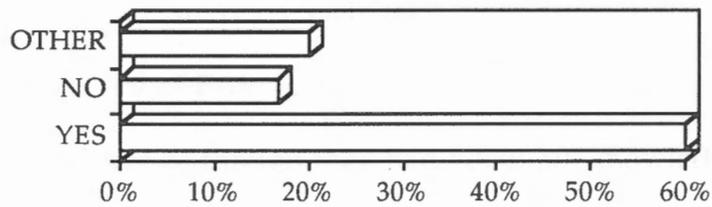


FIGURE 31

CHAPTER FIVE: DISCUSSION, LIMITATIONS, IMPLICATIONS, RECOMMENDATIONS

DISCUSSION SURVEY

The purpose of this research was to establish whether educators had enough basic knowledge to teach students who exhibit FAS/FAE. This was accomplished through a survey which asked questions concerning the participants knowledge of FAS/FAE. Some of the surveys showed that the participants did not feel as though they had adequate knowledge to answer the questions. It is believed that the remaining 206 educators who chose not to participate did so because they felt that they did not have a broad knowledge of FAS/FAE. Educators who participated did so on a volunteer basis. The fact that 76 teachers chose to participate on a volunteer basis is evidence that this topic is extremely important to their current teaching duties.

The findings of the survey are contrary to what has been expected. The percentages show that the majority of the participants are able to answer each question correctly; the average score of each test is 64%, with the lowest score being, 6% and the highest, 83%. The survey consists of general questions about FAS/FAE with a few questions that concern teaching techniques. The results of the survey may be attributed to the information concerning FAS/FAE that is currently prevalent in our society; for example, the warning labels on alcoholic beverage bottles and through the media. Through the various forms of advertisement that deal with FAS/FAE, educators may have

been capable of answering questions addressing general knowledge of FAS/FAE. The low results of questions 7 and 8, concerning teaching techniques showed that although educators may have general knowledge about FAS/FAE, they do not possess a working knowledge of the best educational practices advised for use by educators. Question 7 asks if, "the best way to deal with children who exhibit FAS/FAE is through a behavior modification approach." Only 14% of the participants identify that a behavior modification program will not work with students who exhibit FAS/FAE because of the difficulty they have in relating cause and effect. Question 8 inquires if, "it is possible to establish a curriculum to educate FAS/FAE students to function within society." A total of 1% of the respondents recognize that it is difficult to establish a curriculum because of the varying abilities among students who exhibit FAS/FAE. These questions emphasize that there is a lack of understanding as to how to educate students who exhibit FAS/FAE. The responses to questions 7 and 8 along with the answers to question 19, which points out that 96% of the participants have received less than 5 hours of training, 75% had less than 1, is evidence that educators lack the knowledge to provide a complete education for students who exhibit FAS/FAE. The questions prove that the information that educators have does not come from an educational resource, but from basic information that is provided by various media sources.

Learning FAS/FAE may be

DISCUSSION INTERVIEW

The purpose of the interview was to follow up the survey with more comprehensive questioning of the participants. The interview further assessed information that is offered in the survey. Results of the interviews support the findings of the survey that show that educators have limited access to information concerning FAS/FAE. The results prove that regardless of whether or not the participants have experienced a student who exhibits FAS/FAE in the classroom, the majority feel that they do not have enough information to deal with an FAS/FAE child. The answers given in many of the questions are only offered once. For instance, in question 3 (yes), "What methods or strategies of instruction have you used in facilitating learning with these students who you suspect exhibit FAS/FAE," not one of the answers is repeated. Therefore, all of the responses to question 3 are represented as a part of the "other" category. This lack of consistent answers to the various questions reveal that educators are unsure about methods that are effective when working with students who exhibit FAS/FAE. Moreover, questions 4 (no) and 6 (yes) demonstrate that the knowledge that teachers have comes mainly from intuition and trial and error. Not one participant states that they have received information from the ESD or consultants. Only one participant reports having gained information from a workshop. The fact that only one participant reports having had any formal training concerning FAS/FAE may be taken as evidence that the educators are

primarily giving uneducated guesses about how to address the needs of students who exhibit FAS/FAE.

LIMITATIONS

Because completion of the survey was on a volunteer basis, it is likely that those who responded were those who felt they had some comfort in this area of inquiry. It is also likely that those who lack information did not attempt the survey.

Instead of testing basic knowledge it may be assumed that the survey tests how well educators are able to approximate the appropriate answer. This leads the author to believe that emphasis should be placed on the information that is gathered from the interviews instead of the survey itself.

There is a great deal of current information available to educators; however, for various reasons they are not able to access it. The process of gathering information is long and tedious. It takes many hours and appointments to gain the contacts needed in order to access the data that is available and teachers are limited in the amount of time that they have.

Surveys are limited to Olympia, and Shelton and results cannot be generated to represent the state of affairs throughout Washington on the subject of the education of students who exhibit FAS/FAE. Further research would involve gathering data from a larger sample.

The survey is limited in the number of questions it asks concerning techniques being used in the classroom. With the results of this study

identifying that educators do possess general knowledge about FAS/FAE further studies on the subject of FAS/FAE would involve extensive inquiry into the methods being used by educators to teach students who exhibit FAS/FAE.

IMPLICATIONS

The information shows that the participants have received little or no training and feel that they do not have adequate information or access to information to deal with students who exhibited FAS/FAE. The information that they do have is not based on organized school training. When educators are asked about being involved in a research group (Figure 31) 60% express interest. However, educators for one reason or another do not have ready access to the data. Furthermore, the results of the survey show that regardless of their location, rural or suburban, the percentages of correct answers are the same. Therefore, regardless of location, the accessibility to information is the same. In order for educators to teach students adequately and responsibly who exhibit FAS/FAE information needs to be directly accessible.

It is important to note that searching for information takes a great deal of time and effort. There are workshops and conferences which discuss the topic of FAS/FAE, but they take time and money. Leading researchers in the field are available in Western Washington, but once again meetings are usually scheduled for the middle of the day when educators are teaching classes. If an educator would like to observe a diagnostic examination,

scheduling again is a problem because usually, they occur one day a week and the observation would have to be set up in advance. All of these things point to the fact that if educators want the information, it is difficult for them to obtain it without expending a great deal of time and effort. The job of teaching is time consuming and when educators need information about FAS/FAE they do not have the time to research it.

Lack of information about FAS/FAE in the education system reinforces the mislabeling of students. If students who exhibit FAS/FAE are simply labeled as having ADD or ADHD then how is it possible to offer them an education which meets their needs? As is stated in the review of the literature, we must understand the whole child and not simply attempt to "fix" parts of him/her.

As we move toward an inclusion model it is necessary to consider what effect FAS/FAE will have on the classroom. The information shows that educators do not have accessibility to data needed to educate students who exhibit FAS/FAE. Without the information the question then becomes how is it possible for educators to deal with multiple special needs students as well as non-handicapped students in the mainstreamed classroom? The best practice strategies that could be implemented to help students who exhibit FAS/FAE would not interfere in a regular education curriculum. But, if educators do not have the information it is impossible for them to implement these strategies.

As more and more students are diagnosed with FAS and identified as having FAE there is a desperate need for educators to gain an understanding of the effects of alcohol in utero.

RECOMMENDATIONS

The results of the survey show that there is a strong need and desire from educators and administrators for accessible information. This study inquired of educators if they would be willing to participate in a research/action group that would discuss the subject of FAS/FAE. As a result of the favorable response an action group organized during the 1995 school year. The research action group will be self-sustaining and it will give teachers the opportunity to come together and discuss problems as well as the successes that they are having with students who exhibit FAS/FAE. During this time educators will be able to brainstorm techniques and methods to use in the education of students who exhibit FAS/FAE. The research action group will occur as frequently or infrequently as educators feel necessary.

Another possibility could be to set up a data base on the Internet in which educators or other persons could send as well as receive information about techniques, problems, and successes in special education with specific reference to FAS/FAE. Unfortunately this would take a great deal of time, and research. It would also depend on the possibility of gaining a computer system in which to set up the data base.

Since the Internet would take such an extensive amount of time and money, a temporary solution would be to develop a resource kit which would include a floppy disk with a list of the references and abstracts from this thesis along with various articles concerning the education of students who exhibit FAS/FAE.

As noted in "Implications" as well as in the results of the interviews educators have not experienced any training by the local ESD, or a consultant, and only one has attended a workshop on FAS/FAE. Therefore, it is highly recommended that inservice training be set up through the ESD as well as the schools themselves. There also needs to be availability of substitute teachers to educators who are interested in conducting their own research. If these recommendations are followed educators will have a great deal of accessibility to the latest information. We live in an area that is rich with information on the subject; we need to tap into it.

CHAPTER SIX: CONCLUSION

The implications and recommendations which have been presented in this thesis have evolved from the primary premise that educators have limited knowledge about FAS/FAE. The initial purpose of this work was to discover whether or not educators had knowledge about FAS/FAE. However, as responses were assessed and information gathered, it became clear that it is not a question of how much information has been published,

published, but rather the accessibility of the data available and the application of information in the classroom.

In order to gain the information incorporated in this thesis, educators would need a great deal of spare time, something that they do not have. This thesis gives solutions which might make training accessible to educators in the Western Washington community.

Fetal Alcohol Syndrome and Fetal Alcohol Effects are only two of many handicapping conditions that are prevalent in the educational system today. Recognizing FAS/FAE and is a step in the right direction, but we have a long way to go. If we want to help students who exhibit FAS/FAE as well as students who exhibit other handicapping conditions we need to remove the labels that constrain their learning process. It is imperative to understand why they are behaving the way that they are, but it is not necessary to bind them to one way of learning. More importantly, it is vital to look at the children who are affected by this syndrome and attempt to give them the tools to be successful in all their endeavors. In order to do this we as a community must work together. The process does not occur only in the classroom. There must be communication between educators, doctors, parents, and students. Without community support, students who exhibit FAS/FAE will be lost in the cracks.

APPENDIX 1

This survey is a part of a thesis project. The purpose of it is to find out how much information educators have about FAS and FAE. In gathering this information it will be determined whether or not there is a need for more resources on the subject. It would be greatly appreciated if you would take the time to fill this out and return it by June 5, 1994.

1. FAS is an abbreviation for:
 - a. Fetus Alcoholism Syndrome
 - b. Fatality of Alcohol Syndrome
 - c. Fetal Alcohol Syndrome

2. FAE is an abbreviation for:
 - a. Fetus Alcoholism Effects
 - b. Fatality of Alcohol Effects
 - c. Fetal Alcohol Effects

3. In what year was the syndrome first given the name FAS?
 - a. 1968
 - b. 1932
 - c. 1945
 - d. 1973

4. The rate of live births of children who exhibit are approximately how many per 1000?
 - a. 7
 - b. 5
 - c. 2
 - d. 12

5. Children who exhibit FAS have an average IQ of?
 - a. 100
 - b. 40
 - c. 60
 - d. 70

6. FAS has physical characteristics which differentiate it from FAE?

True
False

7. FAS occurs more frequently than FAE?

True
False

8. To be diagnosed with FAE children must have the following characteristics: growth retardation, characteristic facial features, central nervous dysfunction?

True
False

9. FAS causes damage to the brain?

True
False

10. Children with FAS/FAE often times are affected with ADD?

True
False

11. Children who exhibit FAS/FAE are a decreasing problem within the educational system?

True
False

16. Children who exhibit FAS/FAE always display the same behavior problems?

True
False

17. There is a biochemical test which will determine whether or not children have FAS/FAE.

True
False

18. The medical field has presented data which says that it is alright to drink in moderation during pregnancy?

True
False

19. Children with FAS are detected at birth?

1. always
2. most times
3. sometimes
4. almost never
5. never

20. The best way to deal with children who exhibit FAS/FAE is through a behavior modification approach?

- a. strongly agree
- b. agree
- c. unsure
- d. disagree
- e. strongly disagree

21. It is possible to establish a curriculum which would enable FAS/FAE students to function within society?

- a. strongly agree
- b. agree
- c. unsure
- d. disagree
- e. strongly disagree

22. The government is doing enough to educate people about the effects of alcohol on the fetus?

- a. strongly agree
- b. agree
- c. unsure
- d. disagree
- e. strongly disagree

23. Training which I have had on the subject of FAS/FAE.

- a. Less than 1 hour
- b. 1-5
- c. 5-10
- d. 10 and up

24. I would be willing to participate in a phone or personal interview on the subject of FAS/FAE?

- Yes
- No

Thank You For Your Time

Shauna L. Reed

APPENDIX 2

Dear Educator,

I'm writing to ask for your participation in a survey concerning FAS/FAE. These surveys are a part of a Master's thesis research, which is intended to examine the amount of information that teachers have about the subject. As a result of these surveys I hope to gather techniques that help these students to thrive and flourish in our educational system. The surveys will be anonymous and will take approximately 10 minutes to complete. If indicated on the survey there is a possibility for a follow up interview.

If you are willing to participate, please sign the Informed Consent Affidavit below. The final thesis will be available to anyone who chooses to participate in the survey. It may be obtained in May of 1995, by contacting the project director at the enclosed phone number. **Please return this consent form with the completed survey. I appreciate your time and cooperation.**

Sincerely,
Shauna Reed
Evergreen Master in Teaching candidate
(206) 754-1688

Informed Consent Affidavit

I, _____, hereby agree to participate in the research project entitled **THE EFFECTS OF ALCOHOL ON THE CLASSROOM**. The purpose of this study has been explained to me. I understand that there are no possible risks to me associated with this study. I may not receive any direct benefit from participating in this study, but my participation may help teachers who interact with students who exhibit FAS/FAE. Shauna Reed has offered to answer any questions I may have about the study and to provide me with access to the final thesis document.

I understand that the person to contact in the event I experience problems as a result of my participation in this project is Les Wong, academic dean, at The Evergreen State College, L-2211, Olympia, WA 98505; phone 866-6000, ext. 6742.

I hereby agree to participate as a subject in the above-described research project. I understand that my participation in this project is voluntary, that I am free to withdraw from participation at any time, and that my choice of whether or not to participate in this project will not jeopardize my relationship with the Evergreen State College. I have read, understood and agree to the foregoing.

Participant's Signature: _____ Date: _____

APPENDIX 3

Dear Principal,

I'm writing to seek permission to survey your teachers concerning FAS/FAE. These surveys are a part of Master's thesis research, which is intended to examine the amount of information that teachers have about the subject. As a result of these surveys I hope to gather techniques that help these students to thrive and flourish in our educational system. The surveys will be anonymous and will take approximately 10 minutes to complete. If indicated on the survey there is a possibility for a follow up interview.

If you are willing to give your permission to allow teachers to participate, please sign the Informed Consent Affidavit below. The final thesis will be available to anyone who chooses to participate in the survey. It may be obtained in May of 1995, by contacting the project director at the enclosed phone number. I appreciate your time and cooperation.

Sincerely,
Shauna Reed
Evergreen Master in Teaching candidate
(206) 754-1688

Informed Consent Affidavit

*I, _____, hereby agree to participate in the research project entitled **THE EFFECTS OF ALCOHOL ON THE CLASSROOM**. The purpose of this study has been explained to me. I understand that there are no possible risks to me associated with this study. I may not receive any direct benefit from participating in this study, but my participation may help teachers who interact with students who exhibit FAS/FAE. Shauna Reed has offered to answer any questions I may have about the study and to provide me with access to the final thesis document.*

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Participant's Signature: _____ Date: _____

APPENDIX 4

1. Have you ever had a student who exhibited FAS/FAE?

YES RESPONSE--

2. Name a few characteristics that you identified in the student who you suspect exhibited FAS/FAE.

3. What methods or strategies of instruction have you used in facilitating learning with these students who you suspect exhibit FAS/FAE.

4. Which of the previous methods appeared to make a significant difference with your student?

5. Do you feel that you had adequate information as well as access to the information to deal with a student who exhibited FAS/FAE?

6. Were the methods and the strategies that you used informed by any of the following:

*library research

*trial and error

*consultants

*the student

*parents

*your local ESD

*intuition

*workshops

NO RESPONSE--

2. Name a few characteristics that you think students with FAS/FAE exhibit.

3. Do you feel that you have adequate information to deal with students who exhibit FAS/FAE?

4. Have you spent any time researching this subject area? If so did you find your information through any of the following:

*library research

*trial and terror

*consultants

*the student

*parents

*your local ESD

*intuition

*workshops

EITHER RESPONSE

Would you be interested in participating in a interest/research action group to discuss and share ideas about meeting your needs as a teacher of children who exhibit FAS/FAE and brainstorming the best practices for meeting the needs of these children and their families?

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