

**UNIVERSITY OF CALGARY**

**CANADIAN NATIVE ADOLESCENT SOLVENT ABUSE  
AND ATTACHMENT THEORY**

**by**

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## **ABSTRACT**

**The purpose of the present study was to examine the perceived patterns of attachment of three naturally occurring groups of Native adolescents – 56 solvent users, 80 poly-substance users, and 88 non-substance users - and their attachment relationships to their parents and peers as well as to explore their perception of well-being and social adaptation based on early experiences with attachment figures. Attachment characteristics were assessed using the Adolescent Attachment Questionnaire (AAQ) and the Inventory of Parent and Peer Attachment (IPPA). Perception of well-being and social adaptation characteristics were assessed using an ad hoc Solvent Abuse/Attachment Questionnaire, the Family Environment Scale (FES), the Culture-Free Self-Esteem Inventory (CFSEI-2), the Beck Depression Inventory (BDI-II), the Beck Hopelessness Scale (BHS), the State-Trait Anxiety Inventory – Form Y (STAI), and the Personality Inventory for Youth (PIY).**

**The results of the study supported the hypotheses that Native adolescents who abuse solvents would demonstrate the greatest degree of an insecure attachment pattern, show an insecure attachment towards both parents and peers, and exhibit greater degrees of maladaptive cognitive and affective difficulties, deficits in interpersonal and social skills, and higher levels of dysfunctional family characteristics and antisocial behaviour. Native adolescents who started to abuse solvents before age six were at the greatest risk of severe solvent use in their teenage years and reflecting a disorganized attachment pattern. However, as the age of onset for solvent use increased, the solvent users presented with a similar type of insecure attachment (preoccupied as opposed to**

disorganized) reported by the poly-substance users and lower levels of negative perceptions of well-being and social adaptation than those who started before age six.

Results are discussed in relation to previous studies of attachment and developmental processes thought to characterize high-risk adolescents and theoretical explanations are offered for the differences in the degree and type of insecure attachment patterns and perception of well-being and adaptation in the three groups. Finally, the implications for practice, theory, and future research are outlined.



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## CHAPTER 1

### INTRODUCTION

Of all the substances used by adolescents, inhalants, or volatile solvents, have received the least amount of attention in the literature. Groves (1990) relates that solvent use is considered to be a "low-status" way to get "high". Most solvent users are likely to be alienated, social rejects, emotionally disturbed, disadvantaged, and maladjusted. Because solvents are not illegal and do not have the excitement or appeal that other drugs have, inhalant abuse tends to get ignored. However, the abuse of solvents is a common and harmful practice by people in all age categories, although the percentage of users in the early adolescent years and marginalized groups is consistently noted to be the highest (Mason, 1979; Millar, 1991). According to Newcomb and Bentler (1989), volatile solvents are the most accessible intoxicants to juveniles and the fumes are frequently the first mood-altering substances used by children. Some researchers (Beauvais & Oetting, 1988) maintain that solvents may act as a "gateway" drug because children as young as three to four years old abuse solvents. However, despite the fact that solvent abuse has been a serious problem for years and the abuse of solvents interferes with the development of children at the most crucial stages of their development, it has only recently become a concern and focus of research (Beauvais & Trimble, 1997; Sharp, 1977).

Research suggests that inhalant abuse by Native youth is almost twice the national average for all adolescents between the ages 12 to 17 (Beauvais & Oetting, 1988). Inhalant abuse has been found among young children below the age of 12, particularly

those from Native reservations. A survey of solvent abuse among Native youth in Canada indicated that most communities are experiencing moderate to epidemic usage of solvent by their youth (Health Canada, 1993). Also, recorded rates of solvent abuse are thought to be much higher than many studies have stated for the following reasons (Oetting, Edwards, & Beauvais, 1988):

- 1) Solvent abusers have been shown to be a fairly dysfunctional group with a wide range of psychological and social problems that would include poor school adjustment and dropping out. Since many studies are surveys done on school, many solvent abusers are not interviewed and are not included in the statistical records.
- 2) Solvents may be viewed as "kid's drug" or not seen as sophisticated, therefore, many adolescents might feel embarrassed to admit using.

A brief review of the literature revealed that solvent abusers are among the most difficult and unmanageable people to deal with from a treatment perspective. Because of the numerous and severe problems (social, psychological and biological) that lead to dysfunction in a wide range of social and personal contexts, inhalant abusers tend to not do well in traditional drug treatment programs. Chronic solvent abusers are difficult to engage and most treatment programs are not equipped to deal with the intensity of problems that solvent abusers present. (Beauvais, 1992; Sharp, 1992). As a result, research is needed to investigate why solvent abusers are so difficult to treat; what makes them so unique; and how treatment programs need to be adapted for severe abusers instead of relying on traditional methods for treating substance abusers.

Attachment theory and the consequences to the individual if the appropriate emotional bonds are not established or sustained have been an area of interest in developmental and psychosocial research. Attachment theory has been used to explain the



development and potential negative behavior and intrapsychic processes of children who have been subjected to various forms of maltreatment (Carlson, Cicchetti, Barnett, & Braunwald, 1989; Cicchetti, 1987). In addition, there has been a growing acceptance that insecure attachments create a risk factor for psychopathology in later childhood and adolescence. This includes difficulties in the cognitive realm, poor social skills and dysfunctional relationships, self-harming behavior and low self-esteem (for reviews, see Cicchetti & Carlson, 1989; Greenberg, Cicchetti, & Cummings, 1990; Sroufe, 1988).

Although there has been an interest shown by researchers in the potential influence of parent-child and peer attachments on adolescent substance abuse and well-being, no research has apparently investigated the relationship of parent-child and peer attachments with solvent abusers; particularly, with Native adolescent solvent abusers. With its focus on “internal working models” and social attachment for psychosocial fitness, the attachment theory proposed by Bowlby (1969) offers a potentially unique theoretical understanding of the emotional distress, negative self-perception, and dysfunctional social correlates of Native adolescent solvent abusers’ behaviors. These insights may help researchers to identify and develop appropriate treatment programs more suited to engaging and addressing the unique social, psychological, biological and cultural issues facing solvent abusers. Furthermore, early identification and preventative procedures could play an important role in helping Native children nurture secure attachment patterns, an ability to negotiate stage-salient developmental tasks successfully and to avoid the inevitable consequences of using solvents as a way of coping with interpersonal and life stressors.

## CHAPTER 2

### LITERATURE REVIEW

#### Background

Sharp (1992) reported that volatile substances have been used as intoxicants well back into history. The practice of inhalation to produce an euphoric effect has been noted in such diverse groups as Biblical Palestinians, ancient Egyptians, early North and South American Indians, early Africans and ancient Greeks (Blum, 1984; Glowa, 1986). However, epidemiological interest in solvent abuse only began in the 1960s resulting from increasing numbers of reports of youth “sniffing” such things as model glue, lighter fluid, cleaning solutions, and propellant gases from aerosol products. Prior to the uncovering of this information in recent years, the use of solvents was thought to be a phenomenon restricted to factory workers who were exposed to volatile substances during the course of their work (Blum, 1984).

As the “sniffing” problem became more critical following several reported deaths in the 1960s, a number of attempts were made to restrict the production of toxic solvents (Sharp, 1992). However, as soon as the industry made changes in and placed community controls on the popularly abused products, another solvent would gain popularity. By the 1970s, a long list of abusable volatile chemicals was created that included cements, adhesives, paints, lacquers, thinners, and cleaning fluids. However, these products are essential to everyday functioning and therefore it has been difficult to control them, let alone be aware of all the substances that could be abused. Each year, several new solvents are created that have a high abuse potential. As a result, with the rise in the number of

volatile solvents, came an increase in the use of solvents (Espeland, 1993). Sharp and Rosenberg (1992) point out that even though inhaling solvents is one of the oldest and simplest forms of inducing intoxication, there have been limited efforts to define the basic elements of the solvent, evaluate its consequences or deal with this problem in a systematic way. Sharp and Rosenberg (1992) propose the following reasons for this failure:

- 1) The derogatory attitude towards the population of solvent abusers by both the general population and within the drug culture itself.
- 2) It is thought that the term “glue sniffing” helps to divert attention away from other forms of inhalant abuse.
- 3) Because many of the solvents being abused have been used for decades and are generally considered safe by the average user, most people would never think that their children would be sniffing deodorant or hairspray in order to get high.
- 4) From a law enforcement perspective, cocaine, amphetamines, hallucinogens, opiates and marijuana have been considered the major drugs of abuse and solvents are relegated to the status of a being a minor problem.
- 5) Hard to detect the abuse of some solvents and the purchase of solvents is not restricted or illegal.

#### Prevalence Rates

Most research studies on solvent abuse have tended to focus on impoverished minority groups (e.g., Hispanics, Native Americans, etc.) living in ghettos or isolated communities since they are considered to be at greatest risk (Smart, 1986). Beauvais (1992) reported general prevalence rates of 17% for Native Americans, 16% for Spanish Americans, 12% for Mexican Americans of 17%, and 8% for African Americans. However, certain studies reveal rates ranging from an approximate low of 1% to a high of

60% in certain populations (Addictions and Community Funded Programs, 1993; Beauvais, 1992; May, 1982). In Canada, for example, Boeckx, Postl and Coodin (1977) reported that more than 50% of the children in the community of Shamattawa had admitted to sniffing gasoline. In a study done by Angle and Eade (1975) of two Native communities in Northern Quebec, it was estimated that 63% of those between 6 and 18 years of age had sniffed gasoline. Some of the reasons given for sniffing were the high availability of gasoline, the cultural disintegration of traditional ways of life, community support for intoxication as a pastime and a lack of recreational and cultural facilities for young people.

In general, solvent abuse by Native youth is thought to be almost twice the national average for all adolescents between the ages 12 to 17 (Beauvais & Oetting, 1988). Inhalant abuse has been found among young children below the age of 12, particularly those from Native reservations. Groves (1990) stated that approximately 20% of non-Natives experiment with solvents by the time they graduate from high school. He reported that the prevalence rates are at least twice as high for many American Indian populations. A Canadian based survey of solvent abuse among Native youth indicated that most aboriginal communities are experiencing moderate to epidemic usage of solvents by their youth (Health Canada, 1993). It also suggested that in comparison to substance non-users and poly-drug users, solvent abusers are more likely to be experiencing multiple problems (e.g., death of a family member or abuse and neglect), backgrounds characterized by unstable or dysfunctional families, parental substance abuse, school-related difficulties and conflict with the law (Health Canada, 1993).

### Tolerance and Dependence

Tolerance is often defined as the need to increase the dose of a solvent to maintain the same effect or the loss of an effect at the same dose. The development of tolerance to the intoxicating effects of solvents has been well-documented (Sharp & Rosenberg, 1992; Watson, 1986). Tolerance by the central nervous system (CNS) occurs quickly and dramatically, with some researchers reporting only weeks of use being required to produce an escalating dose schedule (Ron, 1986). Inhalation can be repeated an indefinite number of times and it is likely that the rapid onset and waning of the effects that accounts for the tendency of solvent abusers to develop compulsive tendencies. Solvent abusers seek rapid, predictable change and continue to seek change (Groves, 1990).

Psychological dependence on solvents is well documented (Cameron, 1988; Clark, 1994; Fornazzari, 1988). Researchers have reported that the relapse rate among young solvent abusers is extremely high. With frequent abuse, the user acquires a craving for the psychological effects and solvent use becomes an increasingly important focus in their everyday life. Generally, punishment and other types of controls tend to deter the solvent use for only short periods of time. Solvent abusers seldom seek professional assistance on their own. Rather, most solvent abusers are forced into treatment for safety reasons by caregivers and legal authorities.

Some researchers (Beauvais & Oetting, 1988; Cameron, 1988) believe that physical dependence can result from chronic abuse of solvents. Withdrawal symptoms have been noted to occur following abrupt termination after heavy use. However, such a

response is not universal and the symptoms experienced by chronic users following termination of usage vary (Fornazzari, 1988).

### Classification of Solvents

Inhalants, or volatile solvents, are man-made chemicals never intended for human consumption and whose vapours, when inhaled, produce psychoactive effects. Chemicals such as spray paints, camping fuel, gasoline, and paint thinner are industrial chemicals that are used as a drug because of their euphoric or intoxicating properties. Other solvents that are abused include lacquer and lacquer thinner, acetone, hair sprays, spray starches, carbon tetrachloride, and aerosol products. Many of the aerosol products not only contain a conventional solvent, but also freon as a propellant. The medicinal or pharmacological chemicals that are abused include inhalable anesthetics, such as nitrous oxide. Solvents can be grouped into four basic classes: volatile solvents (e.g., gasoline, lighter fluid, paint, and nail polish), volatile nitrates (e.g., such as amyl and butyl nitrates), anesthetics (e.g., ether, chloroform, and nitrous oxide), and aerosols (e.g., hair spray, spray paints, and frying pan lubricants). It is important to note that there are many different chemicals in solvent products, all with diverse physiological effects, toxicities, and chemical properties (see Appendix A).

### Effects of Solvent Abuse

A great deal of controversy exists around whether or not chronic solvent abuse can cause permanent neurological, psychiatric, and intellectual deficits. Many researchers have indicated that prolonged use of solvents can lead to kidney, liver, lung and brain damage that can be life threatening and irreversible (Bruhn, Arlien-Soborg, Gyldensted,

& Christensen, 1981; Byrne, Kirby, Zibin, & Ensminge, 1991; Fornazzani, 1990; Zur, & Yule, 1990). Segal (1997) points out that since solvents can be highly toxic, death and severe physical damage can result from their use. However, other researchers feel that definitive conclusions regarding chronic neurobehavioural effects and psychiatric manifestations are premature (Lees-Haley & Williams, 1997; Ron, 1986).

### Acute Effects

The methods of inhalation of solvents vary depending on the product employed, but they all involve deep breathing through the nose or the mouth, often using strategies to maximize the concentration of the solvent in the inhaled air. For example many inhalant abusers will place the solvent in a bag which they place over their mouth and nose as they inhale. This increases the amount of solvent inhaled. Volatile solvents are central nervous system depressants that exert an excitatory effect on the central nervous system which is followed by a depressive phase (Morton, 1987). The general effect of abusing solvents is a rapid, general depression of the CNS, characterized by marked inebriation, dizziness, floating sensations, exhilaration, intense feelings of well being. A breakdown in inhibitions and feelings of greatly increased power and aggressiveness can also take place as well as vivid hallucinations. To the observer, the subject often shows a lack of coordination, slurred speech and impaired judgement, followed by lethargy and increased somnolence. These effects last for 30 to 45 minutes after cessation of exposure. Some degree of amnesia around the event is not uncommon after recovery.

The absorption of inhaled solvents is rapid across the large surface area of the capillaries in the lungs into the blood so that the immediate effect of solvent use is like an

intravenous injection of drugs (Watson, 1984). Because the inhaled substance moves directly to the brain and is not diluted, the effects are extremely strong. In many ways, solvent abuse symptoms can resemble those of alcohol and barbiturate intoxication with a comparatively quicker onset and a shorter duration after use (Sharp & Rosenberg, 1992). Fornazzari (1988) suggests that volatile solvents tend to accumulate in the fatty tissue such as those of the brain, heart, liver, and muscles. The passage of the solvents from these fat tissues back to the blood stream is characteristically low. This explains why there tends to be a lack of dramatic signs and symptoms of withdrawal which differentiates volatile solvents from the other psychoactive substances.

It would appear that only a minority of abusers with particularly severe and persistent symptoms require admission to hospital where neurological impairment can be observed. In a group of 20 consecutive admissions reported by King, Day, Oliver, Lush, and Watson (1981), coma was the presenting feature in five patients, epileptic convulsions in three, dysarthria in five, and ataxia in the rest. It was further suggested that severe intoxication, rather than permanent structural damage to the brain, was the cause of these abnormalities.

One significant consequence of chronic solvent abuse is what is often referred to as “sudden death syndrome”(Barnes, 1979). Death can occur from heart and lung failure, asphyxiation, paralysis of breathing mechanisms, or accidents as a result of being inebriated (Lettieri, 1990; Pagliaro & Pagliaro, 1996). In one study of the deaths reported in connection with solvent abuse (Anderson, MacNair, & Ransay, 1985), half of the deaths were attributed to accidents during intoxication with most of the rest to the cardiac



effects of the solvents, less than two percent of them to the effects of solvents on the central nervous system.

### Persistent Effects

Persistent cerebellar signs have been reported in some cases of chronic solvent abuse (Bruhn, Arlien-Soboreg, Gyldensted, & Christensen, 1981; Lindgren, Hagstadius, Abjomsson & Orbaek, 1997; Morrow, Robin, Hodgson, & Kaims, 1992). The largest series of solvent-related (i.e., toluene) cerebellar signs has been reported by Fornazzari, Wilkinson, Kapur, and Carlen, (1983) who found them in 11 out of 24 solvent abusers admitted to a Canadian drug treatment unit. Ron (1998) believes that the high frequency of cerebellar abnormalities in certain solvent abusers is likely to be related to the age of the subject (who tend to be in their twenties) and to the more severe and prolonged abuse. He further states that among the persistent neurological deficits attributed to toluene, cerebellar signs are perhaps the most common and the most convincingly described. However, only a small minority of severe abusers are affected and in milder cases cerebellar signs are clearly transient. In those cases with more persistent symptoms, improvement has been described with abstinence, although the long-term outcome is not yet known (Less-Haley & Williams, 1997; Ron, 1988).

The possibility that prolonged solvent abuse could cause permanent neuropsychological deficits has been a focus of research, and the conclusions have been mixed. For example, several researchers (Hormes, Filley, & Rosenberg, 1986; Zur & Yule, 1989) have concluded that there is no question that chronic and prolonged solvent abuse will result in multiple neuropsychological deficits (e.g., visual-spatial difficulties,

visual scanning problems, language difficulties, motor incoordination, and memory problems). However, Less-Haley and Williams (1997) warn that “methodological shortcomings in research preclude confidence in studies allegedly supporting a causal link between chronic low-dose solvent exposure and lasting neurobehavioural deficits” (pp. 699).

Ron (1988) claims that the question has not been satisfactorily answered for a number of reasons. To begin with, researchers have not distinguished between acute and chronic effects of abuse. This would require allowing for a period of abstinence before testing which most studies have failed to do. Moreover, details of the severity and frequency of abuse are often omitted, making comparisons between studies difficult. Comparative research is also precluded by the use of many different types of psychological tests which may be due, in part, to a lack of understanding which deficits are most likely to occur. The most serious methodological error outlined by Ron (1988) is the choice of inadequate control groups. For example, Barker and Adams (1963) compared 28 delinquent boys who had abused toluene with a control group from the same school. The only significant differences between the groups were in the poorer reading ability and school performance of the abusers. However, reading ability is often considered to be an indicator of premorbid IQ and the group differences may have predated the onset of solvent abuse. Also, the poor school performance by the solvent abusers may have been due to poorer attendance.

Less-Haley and Williams (1997) list some of the shortcomings of the research literature as including selection bias in recruitment of research subjects, over-reliance on

subjective recall in determining levels and duration of exposure, between-study variability in kinds of solvents examined, variability in tests selected to assess neurobehavioural functioning, and diversity in reported findings. Overall, the flaws in the available studies makes it difficult to determine whether consistent neuropsychological deficits are present in chronic solvent abusers and whether they are transient or permanent in those suspected of being impaired.

### Behavioural Patterns of Solvent Abuse

In an attempt to better understand the behaviour of solvent abusers for treatment and prevention purposes, researchers have attempted to develop various ways to classify or categorize different types of solvent abusers and their behaviours. For example, Kerner (1988) has focused on four key elements in an attempt to develop a classification system. These elements include the following: (1) the user, (2) the solvent used, (3) the context of use, and (4) the culture of use. Kerner's classification system is typical of drug user categories based on the frequency of use. Although Kerner's systems provides an easy way to organize and collect data, difficulties arise because of variations in levels of solvent use over time and measures of quantity and frequency of use are often consolidated (Lettieri, 1990).

Another method of categorizing has been outlined by McSherry (1988) who has listed three types of solvent abusers. The first type is referred to as the experimental abuser. This type of abuser has under two years of sporadic solvent use experience. There is little criminal activity and little evidence that the use of other drugs is associated with this pattern of use. Typically, the age range is between 14 and 17 years. The second type

of solvent abuser defined by McSherry is the acute abuser, described as having used solvents two to four years and at least three times a week. These individuals may have been involved in petty criminal activity. They may use other substances, but solvents are the predominant drug of choice. The age range of this type of abuser is thought to be between 17 and 21 years. The third type listed is the chronic abuser. These individuals have been using inhalants and solvents for 5 to 15 years and solvents are their drug of choice. They are psychologically and physically addicted to the use of solvents. They often experience mental and physical deterioration. Drug-related criminal activities among this group are somewhat higher level than in the others two groups. The age range of chronic abusers is between 20 and 28 years. It is estimated that the majority of the adult population seen in treatment are of the chronic abuse type.

Oetting et al. (1988) have independently defined three types of solvent abusers in the populations they have studied. The three main types are referred to as young inhalant abusers, polydrug abusers, and inhalant-dependent adults. They point out that many children start out experimenting with solvents due to curiosity about being high on a substance, because they are seeking attention or due to peer group influences. They also suggest that the ready availability of solvents is often a factor in experimentation and that solvent use provides a vicarious high when intoxicants such as alcohol and other drugs are not available. Oetting et al, (1988) relate that many young children are merely experimenting at this stage and that dependence on the solvents or needing them on a regular basis is not likely. This initial experimentation with solvents tends to be more common in peer group settings located in particular communities, neighborhoods, ethnic

groups, and schools. Oetting and Webb (1992) refer to these environmental influences as causing "hot spots" of high inhalant use. Other researchers (Remington & Hoffman, 1984; Smart, 1988) suggest that these social phenomenon can contribute to significantly high prevalence rates among school-age youths in some Native communities.

With regards to the polydrug abusers, it is proposed that as children reach their teenage years, access to and experience with other substances occurs and tends to replace solvents as vehicles of intoxication and euphoria. Oetting et al. (1988) point out that many youth who gravitate to peer clusters that emphasize the recreational use of drugs have had a past experience with solvents and may continue the use of solvents when alcohol or other recreational drugs are not available. However, although not all polydrug abusers use solvents, Oetting et al. (1988) suggest that polydrug abusers who do use solvents are at greater risk for future drug-related problems than non-solvent users.

Finally, Oetting et al. (1988) characterize the inhalant-dependent adult as socially isolated individuals who have abused solvents for many years and present as frequently high on inhalants as well as chronically intoxicated. Because their lives are focused on acquisition and consumption of solvents, they tend to have long histories of unemployment, medical or psychological problems, and serious social problems. Many inhalant-dependent adults come from disrupted, isolated, multiproblem families and generally do not achieve independence for any length of time as an adult. In the end stage of use, many find themselves in intensive medical care units with the risk of death being quite high (Anderson , MacNair, & Ransay, 1985; May & Del Vecchio, 1997).

Although attempts have been made to categorize discrete types of inhalant abusers, no widely accepted classification has yet been developed. The literature does provide a number of specific psychosocial and behavioural characteristics to examine as risk factors for solvent abusers. However, researchers seldom indicate which of the risk factors are more important for certain age groups or what potential impact the risk factors might have on psychological or developmental processes that place initial users at risk of becoming socially isolated and chronic users. Most of the survey literature deals with inhalant abusers involved in polysubstance abuse which may be a reflection of the strong research and funding interest in drug and alcohol abuse in the general population. The more detailed and analytical literature also seems to be concerned with polysubstance abuse as well as adult use (Beauvais & Trimble, 1997). There is very little explicit literature on what separates experimental users from those individuals who are at risk of becoming chronic abusers at a young age due to certain distinct vulnerabilities

#### Sociocultural Factors of Solvent Abusers

One of the more frequent findings in the literature comparing solvent abusers with other populations is that inhalant users have suffered from a greater degree of family dysfunction (Beauvais & Trimble, 1997; Morton, 1987; Segal, 1997). They are more likely to come from broken homes, families with alcohol and drug problems, and families that are characterized by conflict, discord and aggression. One study revealed that the average age when the breakup occurred for solvent-using abusers was 8-9 compared with age 14-15 for other addicts (Altenkirch & Kindermann, 1986). There also seems to be some relationship between low social economic status and solvent abuse. The highest

rates of inhalant use are found in ghettos, native reserves, and places where unemployment, low education, poverty as well as prejudice are endemic. Solvent users often have serious problems in school. Studies suggest that solvent abusers are more likely to have high absenteeism, to have been suspended, to drop out, or to have been expelled. They are also likely to have poor academic performance and lower grades (Jacobs & Ghodse, 1988).

In most studies that look at deviant behaviour, particularly in older youths, solvent users are not only more deviant than non-drug users, but are more deviant than users of other drugs. For example, Bachrach and Sandler (1985) reported on youths referred by the juvenile court for treatment of solvent abuse. Out of the 40 solvent users, 39 had been previously arrested, with a higher number of arrests for a variety of crimes other than drug use. Solvent users are also likely to get into trouble with the law earlier than users of other drugs. Altenkirch and Kindermann (1986) found that the Berlin opiate addicts who used solvents already had three offenses by the time other opiate addicts were arrested for their first offense. Among adolescent delinquents in London, on the average, the first arrest of solvent users occurred about a year and a half before the first arrest of users of other drugs (Jacobs & Ghodse, 1988).

Research so far has indicated that solvent users are a group with serious social and societal problems. But research focusing on potential of psychopathology and personal/emotional characteristics is minimal and inconsistent. Early studies suggested that solvent users suffer from greater emotional distress. For example, Fejer and Smart (1973) found that solvent users, as opposed to drug and alcohol users, had higher scores

on the Taylor Manifest Anxiety Scale, had been treated more often for emotional problems, and were more alienated. A few recent studies have looked at differences in emotional distress. Oetting et al. (1988) found that young Native solvent users showed more emotional distress than young marijuana users or controls, including depression, anxiety, feeling blamed, and anger. There is also some evidence that solvent abusers have lower self-esteem. De Barona and Simpson (1984) found they suffered from lower self-esteem and lower satisfaction with social relationships than other people their age.

Research suggests that solvent users may suffer from greater emotional distress and some solvent users may have serious personality disorders. Yet the evidence that solvent abuse is initiated as a result of a serious psychopathology is not conclusive (Gilbert, 1983). Reasonably long-standing pattern of solvent use when accompanied by other deviant behaviours, without any further information on psychological functioning, could lead to a diagnosis of personality disorder or antisocial personality disorder. An adolescent reaction to family problems that are often associated with solvent use (broken family, family hostility and aggression) could lead to a diagnosis of adjustment disorder. The idea that the diagnosis is the cause of solvent use may not be warranted. It is just as likely that the signs of emotional distress and the behaviours of the solvent user could be equally the result of the social and family problems and social environment of the solvent user. This line of reasoning is expressed well by Gilbert (1983) who argues that the "disordered existence" of solvent users predates their sniffing, as inferred from the enduring nature of predisposing social and family problems more common to solvent users.



### Peer Influences and Solvent Abuse

Peer influences play a crucial role in the process of involvement in the use and abuse of all substances. Parental influences are thought to be more important in the socialization process during preadolescence, whereas peer influences become important during adolescence (Kaminer, 1991). Kandel, Kessler, and Margulies (1978) report that susceptibility to peer influence is related to involvement in peer-related activities and to a degree of attachment and reliance on peers rather than parents. Research suggests that a lot of solvent use occurs as a socializing or group activity. It was reported in one study that three quarters of solvent use occurred with other youths. Among London delinquents, 75% of users inhaled with friends (Jacobs & Ghodse, 1988). The kinds of friends that solvent users have may be an important factor in the severity of their solvent use. However, a significant number of solvent users are very isolated or tend to have a narrower group of friends who also have a higher incidence of deviance (Gay, Meller, & Stanley, 1982). Although group use may occur, there are a significant number of chronic users who are solitary users. These solitary solvent users are often more disturbed and have more problems than group users. One study that compared group users with solitary users supported the idea of more problems among solitary users which may result in rejection by peers as well as by family and community (Guitierrez, Hernandez, & Rabago, 1978).

### Treatment and Etiology of Solvent Abuse

Solvent abusers are among the most difficult and unmanageable people to treat (Beauvais & Trimble, 1997; Jumper-Thurman & Beauvais, 1992; Smart, 1986). The

research on background and psychosocial characteristics show this group to be characterized by serious, multiple problems that lead to dysfunction in a wide range of social and personal domains. Solvent abusers present with a unique clinical profile that does not fit well within existing treatment programs. They tend to differ from other drug users, are dysfunctional in a variety of ways, and defy conventional treatment and prevention efforts. Workers in the area of prevention seem to be frustrated by what approach to use to prevent young people from experimenting with or using solvents. Since solvents are contained in numerous household and commercial products, prevention messages run the risk of introducing young people to chemicals that they may not otherwise consider (Beauvais & Trimple, 1997). As a result, treatment programs and clinical practitioners, as well as communities in general, are perplexed by the use of solvents and tend to target other abused substances for prevention and treatment. Also, established treatment programs find that solvent abusers do not fit well within existing treatment regimens and are, therefore, reluctant to admit them to their programs (Oetting & Webb, 1992). Morton (1987) related that "solvent abuse appears to be an embarrassment to children services and rather than accepting the challenge of inhalant abuse, a policy of nonintervention exists and this policy is unacceptable" (p. 449).

Presently, it appears that most treatment programs are not equipped to deal with the intensity of problems that solvent abusers bring with them (Beauvais & Trimple, 1997; Riedell, Herbert, & Byrd, 1994; Dyer, 1991). The possible motivation and causation for the deliberate inhalation of volatile substances remains unexplained and there is a void with regards to an appropriate and effective treatment model (Jumper-

Thurman & Beauvais, 1992). Several studies on solvent abuse found that treatment is difficult because most treatment centres tend to apply drug and alcohol treatment techniques with the assumption that all chemically dependent people are alike (Dinwiddie, Zorumski, & Rubin, 1987; Groves, 1990; McSherry, 1988). As early as 1979, a National Institute for Drug Abuse Monograph (Mason, 1979) outlined that when inhalant abusing patients did enter treatment, they tended to perplex the system rather than be successfully served by it. Specifically, the monograph indicated that the inhalant abusers make up the greatest dropout rate among substance abusers in treatment. It pointed out that because of the numerous and severe problems (social, psychological and biological) that lead to dysfunction in a wide range of social and personal contexts, inhalant abusers tend not to do well in traditional drug treatment programs (Beauvais, 1992; Dinwiddie, Zorumski, & Rubin, 1987; Sharp, 1992). Consequently, there is an urgent need to continue investigating the phenomenon of solvent abuse in order to try to understand the specific dynamics that would help researchers determine valid predictors of onset and course of development as well as develop a comprehensive treatment model.

One area of potential research that may lend insight into a better understanding of the etiology of chronic solvent abuse and effective treatment interventions is attachment theory. Attachment relationships and the consequences for the individual if the appropriate emotional bonds are not established or sustained is a major area of interest in developmental and psychosocial oriented research (Ainsworth & Bowlby, 1991; Armsden & Greenberg, 1987; Raja, McGee, & Stanton, 1992; Weiss, 1991). For example, attachment theory has been used to explain the development and potential negative

behaviour and intrapsychic processes of children who have been subjected to various forms of maltreatment (Carlson, Cicchetti, Barnett, & Braunwald, 1989; Cicchetti, 1987). Also, there has been a growing acceptance that insecure attachments are a risk factor for psychopathology in later childhood and adolescence, including difficulties in the cognitive realm, poor social skills and dysfunctional relationships, self-harming behaviour and low self-esteem (for reviews, see Cicchetti & Carlson, 1989; Greenberg, Cicchetti, & Cummings, 1990; Sroufe, 1988).

### Attachment Theory

Attachment theory was originally described by Bowlby (1969, 1973, 1980), combining ideas from psychoanalysis and ethnology. It was developed to explain “the many forms of emotional distress and personality disturbance, including anxiety, anger, depression and emotional detachment, to which unwilling separation and loss give rise” (Bowlby, 1977, p. 201). The term “attachment” is generally defined as “an enduring affectional bond of substantial intensity” (Armsden & Greenberg, 1987, p. 428). The central concern of attachment theory is the implication of functional and nonfunctional social attachments for psychological fitness. According to Bowlby (1969, 1988), parent-child attachment refers to an intense and long-lasting affectional bond between the parent and child. The infant is thought to be equipped at birth with species-characteristic behaviours that activate caregiver behaviour to meet needs in a sensitive and appropriate manner. This generates a subjective feeling of security in the child. Bowlby (1988) maintains that the attachment serves mainly as a buffer against internal and external stresses for the individual. A positive bond between the parent and child is considered an

essential condition for the development of a healthy individual. He notes that individuals who believe that a significant and trustworthy person is both accessible and responsive to them, will be well adjusted not only in childhood, but in adolescence and adulthood as well. The person who fills the role of the significant and trusted other, serves as a secure base for the child and adolescent, particularly in times of stress.

According to attachment theory, it is proposed that between birth and approximately six months of age, an attachment to the primary caregiver is developed. At approximately six months of age, the child is able to continue demonstrating this preference as they are better able to direct their attention as well as to seek the proximity of a specific individual. Within the first six months, it is thought that infants are developing an intense affectional bond to their primary caregiver and increasingly direct their emotions towards that person (Ainsworth & Bowlby, 1991). The development of the bond is furthered when children elicit attachment behaviour and experience varying levels of success in maintaining proximity to the primary caregiver. Such a bond leads to infants establishing internal working models of themselves, their primary caregivers, and themselves in relation to their primary caregivers (Ainsworth, 1989). The quality of the attachment relationship varies, depending on the quality of care experienced by the infant. If the emotional bond is positive and care is consistent, the working models will develop in a positive manner, and a secure attachment will result (Sroufe, 1988). These early experiences, and the relationship to which they lead, exercise important influences on later development (Sroufe, 1988).

Bowlby (1969) argues that cognitive structures or “internal working models” enable the individual to understand and anticipate events in their environment. These structures enable the individual to integrate and assimilate information and experiences relevant to the self and self-other relationships. The quality of both early and later attachments influences self-concepts as well as expectations and attitudes towards social relationships. Individuals whose primary attachment relationships in childhood were satisfying and provided emotional security view themselves as lovable, expect positive interactions with others, and value intimate relationships. Individuals who experienced rejection or harsh treatment as children view themselves as unworthy of love, expect further rejections, and act in ways that elicit rejections (Goldberg, 1991).

#### Patterns of Attachment

The attachment construct is descriptive of an organized behavioural system considered to be an integral part of every human being and “has been variously operationalized in terms of coherent patterns of behaviour which indicate the quality of the attachment bond within a relationship” (Bartholomew, 1990, p. 150). According to Bowlby (1969) the goal of the attachment system is to maintain proximity to the primary caretaker to ensure protection from external threats. However, the attachment system is prone to activation under conditions of anxiety, fear, and loss. When feeling threatened, the infant is thought to exhibit attachment behaviours designed to regain a sense of security by establishing contact with a caregiver.

To assess individual differences in the security of attachment, Ainsworth, Blehar, Waters, and Wall (1978) developed a procedure called the “Strange Situation”. This

procedure involves a series of episodes of contact, separation and reunion with the caregiver designed to observe the infant's behaviour towards the attachment figure during situations where there is increasing stress and separation anxiety. Based on the response of the infants in their study, Ainsworth et al. (1978) identified three patterns that reflect strategies used by infants to manage affective arousal during interactions with, separations from, and reunions with the caregiver. In the secure strategy, the child can readily separate from the caregiver and engage in exploratory behaviour in situations of minimal stress, he/she seeks contact in stressful situations but can return to play once comforted. In the avoidant (dismissing) strategy, the attachment system of the child is defensively suppressed so that he/she appears to be exploring without concern for security, although he/she carefully monitors the attachment figure. In the ambivalent/resistant (preoccupied) strategy, the attachment system of the child is continuously activated at the expense of the exploratory system. When to all outward appearances the child should be safe and comfortable (i.e., the attachment figure is present), the child remains unsettled upon reunion, and mixes contact-seeking behaviour with resistant behaviour such as kicking and squirming.

More recently, researchers have used the "Strange Situation" with atypical populations and have found atypical forms of attachment (Goldberg, 1993). For example, children of depressed mothers (Radke-Yarrow, Cummings, Kuczynski, & Chapman, 1985), and those who have been maltreated (Crittenden, 1985) show patterns of attachment that do not fit the traditional scheme. Main and Solomon (1986) have formalized the criteria for a fourth pattern of attachment called disorganized/disoriented,

marked by lack of a clear strategy in the strange situation. Unlike the previous patterns, which could be described as strategies, the infants in the disorganized group did not have a coherent strategy for coping with attachment-related stress. In addition, they engaged in unusual and inexplicable behaviours that only made sense if interpreted to reflect confusion or fear of the caregiver. Subsequent studies of maltreated children using this new category (disorganized/disoriented) indicated a high proportion of disorganized attachment (Carlson, Cicchetti, Barnett, & Braunwald, 1989; Crittenden, 1985; Lyons-Ruth, Connell, Zoll, & Stahl, 1987). Other researchers have found a strong association of the disorganized pattern with unresolved loss as well as an intergenerational link between extremes of parental attachment experience and extremes of attachment insecurity in the child (Main & Hesse, 1990). It may be that disorganization is a pathological form of attachment.

### Attachment Beyond Infancy

The early research on attachment has primarily focused on the concept of security of attachment in early childhood. Observational research conducted by Ainsworth et al. (1978) has demonstrated that individual differences in patterns of attachment behaviours in infancy can be reliably classified as "secure" and "insecure" (ambivalent or avoidant). Such differences have shown substantial stability under conditions of family and care-taking continuity (Ainsworth et al., 1978; Waters, 1978). Security of attachment at one year has been shown to be related to ego strength and peer and social competence in the preschool years (Arend, Gove, & Sroufe, 1979; Waters, Wippman, & Sroufe, 1979).



More recently, research has extended the study of attachment beyond early childhood and has produced evidence that patterns of attachment behaviour, once formed, tend to persist (Ainsworth, 1989; Bowlby, 1988). Sable (1992) relates that this continuity is explained in terms of inner "working models" of attachment figures and the self that the individual builds in the mind through ongoing experiences, beginning in childhood. Sable (1992) further states that these representational models include both cognitive and affective components of relationships, and are used to appraise situations and to determine plans of action. When built, they tend to become automatic and mostly unconscious, generalizing to other situations. When caregivers are available and responsive, the internal working models reflect confidence in relationships, and the person grows up self-reliant and secure in dealing with others. But if a person were to experience separation or loss experiences or certain variations in how their parents treated them (e.g., being insensitive, unresponsive, abusive, threatening to abandon or not love, failing to confirm a child's perceptions and experiences), they are apt to portray some distortions in their patterns of personality organization. The ease with which adolescents cope with the conflict involved in achieving independence from parents and identity formation appears to be critically influenced by elements of trust, mutual respect and good rapport in relationships with parents (Blos, 1979).

Ainsworth (1989) proposes that there are normative shifts in the nature of a child's attachment to parent figures beyond infancy. At some time between the child's third and fourth birthdays, he/she becomes capable of a "goal-corrected partnership" (Bowlby, 1969). Bowlby suggests that certain cognitive advances trigger this developmental phase.

Ainsworth (1989) points out that another major shift takes place with the onset of adolescence which is started by hormonal changes. This development leads the young person to begin a search for a relationship in which the reproductive and caregiving systems as well as the attachment systems are involved. Ainsworth (1989) further relates that there is reason to believe that a sense of autonomy from parents is normally achieved early in adulthood, presumably as a result of processes that operate gradually from infancy onward through adolescence. Autonomy does not imply cessation of attachments to parent figures. For example, Ainsworth (1989) relates that a person's response to the death of a parent usually demonstrates that the attachment bond has endured. For even after mourning has been resolved, internal models of the lost figure continue to be an influence.

Some of the most compelling evidence for the persistence of attachment patterns and their importance for the child's transition into adolescence and adulthood come from studies documenting intergenerational transmission of attachment (Ricks, 1985). Main, Kaplan, and Cassidy (1985) found that parents who were judged to be secure tended to value relationships and to regard attachment and related experiences as influential on personality development. Many had positive early attachment-related experiences. Those that did were distinguished from insecure parents by their readiness of recall and their ease in discussing attachment that suggested reflection and lack of defensive idealization. Parents rated as insecure-avoidant dismissed attachments as being of little importance and had difficulty remembering their past. Parents rated insecure-ambivalent seemed preoccupied with their parents and were often still enmeshed with them. The children of

each group of parents usually had attachment classifications that matched those of their mothers. A third insecure parent group had experienced the death of an attachment figure before maturity and was still in unresolved, chronic mourning. These were most frequently parents of insecure, disorganized/disoriented children.

Sroufe and Fleeson (1986) point out that there is considerable evidence as to the stability of patterns of early attachment and of continuity of development associated with these patterns. The attachment relationship endures over time and the situation despite changes in form. Behaviour at different points in time can ultimately be predicted from 12 to 18 months attachment assessments because the relationship becomes internalized in the individual's working model. The organization of behaviour with respect to the caregiver becomes transformed into an essential part of personality structure.

This does not mean that one's attachment and basic pattern of adaptation are fixed early in life and determine, in a linear way, later behaviour. Sroufe (1988) points out that Bowlby adhered to a "sophisticated sensitive period hypothesis" (p. 22). This hypothesis suggests that one's models of self, others, and relationships begin to emerge in the first year and have some firmness even before leaving infancy. They become increasingly firm as their structuring is broadened and elaborated and as they are supported by more experience. The increasing firmness of models derives from the fact that with development the child becomes more of a force in creating his/her own environment by choosing which relationships to seek out. This process is also influenced by an increasing range of experiences that may be interpreted within (assimilated to) preexisting models (Sroufe, 1988). Change can and does take place, but later experiences are not considered

to be independent of preexisting models. However, even should the relationship situation and the child change, Bowlby (1973) suggests that prior models are viewed as transformed but not erased.

### Attachment Relations in Adolescence

Predictions derived from the work of Bowlby (1969, 1973, 1980), Ainsworth (1969), and Sroufe (1979; Sroufe & Waters, 1977), as well as previous studies of infant and child development, are now being applied to the study of adolescents. Rice (1990) relates that it may be possible to predict the continuity of attachment and adaptation at later periods of the life cycle, given that attachment relations are "enduring bonds," and that attachment behaviour can be expected to change but still maintain similar meanings and goals. A small but growing body of research is concerned with adolescent-parent attachment relations, and the association between attachment and other areas of adolescent adaptation and development (e.g., Allen, Aber, & Leadbeater, 1990; Kroger & Haslett, 1988; Ryan & Lynch, 1989).

There is considerable agreement that many important developmental tasks of adolescence find their resolution within the context of family relationships. A complete account of the adolescent process should consider the organization and operation of the family, for it is the family that facilitates the adolescent's completion of developmental tasks (Constantine, 1987). As such, there has been an attempt by attachment theorists to establish adolescent attachment to parents as another important variable that facilitates adolescent development and adjustment (Kenny, 1987). For example, psychological well being in adolescents has been associated with expressing greater satisfaction with their

parents. Rosenberg (1965) found that a parental relationship characterized by warmth was associated with the teenager's self-esteem. His results have been supported by Greenberg, Siegel, and Leitch (1983) who indicated that the affective attachment of adolescents towards their parents was highly related to self-esteem and life satisfaction. On the other hand, lack of affectional identification and intimacy in communication increased the probability of delinquent behaviour (Empey, 1982). Brook, Brook, Gordon, Whiteman, and Cohen (1990) support the view that attachment is a precondition for identification with the parents' values and it increases the probability that the adolescent will model parental behaviour. Appropriate attachment also increases the likelihood that parental reinforcement of the adolescent's conventional behaviour is effective.

Brook et al. (1990) state that "the influence of the parent-child relationship on the child's peer relations is important from early childhood on and is of particular significance in adolescence, when peer-related activity, feelings, and interactions are greatly increased" (p. 113). Armsden and Greenberg (1987) reported that a significant relationship between psychological well being and perceived quality of adolescents' attachment to parents and peers existed. Adolescents securely attached to their parents compared to adolescents insecurely attached reported significantly less negative life change and higher self-esteem than the insecure group. Smith (1976) revealed that in important situations, where values and decisions about the future were required, adolescents were more likely to seek the counsel of their parents rather than their peers. Therefore, rather than a shift away from parents to peers, adolescents appear to maintain their relationship with their parents in many important situations. Brook et al. (1990)

conclude that "a strong affectionate parent-child and parent-adolescent attachment results in parents" having a greater influence on their offspring, and this condition leads the adolescent to select friends whose values match those of their parents" (p. 135). The children of authoritative (but not authoritarian) parenting are more competent, independent, and responsible in their relationships with others (Baumrind, 1971). Pulkkinen (1983) reported in his longitudinal study that children of child-centred parents were competent in social relations, responsible, and achievement oriented, whereas children of parent-centred parents dated earlier, smoke and drank earlier, and were moody, impulsive and less interested in school.

Even though attachment theory has been seen as a helpful explanation of how family relationships and interactions can significantly impact an adolescent's sense of emotional stability (Constantine, 1987; Rice, 1990), research in the area of understanding parent-adolescent relations and adolescent attachment issues has been hampered by a lack of appropriate measures. The standard instrument for measurement of attachment beyond infancy has been the Adult Attachment Interview (AAI) (George, Kaplan, & Main, 1987) which was designed to assess attachment organization in later life by investigating an adult's past and present relationships with their significant caregiver(s) through the use of a semi-structured format of inquiry. The scoring of the AAI relies on the qualitative aspects of elicited information and patterns of narrative response. The information gathered from the AAI protocol is not to be perceived as an accurate picture of childhood. Rather, it represents an adult's representational model of attachment and provides four classifications of adult attachment patterns which correspond to the patterns in infants as

determined by Ainsworth's Strange Situation procedure. Although the AAI has been used with adolescents (Adam et al., 1996; Ward & Carlson, 1995), it is somewhat awkward for research purposes in light of the fact that it is costly, has a time-consuming protocol and is time intensive for transcription and coding. Marton and Maharaj (1993) point out that there is a need for a cost-effective and efficient tool with strong validity and reliability based on the commonly used attachment classifications to further and enhance the study of attachment in adolescence.

There are number of self-report measures that have been used to assess adolescent attachment. They are the Parental Bonding Instrument (Parker, Tupling, & Brown, 1979), the Inventory of Parent and Peer Attachment (Armsden & Greenberg, 1987), and the Parental Relationship Questionnaire (Kenny, 1987). However, West, Rose, Spreng, Sheldon-Keller, and Adam (1998) point out that "none of these measures offers the possibility of direct correspondence to the most commonly used classification of attachment in later periods, as derived from the Adult Attachment Interview" (pp. 662-663). In response to this dilemma, the Adolescent Attachment Questionnaire (AAQ) was designed specifically to be easily administered and to assess the attachment characteristics of adolescents (Sheldon-Keller, West, Larose, & Adam, 1993).

West et al. (1998) propose that the common theme underlying the adverse family experiences outlined in the literature is the negative impact they have on the provision of adequate parental care and a secure environment during a child's development. Adverse family experiences are viewed as a threat to the consistent availability and responsiveness of an individual's primary attachment figure and therefore to the security of their

attachment. Both the external security of the attachment relationship, as well as the individual's internal security, are seen as essential to the developmental growth and continuity of self. Individuals who experience adverse family experiences are predisposed to develop an insecure pattern of attachment early on which becomes the template upon which an internal working model of self in relation to others is constructed. Continued lack of success in having one's attachment needs met reinforces the individual's current style of insecure attachment that West et al, (1998) propose as being operationalized by the four dimensions (perceived unavailability of the primary attachment figure, lack of a secure base, role reversal, and high angry distress) on the AAQ.

The four scales (Unavailability, Lack of a Secure Base, Role Reversal, Angry Distress) of the AAQ have demonstrated strong convergent validity with the "gold standard" for classifying attachment styles in adults, the AAI. Sheldon-Keller et al. (1993) reported that "adolescents who were classified as 'secure' according to the AAI tended to report more available responsiveness of their attachment figure (i.e., lower scores on the 'Unavailability' scale). Adolescents who were classified as 'dismissing' of attachment according to the AAI reported less need for their attachment figure (i.e., lower scores on the 'Lack of Secure Base' scale) and less tendency to assume responsibility for their attachment figures (i.e., lower scores on the 'Role Reversal' scale). Adolescents who were classified as 'preoccupied' with attachment issues according to the AAI reported higher angry distress (i.e., higher scores on the 'Angry Distress')" (p. 16). It would also appear that AAQ scales have demonstrated construct validity and offer high discriminant power, both in differentiating the normal from the clinical sample and in differentiating,



within the clinical sample, adolescents with and without a history of suicidal behaviour (West et al., 1998).

It should be noted that although the AAQ scales relate in a meaningful way to the traditional three-category AAI classification system, West et al. (1998) point out that “it would be injudicious to regard the scales as directly measuring security or insecurity in the relationship. Whereas attachment status derived from a clinical interview such as the AAI is ultimately based on an evaluation of unconscious defensive processes, self-report methodology cannot tap this important dimension. Rather, self-report questionnaires such as ours are more likely to reflect conscious evaluations of the self in relationships. Therefore, our scales should be regarded only as assessing adolescents’ perception of the available responsiveness of their attachment figure and not as an index of the security or insecurity in the relationship” (p. 670).

#### Attachment, Adaptation and Psychopathology

Numerous longitudinal results have supported the notion that chronic problem behaviours in childhood are associated with future problem behaviour, emotional instability, and delinquency in both adolescence and adulthood (Jacobson, Edelstein, & Hofmann, 1994; Mickelson, Kessler, & Shaver, 1997; Goldberg, 1991). However, the underlying cause(s) of these deficits in emotional stability have not been adequately researched. Yet the fact that the attachment classifications and related behaviours have been consistently found to remain stable throughout childhood (e.g., Main, 1990), it is highly probable that attachment type is a strong predictor of emotional security,

delinquent behaviour and psychopathology in adolescence (Van der Kolk, Perry, & Herman, 1991).

Unless secure attachment strategies are being utilized, insecure attachments involve alternative patterns of interaction: avoidant, ambivalent, or disorganized. Grossman and Grossman (1991) have argued that these differences, even if minor, appear to make a difference in the quality of a person's emotional life. It is thought that if a person using insecure attachment strategies is under pressure or stress, he/she may turn out to be more susceptible to psychological ill health. This vulnerability depends on an intricate interplay of the quality of the working models, the social-emotional support experienced by the individual in the present and current emotional stress. The specific type of psychopathology, if any, which results may also depend on the interplay of these variables (Burbach, Kashani, & Rosenberg, 1989; Mickleson, Kessler, & Shaver, 1997; Rosenstein & Horowitz, 1996; Van der Kolk, Perry, & Herman, 1991; West, Rose, & Sheldon, 1993).

### Self-Esteem

Attachment theorists have implied that there is a positive correlation between secure attachment and self-esteem. For example, Greenberg and associates (Armsden & Greenberg, 1987; Greenberg, Siegel, & Leitch, 1983) developed and utilized a self-report measure called the Inventory of Parent and Peer Attachment (IPPA) in their research on adolescent attachment and psychological well-being. They reported that the quality of affect towards parents was related to higher self-esteem and life satisfaction scores and accounted for significant additional variation in those scores over and above reported

affect toward peers and peer utilization. In a subsequent study, Armsden and Greenberg (1987) found that the quality of attachment to parents (the sum of trust and communication scores minus the alienation score from the IPPA) was positively correlated with measures of self-concept, self-esteem, life satisfaction, and healthy family environment. In regression equations, attachment to parents again accounted for significant additional variability in self-esteem and life satisfaction scores over and above variation accounted for by attachment to peers. In addition, higher scores on parent attachment were associated with adaptive emotional functioning (i.e., lower scores on depression/anxiety, resentment/alienation, irritability/angry, and guilt). The finding that attachment to parents over and above attachment to peers contributes to adolescent adjustment suggests continuity in the importance of parent-child relationships well into late adolescence.

Kobak and Sceery (1988) recruited university students to assess whether working models are or are not associated with differences in affect regulation. Representations of self and others were also tested. Self-report measures were used to gather data on perceptions of self and others. Results revealed that subjects having a secure attachment to a primary caregiver in infancy and early childhood were rated as more ego-resilient, less anxious and less hostile by peers as well as reporting little distress and high levels of social support in late adolescence.

These previous studies focused on late adolescent relationships with parents. Ryan and Lynch (1989) used samples of early, middle, and late adolescents in their study of attachment relationships and hypothesized that emotional autonomy (detachment) would

be negatively related to attachment and to aspects of adaptive adolescent functioning and development, such as separation-individualization and self-esteem. They found that emotional autonomy was significantly and negatively correlated with felt security and emotional utilization of parents, two dimensions of attachment measured by the Inventory of Adolescent Attachment (Greenberg, 1982). Emotional autonomy was negatively but not significantly associated with individualization (i.e., attachment was positively related to individualization). It was concluded that the measure of emotional autonomy does measure something that is different from individualization. Nonsignificant negative correlations were also reported between emotional autonomy and two indices of self-esteem: global self-esteem and competence. A third index of self-esteem, lovability, was significantly and negatively associated with emotional autonomy. According to these results, emotional autonomy or detachment does not afford the adolescent with any particular adaptational advantages with respect to psychological individualization or self-esteem. It is suggested that these results make sense if the measure of emotional autonomy is understood as a measure of "loss of developmentally appropriate attachments" (p. 354).

In summary, quality attachment relationships seem to exert their adaptive functions in realms of emotional and social development. Adolescents who report secure, trusting attachment relationships with their parents also report high levels of social competence, general life satisfaction, and higher levels of self-esteem.

### Identity Development

Researchers have investigated the connection between adolescent attachment and identity development. For example, Quintana and Lapsley (1987) sampled college students and examined the concurrent relations between parental control, adolescent attachment to parents, and ego identity development. Using a structural equations analysis, a positive, though nonsignificant, association was found between attachment to parents and identity development. Parental control was significantly and negatively associated with both attachment to parents and identity development. As a result, perceived parental control appeared to hinder adaptive identity exploration and also interfered with the parent-adolescent attachment relationship. The nonsignificant relationship between attachment and identity may suggest that adaptation in the form of successful identity development may not depend on a secure attachment relationship with parents.

In a more recent study, Lapsley, Rice, and FitzGerald (1990) hypothesized that secure attachment relations with parents would predict higher levels of identity development and college adjustment. It was proposed that the transition to college was a naturally occurring strange situation similar to the paradigm used by Ainsworth et al. (1978) to study attachment relations in early childhood. A cross-sectional comparison was made between freshmen and senior college students. They used the IPPA to measure attachment (Armsden & Greenberg, 1987). They also used a comprehensive college adjustment inventory that assessed academic, social, and emotional adjustment to college (Baker & Siryk, 1984), and a measure of personal and social identity (Cheek & Briggs,

1982). Personal identity was defined as one's conception of self and feelings of uniqueness; social identity referred to one's participation in social roles and relationships. It was found that certain dimensions of attachment predicted aspects of personal and social identity, and also predicted college adjustment for both groups of students. For both freshmen and upperclassmen, communication with parents was significantly correlated with personal and social aspects of identity. For freshmen, communication with parents was also correlated with academic adjustment to college. For upperclassmen, a trusting relationship with parents was significantly associated with personal-emotional college adjustment. Group differences emerged that indicated upperclassmen were more socially and emotionally adjusted than freshmen.

The association between parent-adolescent attachment and identity development is unclear and may depend, in part, on the particular measure of identity (or attachment) that is used. Also, both studies were cross-sectional and correlational, and the researchers caution that additional longitudinal research is required to address the discrepancies in results and to evaluate more fully the continuity of adaptation hypothesis with respect to identity development (Lapsley, Rice, & FitzGerald, 1990).

#### Self-Efficacy and Individualization

Several lines of research on individual correlates of deviance and delinquency in adolescence attempt to investigate aspects of adolescents' models of themselves in relationships. An adolescent's perceived self-efficacy is one correlate that has been investigated. Self-efficacy has been proposed as a substructure of a great deal of adaptive behaviour change (Bandura, 1977). Research has demonstrated links between an

adolescent's beliefs in their self-efficacy and beliefs in their control over social outcomes and their actual progress in psychotherapy and avoidance of serious problem behaviours (Schinke & Gilchrist, 1985; Weisz, 1986). Adolescents who engage in deviant behaviours may have models of themselves in social relationships in which they view themselves as less competent, less in control, and less likely to achieve desired positive outcomes. Experiences in adolescent-family interactions are a likely source of an adolescent's perceptions of their own self-efficacy in social interactions. This view is consistent with the notion that in infancy secure attachments are likely to be correlated with the infant's efficacy in meeting its needs in interactions with parental figures (Shaw & Vondra, 1993). Therefore, an attachment theory perspective would suggest that family behaviours may produce later delinquency, in part by lowering an adolescent's sense of self-efficacy in social relations.

Some researchers view the main task of adolescence as the establishment of a sense of individualization (or autonomy) in the context of supportive, close parental relationships (Allen, Aber, & Leadbeater, 1990; Blos, 1962, 1979). It is thought that throughout the separation-individualization period, adolescents progressively develop greater psychological separation from parents which is promoted by adolescents' growing physical, mental and interpersonal faculties (Blos, 1962). Adolescents who developed secure attachments with their parents meet this challenge more effectively than those who are insecurely attached (Grotevant & Cooper, 1986; Quintana & Lapsley, 1987). Allen, Weissberg, and Hawkins (1989) report that adolescents who are viewed as the most socially competent held values that reflected some autonomy from adults' values. Also, in

the area of communication, the most competent adolescents strongly valued communication with both peers and adults, norms that they also perceived adults would share. They conclude by maintaining that the optimal developmental path in adolescence involves seeking autonomy, though not at the expense of the adolescent's relationship with his/her parents.

Allen, Aber, and Leadbeater (1990) suggest that this conclusion about adolescent attachment and autonomy is important because it challenges the traditional view of problem behaviours being the natural consequence of most adolescent's natural striving for autonomy. This perspective suggests that serious problem behaviours of adolescence do not inevitably follow from adolescents' striving for autonomy. Attachment theory, along with the concept of autonomy, help explain the increase in the incidence of problem behaviours in adolescence, as well as the fact that this increase occurs only for certain groups of adolescents. However, for adolescents who are not able to express strivings for autonomy while preserving relationships, delinquency and other acting out behaviours may be a likely outlet during adolescence. Although strivings for autonomy are a normal part of adolescence, for those adolescents with insecure models of attachment, these strivings may be perceived as threatening to the parental relationship. Adolescents caught in this dilemma may rekindle existing insecurities about the emotional availability of the parents and reignite the sense of anger implicit in some adolescents' models of attachment relationships (Allen, Aber, & Leadbeater, 1990).



### Psychopathology

Attachment theory has been applied to the emerging field of developmental psychopathology (Bates & Bayles, 1988; Sroufe, 1988), with longitudinal attachment based studies of families with depression (Radke-Yarrow, Cummings, Kuczynski, & Chapman, 1985), of families with maltreatment (Cicchetti & Barnett, 1991; Crittenden, 1985; Lyons-Ruth, Connell, Zoll, & Stahl, 1987), of clinical interventions in families with low social support (Lieberman & Pawl, 1988) and with behaviour-problem children (Greenberg & Speltz, 1988).

There appears to be a complex relationship in which family attachments and interactions predict (not always in a direct way) adolescent problem behaviours and psychopathology. Attachment theory offers a model that potentially accounts for much of this relationship and suggests how family characteristics influence the problem behaviours of adolescents. Specifically, features of attachment models assessed in one-year-olds have been found to predict social competence at age five. In adulthood, features of attachment models correlate both with an individual's social competence and with his/her capacity to form secure attachment relationships with their own children (Lafreniere & Sroufe, 1985; Waters, Wippman, & Sroufe, 1979). An individual's model of attachment relationship may mediate the link between family interactions in childhood and social competence across the lifespan.

More recently, attachment theory has been seen as an explanation of hostile and antisocial behaviour that directly fits much of the available data on the correlates of adolescent problem behaviours (Cicchetti & Howes, 1991). Within attachment theory,

anger is considered a natural response of children to actual separation and loss of parental figures or to the loss that occurs with real or perceived parental rejection (Bowlby, 1973). When parental behaviours are chronically inconsistent or rejecting, it is proposed that the child experiences an almost constant state of uncertainty about the physical or emotional availability of the parent. Over time, the child in these circumstances learns a model of a relationship in which anger and insecurity are central features. Under some conditions, this anger is likely to be displaced onto other sources and result in hostile or antisocial behaviour (Bowlby, 1980; Cicchetti & Howes, 1991; Crittenden, 1985).

Hostility and insecurity in children's model of themselves in attachment relations may constitute an enduring basis of risk that leads to various age- specific manifestations of problems over the course of development (Cicchetti & Howes, 1991; Van der Kolk, Perry, & Herman, 1991). Children whose parents do not meet their needs for security and emotional support may form models of attachment characterized by the child's feelings of anger and hostility and the child's perceptions that their needs are unlikely to be met by other people in their lives. These models can then influence social behaviours throughout development. In childhood, poor family management practices have been related to childhood antisocial behaviour and to difficulty socializing with peers (Loeber & Dishion, 1983; Patterson, 1986). Insecure and angry models of attachment also have been tied to victimization in preschool and to heightened aggressiveness and noncompliance during preschool and early school-age years (Troy & Sroufe, 1981). If unchanged, these hostile and angry models of relationships may create a heightened risk of a variety of adolescent problem behaviours. Several studies provide some support for this prediction

by linking aggressiveness and noncompliance in childhood to antisocial behaviours in adolescence and beyond (Loeber & Dishion, 1983; Patterson, 1986). Current research and theory suggest that models of attachment that could be classified as avoidant or dismissing of attachment relationships and as insecure and disorganized are the two most likely to be related to hostile and antisocial behaviour in adolescence (Ainsworth, 1989; Kobak & Sceery, 1988). For example, the connection between avoidant attachment and antisocial or disruptive behaviour has been reported (Renken, Egeland, Marvinney, Mangelsdorf, & Sroufe, 1989).

Children who have been abused for many years and from an early age are thought to possibly expect the same or similar maltreatment in new relationships, and may adopt some of the same coping strategies learned at a younger age (Crittenden, 1985). The new relationships upon whom the abused children impose their internal working models may include a variety of people such as teachers, foster parents, and peers. Littner (1960) outlined a detailed account of the proclivity of emotionally disturbed children to repeat past relationship patterns in subsequent relationships. He argued that abused children bring expectations and beliefs to new relationships, often interpret the actions of new individuals in a hostile and negative manner, and then behave in ways to provoke these individuals into rejecting or abusing them.

Researchers (Carlson, Cicchetti, Barnett, & Braunwald, 1989; George & Main, 1979; Lyons-Ruth, Connell, Zoll, & Stahl, 1987; Main & Weston, 1981) have also focused on the devastating effects that parental abuse has on children. Alexander (1992) maintains that attachment theory provides a useful conceptual framework for

understanding the familial antecedents and long-term consequences of sexual abuse. She further states that “themes associated with insecure parent-child attachment (rejection, role reversal/parentification, and fear/unresolved trauma) are frequently found in the dynamics of families characterized by sexual abuse” (p. 185). Abused children become insecurely attached and develop very early in childhood dysfunctional interpersonal skills and the characteristics of their abusing parents which they carry on into adolescence.

Many of the theories and studies on the etiology of substance abuse are related to problems in the early parent-child relationship and the symptoms these problems produce (Lawson & Lawson, 1992; Pagliaro & Pagliaro, 1996). For example, Rosenstein and Horowitz (1996) attempted to identify the quality of attachment in psychiatrically ill adolescents and their mothers and to what degree dysfunctional attachments played a role in the development of adolescent psychopathology. They reported that both adolescent and maternal attachment status were overwhelmingly insecure and were highly concordant. More specifically, adolescents showing a dismissing attachment organization were more likely to have a conduct or substance abuse disorder, narcissistic or antisocial personality disorder. Mickelson, Kessler and Shaver (1997) examined the relation of four categories of disorders: mood, anxiety, substance abuse, and other disorders (schizophrenia, conduct, antisocial) to adult attachment. The authors reported that adult psychopathologies had a strong association with insecure attachment. More specifically, alcohol abuse and drug dependence were more characteristic of people with avoidant than with anxious attachments. It was reasoned that individuals who cannot express their feelings of distress to others are more likely to attempt to alter their moods with the help

of substances. This conclusion was in line with results reported by other researchers (Brennan, Shaver, & Tobey, 1991; Dozier & Kobak, 1992). Senchak and Leonard (1992) found that men with an avoidant attachment style were more likely to be heavy drinkers than men with a secure or anxious attachment style.

Rhodes and Jason (1990) report that the primary influences on adolescent drug use and severity are poor family environment and low assertiveness on behalf of the adolescent. They suggest that weak sibling and parental relationships, a lack of perceived support and encouragement, and a high degree of family problems are related to a higher level of usage. In a study of the initiation of adolescents into drug use, Kandel, Kessler, and Margulies (1978) found that a lack of perceived closeness to the father strongly predicted substance use. Although a lack of perceived closeness to the mother also predicted this result, the relationship was not as strong. Numerous other researchers using high school or college samples found that parental warmth and support and interest in the child were inversely related to drug use ( Mercer, Hundlely, & Carpenter, 1978; see Penning & Barnes, 1982, for review). Brook et al. (1990) related that a literature review strongly indicates that adolescents' attachments to parents are important in determining drug use or non-use. They conclude that these attachments may be expressed in such behavioural variables as parental affection and involvement, the adolescent's closeness to and identification with his/her parents, and the nature of the relationship between adolescent and parent. These behavioural variables in the negative inhibit a child's attachment and perceptions which in turn affect the use or non-use of substances. If parent-child relationships are close and without conflict and if the primary adolescent tie

is to the parents rather than to peers, then the adolescent is less likely to use drugs than the adolescent whose relations with parents are conflicted or detached and who turns to friends for comfort and affection.

### Attachment and Cross-Cultural Dimensions

The beginnings of cross-cultural attachment research occurred in 1954 when Mary Ainsworth carried out a short-term longitudinal field study in Uganda, a former British protectorate in East Africa. Based on this study, Ainsworth began to create the famous tripartite attachment classification system of “avoidant” (A), “secure” (B), and “resistant” or “ambivalent” (C) (Ainsworth, 1967). Van Ijzendoorn and Sagi (1999) relate that Ainsworth’s Uganda study raised some important cross-cultural issues that included: 1) the universality of the infant-mother attachment relationship and the three part attachment classification system; 2) the universality of the nomological network surrounding the concept of attachment; and 3) the culture-specific or contextual dimension of attachment development. The Uganda study also showed for the first time that the decisive factors for attachment security were not the number of caretakers. Rather, it was the continuity and quality of the mother-infant interactions (Robertson & Robertson, 1971).

Since Ainsworth’s famous study, van Ijzendoorn and Sagi (1999) point out that most cross-cultural attachment research has attempted to apply Bowlby’s conceptualization of attachment and Ainsworth’s operationalization of attachment to various non-Western cultures. This is often referred to as an “etic” approach since an emphasis is placed on theories and assessments that have been developed in a specific culture (most often a Western society) which are then applied in other cultures to test

whether the concepts being tested are really cross-culturally valid rather than culture specific. An alternative approach is the “emic” approach that focuses on social and behavioural aspects and developmental trajectories that are specific to the culture and tries to understand the culture from within its own frame of reference (Berry, 1969; Jackson, 1993). A possible reason for the focus on the “etic” approach may be the ethological foundation of attachment theory as espoused by Bowlby (1969) where he suggested that the information of an attachment relationship between infants and their protective caregivers is the outcome of evolution. As a result, a core tenant of attachment theory is the idea of the universality of this bias in infants to become attached, regardless of their specific cultural background.

In response to the universality thesis of an innate bias, Hinde and Stevenson-Hinde (1991) point out that it does not follow that the development of attachment is insensitive to culture-specific influences. They suggest that the evolutionary perspective allows for globally adaptive behavioural traits that are realized in a specific manner unique to the culture the child has to survive in. For example, if a certain culture requires the suppression of negative emotions, infants may develop an avoidant attachment pattern in order to adapt to this cultural demand. The avoidant attachment pattern may be considered normative in the sense that it promotes inclusive fitness and general adaptation in that particular culture. Therefore, the universality thesis predicts only that attachment bonds will be established in any known culture, regardless of the child-rearing arrangements and family constellations. It does not imply that one of the three principal attachment patterns is universally normative (Belsky & Nezworski, 1988; Main, 1990).

In an attempt to assess whether or not attachment theory is just a middle-class Western invention with no relevance to other cultures, van Ijzendoorn and Sagi (1999) reviewed numerous cross-cultural attachment studies in non-European and non-Anglo-Saxon cultures. They stated that “our analysis and integration of cross-cultural attachment research suggests a balance between universal trends and contextual determinants” (van Ijzendoorn and Sagi, 1999, p. 730). It is suggested that contextual components need to be considered since if all infants used the same fixed strategies to deal with attachment challenges, it would leave no room for adaptation to dynamic changes of the environment. Their study also indicated that the three basic attachment patterns – avoidant, secure, and ambivalent – can be found in every culture in which attachment studies have been conducted. What seems to be universal are the general cultural pressure towards selection of a secure attachment pattern in the majority of children and the preference for the secure child in parents across cultures. Harwood, Miller, and Irizarry (1995), complement this conclusion in reporting that across cultures, experts as well as mothers interpret attachment security in a similar manner and they also appear to evaluate it in the same way, although the reason for their preference of secure instead of insecure attachments may be different.

#### Rationale of the Study

Many of the conclusions found in attachment research that has focused on the relation of attachment processes to the development of psychopathology beyond childhood are consistent with the developmental pathways perspective in which internal working models of attachment, guiding patterns of behaviour, and affect regulation, give



rise to attachment strategies. These attachment strategies produce differential vulnerability to psychopathology (Rosenstein & Horowitz, 1996). In the study of the etiology of chronic solvent abuse, it seems plausible to examine early attachment history and disrupted affectional bonds in an empirically sound manner in order to determine if these factors are relevant or basic to the etiology of chronic solvent abuse. Although there has been an interest shown by researchers as to the potential influence of parent-child attachments on adolescent substance abuse and well being (Allen, Aber, & Leadbeater, 1990; Kwakman, Zuiker, Schippers, & Wuffel, 1988), this research does not differentiate between different types of substance abusers (e.g., chronic solvent abusers as opposed to alcohol or marijuana users). With its focus on "internal working models" and social attachments for psychological fitness, the attachment theory proposed by Bowlby (1969) offers a potentially unique theoretical understanding of the emotional distress, negative self-perception, dysfunctional social skills and antisocial behaviours that directly fit much of the available correlational data on adolescent solvent abusers' behaviours. These insights would help researchers to identify chronic solvent abusers and to develop appropriate treatment programs more suited to engaging and addressing the unique social, psychological and biological issues facing solvent abusers. In addition, early identification and preventative procedures could play an important role in minimizing the impact that social and societal problems may have on potentially insecurely attached individuals who might be at risk of abusing solvents.

The purpose of the present study was to examine the pattern of attachment of each of the subjects in the three naturally occurring groups (solvent users; poly-substance

users; and substance non-users) of Native adolescents and their attachment relationships to their parents and peers as well as to explore their perception of well-being and social adaptation based on early experiences with attachment figures.

In this study, the following hypotheses were stated:

1. The solvent users will be significantly more likely than the poly-substance users and the substance non-users to demonstrate the greatest degree of insecure attachment (operationalized as a greater perception of unavailability of the attachment figure, high angry distress, limited sense of responsibility for the parent's well-being and lack of a secure base on the AAQ).
2. The solvent users, unlike the poly-substance users and substance non-users, will show insecure attachment towards both parents and peers (operationalized as greater perception of non-communication, alienation and lack of trust towards father, mother and peers on the IPPA).
3. The solvent abusers will be significantly more likely to exhibit a greater degree of maladaptive cognitive and affective characteristics followed in turn by the poly-substance users and then the substance non-users.
4. The solvent abusers will be significantly more likely to exhibit a greater degree of interpersonal difficulties and social skills deficits followed in turn by the poly-substance users and then the substance non-users.
5. The solvent abusers will be significantly more likely to exhibit a greater degree of dysfunctional family characteristics and antisocial behavior followed in turn by the poly-substance users and then the substance non-users.

## CHAPTER THREE

### METHOD

#### Subjects

The subjects for this study were obtained through a “designated contact” who had been briefed on the research protocol at the junior and senior high schools on the Sarcee and Blood reserves and the following treatment centres: 1) Scheshashit Addiction Treatment Center; 2) Williams Lake Addiction Treatment Center; 3) White Buffalo Treatment Center; 4) Whiskey Jack Addiction Treatment Center; 6) Stoney Medicine Lodge; and 7) Aisokina Addictions Centre. A visit was made to each recruiting site where a meeting with potential subjects was arranged through the contact person. The writer also hired a Native assistant, fluent in the Native languages of the subjects and trained to administer the research protocol, in order to accommodate subjects who might need help in their Native language around interpretation and understanding the questions being asked of them. For those subjects who consented to participate, the purpose of the study, the voluntary nature of participation, and the limits of confidentiality throughout the course of the study were explained. The subjects were also informed of their right to withdraw from the study at any time and of the independence of the study from the treatment process they were involved in, if relevant.

The participants in this study were 224 Native adolescent volunteers in the age range of 12 to 18 years. Subjects were interviewed and divided (as outlined in the specified criteria below) into three groups that consisted of 88 substance non-users, 80 poly-substance users and 56 solvent users. The substance non-users were obtained from

the junior and senior high schools on the Sarcee and Blood reserves. The poly-substance using and solvent using subjects were obtained from the following addiction treatment centers: 1) Scheshashit Addiction Treatment Center; 2) Williams Lake Addiction Treatment Center; 3) White Buffalo Treatment Center; 4) Whiskey Jack Addiction Treatment Center; 6) Stoney Medicine Lodge; and 7) Aisokina Addictions Centre.

The substance non-using group consisted of 40 female and 48 male subjects. Subjects were eligible for inclusion in the substance non-using group if they were between 12 to 18 years of age and had abstained from any and all recreational alcohol and chemical use. The poly-substance using group consisted of 33 female and 47 male subjects. Subjects were eligible for inclusion in the poly-substance using group if they were between 12 to 18 years of age and met the DSM-IV (1994) criteria for substance abuse or dependence. Finally, the solvent using group consisted of 22 female and 34 males subjects. Subjects for the solvent using group were eligible for inclusion if they were between 12 to 18 years of age and met the DSM-IV (1994) criteria for inhalant abuse or dependence (i.e., solvents needed to be their primary substance of choice).

### Psychological Instruments

In order to examine the pattern of attachment of each of the subjects in the three naturally occurring groups (solvent users; poly-substance users; and substance non-users) of Native adolescents and their attachment relationships to their parents and peers, the Adolescent Attachment Questionnaire (AAQ) and Inventory of Parent and Peer Attachment (IPPA) were used. Exploring the subject's perception of well-being and social adaptation was accomplished through the administration of the Family

Environment Scale (FES), Culture-Free Self-Esteem Inventory – Second Edition (CFSEI-2), Beck Depression Inventory – Second Edition (BDI-II), Beck Hopelessness Scale (BHS), State-Trait Anxiety Inventory – Form Y (STAI), and Personality Inventory For Youth (PIY). Also, a research questionnaire was designed and administered to gather sociodemographic and epidemiological information relevant to each of the subject's perception of well-being and social functioning.

Solvent Abuse/Attachment Questionnaire (see Appendix B)

The questionnaire was created by the writer in order to gather sociodemographic and epidemiological information related to early attachment experiences affecting family dynamics, substance abuse patterns, academic history and factors affecting a person's perception of well-being and self-perception.

Adolescent Attachment Questionnaire

The Adolescent Attachment Questionnaire (AAQ) is a 20-item self-report questionnaire consisting of four scales (Unavailability, Lack of a Secure Base, Role Reversal, Angry Distress) that assess an adolescent's current perception of their relationship with their attachment. The AAQ is based on dimensions identified as relevant to defining the three potential (secure and insecure - avoidant, ambivalent) patterns of parent-adolescent attachment. Following Loevinger's (1957) construct-oriented approach to scale development, the scales of the AAQ were derived a priori from theoretical considerations rather than through post-hoc statistical manipulations such as factor analysis.

Subjects are asked to answer questions about their relationship with their attachment figure who is defined as the person who was their primary caregiver from the time they were born to age five. The four scales define the behaviours and affect of the caregiver-adolescent attachment. The Unavailability scale assesses the extent to which the attachment figure is viewed as reliably accessible. The Lack of a Secure Base scale measures the extent to which the adolescent feels secure in the absence of the caregiver. The Role Reversal scale evaluates the adolescent's sense of responsibility for the attachment figure's well-being. Finally, the Angry Distress scales measures the adolescent's negative affect responses to the perceived unavailability of the attachment figure. Each scale item (five in each scale) is rated with a five point Likert-scale response format from strongly disagree (1) to strongly agree (5). Summation scores for each scale are produced. Higher scores for each scale reflect greater insecurity with respect to the attachment characteristic being measured (Sheldon-Keller, West, Larose, & Adam, 1993).

Statistical analyses was used to refine and confirm the psychometric strength of the theoretically-based scales (Sheldon-Keller et al., 1993). Internal consistency across the scales of the AAQ was demonstrated by Cronbach's alpha coefficient ranging from .66 to .90 over two sets of adolescent subjects: a sample of normal adolescents (n=777) and a subsample of clinical adolescents (n=133). Test-retest reliability of the AAQ for the sample of normal adolescents ranged from .72 to .82 over a four week period (Sheldon-Keller, West, Larose, & Adam, 1993).

### Inventory of Parent and Peer Attachment

Attachment to parents and peers was assessed using the Inventory of Parent and Peer Attachment (IPPA) which was developed by Armsden and Greenberg (1987). The IPPA was developed in order to assess the positive and negative affective/cognitive dimension of adolescents' relationships with parents and close friends as well as how well these figures serve as sources of psychological security. The instrument is a self-report questionnaire with a five-point Likert-scale response format. The IPPA consists of 28 parent and 25 peer items, yielding two attachment scores. Attachment on the IPPA is measured by three subscales: quality of communication, degree of mutual trust, and extent of alienation. The IPPA is scored by reverse-scoring the negatively worded items and then summing the response values in each section. The item content for the IPPA was selected from an original pool of items suggested by Bowlby's theoretical formulations (Armsden & Greenberg, 1987) based on the "nature of feelings towards attachment figures" (p. 5). Armsden and Greenberg (1987) report internal reliability of .87 for mother attachment, .89 for father attachment and .92 for peer attachment.

### Family Environment Scale

The Family Environment Scale (FES) is a 90-item true-false instrument designed to measure the social-environmental attributes of various kinds of families. The FES contains ten subscales which are designed to appraise these attributes and assess the following three underlying domains: 1) the relationship dimension - cohesion, expression, and conflict; 2) the personal growth dimensions - independence, achievement orientation, intellectual-cultural orientation, active-recreational orientation, and moral-religious; and

3) the system maintenance dimensions - organization and control. Moos and Moos (1994) reported internal consistency reliabilities for the subscales ranging from .61 to .78 and 2-month test-retest reliabilities ranging from .73 to .86.

### Culture-Free Self-Esteem Inventory – Second Edition

The Culture-Free Self-Esteem Inventory – Second Edition for Children (Form A) (CFSEI-II) (Battle, 1981). It is a 60-item self-report inventory measuring self-esteem. Four sub-scales measure an individual's perception of self, peers, parents, and school. A 5th subscale, a lie scale, is a measure of defensiveness. The respondent checks each item as either "Yes" or "No". The SEI (Form A) was standardized on elementary school children in grades three to six, and junior high-school students in grades seven to nine. Additionally, it has been used with high-school students. Test-retest (48hr.) reliability for the total sample (n=198), males, and females in grade three through to six on Form A ranged from .81 to .89, .72 to .93 and .74 to .87, respectively (Battle, 1976).

### Beck Depression Inventory- Second Edition

The Beck Depression Inventory- Second Edition (BDI-II) (Beck, Steer, & Brown, 1996) is a clinically derived self-report measure which consists of 21 items relating to affective, cognitive, motivational, and physiological symptoms of depression. Each item consists of four statements reflecting increasing depressive symptomatology. Statements are ranked from 0 to 3, with 0 being the least serious and 3 representing the most serious. In terms of readability, the BDI-II requires a fifth-grade reading level making it readily comprehensible to an average adolescent aged 13 to 16. The original BDI and the BDI-II have been validated as reliable self-report measures of depression in both clinical and



nonclinical samples (Baron & Perron, 1986; Beck, Steer, & Brown, 1996; Beck, Steer, & Garbin, 1988; Ehrenberg, Cox, & Koopman, 1990; Strober, Green, & Carlson, 1981).

### Beck Hopelessness Scale

The Beck Hopelessness Scale (BHS) (Beck & Steer, 1988) is a self-report instrument that consists of 20 true-false statements that assess the extent of the negative expectancies about the future and is scored by summing the keyed responses of hopelessness for each of the 20 items. The possible range of total scores is from 0 to 20. Steer, Kumar, and Beck (1993) reported that the Beck Hopelessness Scale was effective for measuring hopelessness with adolescent subjects. The internal consistency is high ( $KR-20 = .86$ ).

### State-Trait Anxiety Inventory

The State-Trait Anxiety Inventory (Form Y-I) (STAI) (Spielberger, 1983) is a 40-item measure of two distinct but related anxiety concepts. The Trait Anxiety (T-Anxiety) scale consists of 20 statements that ask about general feelings and assess relatively stable differences in anxiety proneness. State Anxiety (S-Anxiety) refers to transitory, emotional state characterized by feelings of tension and apprehension which fluctuate and vary in intensity. The 20 items of the S-Anxiety scale rate the intensity of anxious feelings at a particular moment on a four point scale (from "not at all" to "very much so. Alpha reliability coefficients on a sample of high school students range from .86 to .95 for the S-Anxiety scale and .90 to .91 for the T-Anxiety scale (Spielberger, 1983).

Test-retest correlations for the T-Anxiety scale range from  $r = .65$  to  $r = .86$ .

Lower levels of stability for S-Anxiety are thought to be expected for a measure designed

to be influenced by situational factors. Correlations between the T-Anxiety and the S-Anxiety scales of the STAI vary between  $r = .64$  and  $r = .70$  for females and between  $r = .59$  and  $r = .75$  for males.

### Personality Inventory For Youth

The Personality Inventory for Youth (PIY) (Lachar & Gruber, 1993) is a self-report inventory that assesses emotional and behavioural adjustment, family interaction, and school and academic functioning. It is composed of 270 items covering nine overlapping clinical scales (cognitive impairment, impulsivity/distractibility, delinquency, family dysfunction, reality distortion, somatic concern, psychological discomfort, social withdrawal, and social skills deficits) and 24 nonoverlapping subscales (poor achievement and memory, inadequate abilities, learning problems, brashness, distractibility and overactivity, impulsivity, antisocial behaviour, dyscontrol, noncompliance, parent-child conflict, parent maladjustment, marital discord, feelings of alienation, hallucinations and delusions, psychosomatic syndrome, muscular tension and anxiety, preoccupation with disease, fear and worry, depression, sleep disturbance, social introversion, isolation, limited peer status, and conflict with peers). The 24 subscales reveal more specific clinical content. In addition, four validity scales help determine whether the respondent is uncooperative or is exaggerating, malingering, responding defensively, carelessly, or without adequate comprehension. It is written at a third-grade reading level and can be completed in 45 minutes. The PIY was developed on the research of the Personality Inventory For Children which is a widely used and highly regarded parent-report scale.

### **Procedure**

If a subject agreed to participate, they were asked to sign the consent form (Appendix C) (one for the participant and one for the researcher) and the legal guardian was contacted in order to obtain verbal permission as well as written consent. Once parental consent had been obtained, the writer (and Native research assistant) interviewed the subjects and administered the Personal Experience Screening Questionnaire to make sure the acceptance criteria for the various groups had been met. In the case of the subjects referred as poly-substance users and solvent users, in-depth questions were asked about their substance use patterns to evaluate whether or not they met the criteria for substance abuse/dependence or inhalant abuse/dependence found in DSM-IV (1994).

Subjects meeting the criteria were asked to complete the Solvent Abuse/Attachment Questionnaire (see Appendix B - information about family relationships, history of abuse, academic problems, caregiver and relational issues etc.) and inventories - IPPA, AAQ, FES, CFSEI-II, BDI-II, BHS, STAI, PIY. The ad hoc Solvent Abuse/Attachment Questionnaire and inventories were administered by the researcher (or Native research assistant) in the privacy of an interview room to address any problems or misunderstandings that might arise. The average time needed for filling out the questionnaire and inventories was approximately two hours. The results of the questionnaire and inventories were collected for each group and compiled for data analysis.

### Statistical Analyses

Descriptive statistics for the three groups was calculated for the data collected from the research questionnaire and inventories. ANOVA was performed to determine any between group differences. All significant F-ratios were subjected to the Newman-Keuls post hoc procedure.

### Ethical Considerations

Participation in this study was entirely voluntary and based upon informed consent. Informed consent consisted of the subject and the parent/guardian signing a written consent form which outlined the objectives and nature of the study, the limits of confidentiality and the voluntary nature of participation. In order to safeguard the anonymity of the participating subjects, they were asked not to record their name on any of the research forms or inventories. The consent forms were separated and the completed research forms and inventories from the subjects were identified with a number code to ensure responses remain unidentifiable for the purposes of data analysis. This study did not involve physically invasive procedures or purposes hidden from the participants. Prior to data collection, confirmation of ethical approval was sought and obtained. Results produced from the data analyses are reported in aggregate form only.

## CHAPTER FOUR

### RESULTS

#### Sociodemographic Variables

The three naturally occurring groups (SU: solvent users, PSU: poly-substance users, and NSU: non-substance users) were compared on a number of sociodemographic variables: age, gender, family status, marital status of the subject's parents, primary caregiver (up to age six), number of caregivers (during first five years and total), number of times client was relocated, number of best friends, number of perceived important people in their lives, number of family deaths, age that substances (solvents, alcohol, and drugs) were first used and regularly used, degree of substance use, who introduced them to solvents or substances, pattern of usage (alone, with others, etc.), number of friends and siblings who use solvents or substances, parents/guardians who use substances, number of delinquent acts, number of assaults or aggressive behaviour, number of medical problems, attitude towards school, number of grades held back and schools attended, suicidal ideation, and whether or not the subject had been sexually or physically abused.

#### Demography of the Total Sample

The mean age of the total sample was 14.69 years (standard deviation = 1.86 years). There were 98 (43.8%) female adolescents and 126 (56.2%) males. In terms of family status, 41.1% (n = 92) reported coming from a biologically intact family, 34.4% (n = 77) acknowledged coming from a single-parent family, 21.9% (n = 49) listed coming from a blended/step family, and 2.7% (n = 6) related that they were not residing with

either of their parents. With regard to the marital status of the subject's parents, 41.1% (n = 92) reported that their biological parents were still married, 29.9% (n = 67) acknowledged that their biological parents were separated or had been divorced, 25.9% (n = 58) related that their biological parents had never married, and 3.1% (n = 7) listed that their biological parents lived common-law. When asked who they considered to be their primary caregiver up to age six, 26.3% (n = 59) reported that their primary caregiver was their mother, 3.6% (n = 8) listed their father as their primary caregiver, 42.4% (n = 95) related that they considered both their parents to be their primary caregiver, 14.3% (n = 32) felt that their grandparent(s) were their primary caregiver, 1.3% (n = 3) related that a step-parent was their primary caregiver, 2.2% (n = 5) noted that they considered an adoptive parent to be their primary caregiver, 7.1% (n = 16) listed an extended family member as their primary caregiver and 2.7% (n = 6) reported having no significant caregiver.

#### Sociodemographic Comparison of the Three Naturally Occurring Groups

The gender and age distribution of the Native adolescents by group classification is given in Table 1. There was no significant gender difference between the three groups as determined by a  $\chi^2$  analysis [ $\chi^2 (2) = .93, p < .627$ ]. The group comparisons of mean ages were examined using ANOVA. The results revealed that there was a significant difference in the mean age between certain groups [ $F(2,221) = 15.64, p < .0001$ ].

Table 1. Distribution of Gender and Age by Group

		GROUPS			
SU		PSU		NSU	
<u>Gender</u>					
n	Male 33	Female 23	Male 47	Female 33	Male 46
%	(58.9%)	(41.1%)	(58.85)	(41.3%)	(52.3%) (47.7%)
<u>Age</u>					
M	14.53		15.53		14.03
SD	1.47		1.84		1.84

SU Solvent Users

PSU Poly-substance Users

NSU Non-substance Users

Newman-Keuls post hoc analysis indicated that although the NSU and SU were not significantly different from each other, the PSU had a significantly higher mean age than both these groups.

With regards to the comparison of the three SU sub-groups (EC, LC, and AD) to the PSU group and NSU group (see Table 2), there were no significant gender differences as determined by a  $\chi^2$  analysis: EC [ $\chi^2 (2) = 1.06, p < .588$ ]; LC [ $\chi^2 (2) = 1.56, p < .458$ ]; and AD [ $\chi^2 (2) = 1.55, p < .460$ ].

The family status, marital status of the subject's parents and who the subject's primary caregiver was up to age six as well as the reported number of caregivers up to age five and the total number of caregivers to date distribution of the participants by group classification are given in Table 3. Significant differences were noted among the three groups with regard to the subjects' family status [ $\chi^2 (6) = 34.64, p < .0001$ ], the marital status of their parents [ $\chi^2 (2) = 10.97, p < .004$ ] and who the subject's primary caregiver was up to age six [ $\chi^2 (14) = 79.62, p < .0001$ ].

As can be seen in Table 3, the subjects from the NSU group reported a higher percentage of belonging to a biologically intact family than the PSU group who in turn reported a higher percentage than the SU group. Subjects of the PSU group reported a higher percentage of coming from single-parent families than the SU group who in turn reported a higher percentage than the NSU group. Finally, the SU group reported a higher percentage than both the PSU group and the NSU group of coming from a blended/step family. It should be noted that 10.7% of the subjects from the SU group



Table 2. Distribution of Gender by Sub-Group

		SUB-GROUPS					
EC		LC				AD	
Gender	Male	Female	Male	Female	Male	Female	
n	16	10	12	6	5	7	
%	(61.5%)	(38.5%)	(66.7%)	(33.3%)	(41.7%)	(58.3%)	

EC    Early Childhood (ages 1 to 5)  
 LC    Late Childhood (ages 6 to 10)  
 AD    Adolescence (ages 11 to 18)

Table 3. Numbers and Percentages of the Demographic Variables in the Three Naturally Occurring Groups (SU, PSU, and NSU).

Category	GROUPS						$\chi^2$	df	p <
	SU		PSU		NSU				
	n	%	n	%	n	%			
Family Status	56	25.0	80	35.7	88	39.3	34.64	6	.0001
Biologically Intact	14	25.0	28	35.0	50	56.8			
Single-Parent	21	37.5	36	45.0	20	22.7			
Blended/Step	15	26.8	16	20.0	18	20.5			
Other (e.g., PGO)	6	10.7	-	-	-	-			
Marital Status	56	25.0	80	35.7	88	39.3	10.97	2	.004
Married	19	33.9	25	31.3	48	54.5			
Other (e.g. divorced)	37	66.1	55	68.8	40	45.5			
Primary Caregiver (6)	56	25.0	80	35.7	88	39.3	79.62	14	.0001
Mother	8	14.3	33	41.3	18	20.5			
Father	-	-	2	2.5	6	6.8			
Both Parents	13	23.2	24	30.0	58	65.9			
Grandparent	17	30.4	9	11.3	6	6.8			
Step-Parent	1	1.8	2	2.5	-	-			
Adoptive Parent	3	5.4	2	2.5	-	-			

Category	GROUPS						$\chi^2$	df	p <
	SU		PSU		NSU				
	n	%	n	%	n	%			
Extended Family	9	8.9	7	8.8	-	-			
Other (PGO, etc.)	5	8.9	1	1.3	-	-			
Degree of Use	56	41.2	80	58.8	-	-	12.95	2	.002
Severe	34	60.7	27	33.8	-	-			
Moderate	7	12.5	30	37.5	-	-			
Minimal	15	26.8	23	28.8	-	-			
Introduced By	56	41.2	80	58.8	-	-	1.84	1	<.174
Adults	29	51.8	32	40.0	-	-			
Peers	27	48.2	48	60.0	-	-			
Pattern of Use	56	41.2	80	58.8	-	-	41.68	2	<.0001
Alone	23	41.1	-	-	-	-			
Alone/With Others	19	33.9	33	41.3	-	-			
With Others	14	25.0	47	58.8	-	-			
Friends Who Use	56	25.0	80	35.7	88	39.3	75.17	8	<.0001
None	-	-	1	1.3	14	15.9			
A Few	8	14.3	12	15.0	39	44.3			
Some	8	14.3	22	27.5	24	27.3			

Category	GROUPS						$\chi^2$	df	p <
	SU		PSU		NSU				
	n	%	n	%	n	%			
Most	20	35.7	25	31.3	10	11.4			
All	20	35.7	20	25.0	1	1.1			
Siblings Who Use	49	87.5	70	87.5	20	22.7	95.20	2	<.0001
Parents Who Use	42	75.0	60	75.0	5	5.7	102.89	2	<.0001
Suicidal Ideation	40	71.4	42	52.5	23	26.1	29.77	2	<.0001
Sexually Abused	17	30.4	21	26.3	1	1.1	27.08	2	<.0001
Physically Abused	44	78.6	42	52.5	4	4.5	85.88	2	<.0001
Attitude – School	56	25.0	80	35.7	88	39.3	47.36	2	<.0001
Poor	31	55.4	35	43.8	5	5.7			
Good	25	44.6	45	56.3	83	94.3			

reported not having any family status at all which would imply that they were being cared for by an extended family member, Child Welfare or some other institution.

With regard to marital status, the NSU group reported having a higher percentage of having parents who were married than either the PSU group or SU group. In the category of having non-married parents (e.g., separated, divorced, never married, living common-law, etc.), the PSU group reported a percentage that was slightly higher than the SU group and the NSU group reported the lowest percentage.

Data gathered on who the subjects from the three groups considered to be their primary caregiver up to age six revealed that the PSU group reported the highest percentage of perceiving their mother as the primary caregiver with the NSU group being next and the SU group reporting the lowest. In the category where the father was considered to be the primary caregiver, the three groups reported the following: NSU group - 6.8 %, PSU group - 2.5% and SU group - 0%. When both parents are acknowledged as the primary caregiver, the NSU group reported the highest percentage with the PSU group being the next closest and SU group reporting the lowest percentage. When the primary caregiver is considered to be a grandparent, subjects from the SU group reported the highest percentage with the PSU group reporting the next closest percentage and the NSU group acknowledging the lowest percentage. Four other categories were offered as potential choices for a primary caregiver to which the three groups reported the following percentages: step-parent – SU (1.8%), PSU (2.5%), NSU (0%); adoptive-parent – SU (5.4%), PSU (2.5%), NSU (0%); extended family – SU

(16.1%), PSU (8.8%), NSU (0%); and other (TGO or PGO status with Child Welfare) – SU (8.9%), PSU (1.3%), NSU (0%).

With regards to the comparison of the three sub-groups (EC, LC, and AD) of the SU group to the PSU group and NSU group, the family status, marital status of the subject's parents and who the subject's primary caregiver was up to age six distribution of the participants by group classification are given in Table 3 and 4. Significant differences were noted among the three sub-groups when compared to the PSU group and NSU group with regard to the subjects' family status: 1) EC [ $\chi^2 (6) = 62.10, p < .0001$ ], 2) LC [ $\chi^2 (4) = 16.32, p < .002$ ], and 3) AD [ $\chi^2 (4) = 11.22, p < .024$ ]; the marital status of their parents: 1) EC [ $\chi^2 (2) = 24.61, p < .0001$ ], 2) LC [ $\chi^2 (2) = 9.51, p < .009$ ], and 3) AD [ $\chi^2 (2) = 13.66, p < .001$ ]; and who the subject's primary caregiver was up to age six: 1) EC [ $\chi^2 (14) = 94.26, p < .0001$ ], 2) LC [ $\chi^2 (14) = 48.15, p < .0001$ ], and 3) AD [ $\chi^2 (14) = 41.42, p < .0001$ ].

As can be seen in Tables 3 and 4, the subjects from the NSU group and AD sub-group reported similar and yet, significantly higher percentages of belonging to a biologically intact family than the PSU group and LC sub-group who in turn reported similar percentages that were significantly higher than the EC sub-group. Subjects of the EC sub-group reported a higher percentage of coming from single-parent families than the PSU group who in turn reported a higher percentage than the NSU group, LC sub-group and AD sub-group who all reported similar percentages. Finally, the LC sub-group reported a higher percentage coming from a blended/step family than the EC

**Table 4. Numbers and Percentages of the Demographic Variables in the Three Sub-Groups (EC, LC, and LD).**

Category	SUB-GROUPS					
	EC		LC		AD	
	n = 26		n = 18		n = 12	
	n	%	n	%	n	%
<b>Family Status</b>						
Biologically Intact	1	3.8	6	33.3	7	58.3
Single-Parent	14	53.8	4	22.2	3	25.0
Blended/Step	5	19.2	8	44.4	2	16.7
Other (e.g., PGO)	6	23.1	-	-	-	-
<b>Marital Status</b>						
Married	1	3.8	9	50.0	9	75.0
Other (e.g. divorced)	25	96.2	9	50.0	3	25.0
<b>Primary Caregiver (6)</b>						
Mother	2	7.7	5	27.8	1	8.3

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Category	SUB-GROUPS					
	EC		LC		AD	
	n = 26		n = 18		n = 12	
	n	%	n	%	n	%

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Father	-	-	-	-	-	-
Both Parents	3	11.5	4	22.2	6	50.0
Grandparent	8	30.8	6	33.3	3	25.0
Step-Parent	-	-	1	5.6	-	-
Adoptive Parent	2	7.7	1	5.6	-	-
Extended Family	6	23.1	1	5.6	2	16.7
Other (PGO, etc.)	5	19.2	-	-	-	-
Degree of Use						
Severe	25	96.2	6	33.3	3	25.0
Moderate	-	-	4	22.2	3	25.0
Minimal	1	3.8	8	44.4	6	50.0
Introduced By						
Adults	13	50.0	7	38.9	9	75.0
Peers	13	50.0	11	61.1	3	25.0



Category	SUB-GROUPS					
	EC		LC		AD	
	n = 26		n = 18		n = 12	
	n	%	n	%	n	%
<b>Pattern of Use</b>						
Alone	21	80.8	2	11.1	-	-
Alone/With Others	2	7.7	9	50.0	8	66.7
With Others	3	11.5	7	38.9	4	33.3
<b>Friends Who Use</b>						
None	-	-	-	-	-	-
A Few	3	11.5	3	16.7	2	16.7
Some	1	3.8	5	27.8	2	16.7
Most	13	50.0	5	27.8	2	16.7
All	9	34.6	5	27.8	6	50.0
Siblings Who Use	21	80.8	16	88.9	12	100.0
Parents Who Use	21	80.8	13	72.2	8	66.7
Suicidal Ideation	24	92.3	10	55.6	6	50.0
Sexually Abused	11	42.3	2	11.1	4	33.3
Physically Abused	26	100.0	14	77.8	4	33.3

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SUB-GROUPS						
Category	EC		LC		AD	
	n = 26		n = 18		n = 12	
	n	%	n	%	n	%
<hr/>						
Attitude – School						
Poor	21	80.8	7	38.9	3	25.0
Good	5	19.2	11	61.1	9	75.0

sub-group, PSU group and NSU group who reported similar percentages with the AD sub-group reporting the lowest percentage. It should be noted that it was only subjects from the EC sub-group who reported not having any family status at all indicating they were being cared for by an extended family member, Child Welfare or some other institution.

With regard to marital status, the AD sub-group reported having a higher percentage of having parents who were married than either the NSU group or LC sub-group who reported similar scores that were higher than the PSU group. The EC sub-group reported a percentage that was the lowest of all the groups and sub-groups. In the category of having non-married parents (e.g., separated, divorced, never married, or living common-law), the EC sub-group reported the highest percentage with the PSU group, LC sub-group, NSU group, and AD sub-group reporting the next highest percentages respectively.

Data gathered on who the subjects from the three sub-groups considered to be their primary caregiver up to age six revealed that the PSU group reported the highest percentage of perceiving their mother as the primary caregiver with the LC sub-group and NSU group being next and the EC sub-group and AD sub-group reporting similar percentages that were the lowest. In the category where the father was considered to be the primary caregiver, no percentages were reported by the three sub-groups. When both parents are acknowledged as the primary caregiver, the NSU group reported the highest percentage with the AD sub-group being the next closest and PSU group, LC sub-group and EC sub-group reporting the next lowest percentages respectively. When the primary

caregiver is considered to be a grandparent, subjects from the NSU group and PSU group reported the lowest percentages with the three sub-groups reporting higher percentages between 25% and 33%. In the four other categories that were offered as potential choices for a primary caregiver, the NSU group did not report any percentages. However, the three sub-groups and the PSU group groups reported the following percentages: step-parent – EC (0%), LC (5.6%), AD (0%), PSU (2.5%); adoptive-parent – EC (7.7%), LC (5.6%), AD (0%), PSU (2.5%); extended family – EC (23.1%), LC (5.6%), AD (16.7%), PSU (8.8%); and other (TGO or PGO status with Child Welfare) – EC (19.2%), LC (0%), AD (0%), PSU (1.3%).

For the reported number of caregivers up to age five and total number of caregivers to date, the overall mean scores for the 224 subjects were, respectively, 1.88 and 3.32. The mean score for each group for the number of caregivers up to age five and the total number of caregivers to date are listed in Table 5. Analysis of variance revealed that there were significant differences among the three groups (see Table 5) with respect to both the number of caregivers up to age five [ $F(2,221) = 71.19, p < .0001$ ] and the total number of caregivers to date [ $F(2,221) = 54.68, p < .0001$ ]. For the number of caregivers up to age five and the total number of caregivers to date, the SU group reported significantly higher numbers than the PSU group which in turn had significantly higher numbers than the NSU group.

With respect to the three sub-groups (EC, LC, and AD), the mean score for each sub-group for the number of caregivers up to age five and the total number of

**Table 5. Means and Standard Deviations of the Demographic Variables in the Three Naturally Occurring Groups (SU, PSU, and NSU).**

Category	GROUPS						F	p
	SU		PSU		NSU			
	M	SD	M	SD	M	SD		
# of Caregivers (5)	3.57	2.14	1.52	.96	1.11	.44	71.19	<.0001
Total # of Caregivers	7.25	5.90	2.65	2.31	1.42	1.16	54.68	<.0001
# of Relocations	4.14	4.38	3.03	5.30	1.38	1.58	8.76	<.0002
# of Best Friends	3.46	4.83	9.53	9.01	8.93	5.66	14.82	<.0001
# of Important People	6.03	9.91	14.27	12.52	11.88	9.31	9.98	<.0001
# of Family Deaths	3.10	1.99	1.90	1.30	2.29	1.84	8.24	<.0004
Age of First Use	6.98	3.78	10.78	2.20	-	-	54.52	<.0001
Age of Regular Use	8.25	3.91	12.38	1.91	-	-	63.58	<.0001
# of Delinquent Acts	10.29	10.16	2.79	4.32	.06	.28	56.50	<.0001
# of Assaults/Aggress.	2.82	3.82	.53	2.29	.00	.00	26.28	<.0001

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Category	GROUPS							
	SU		PSU		NSU		F	p
	M	SD	M	SD	M	SD		
# of Medical Prob.	2.41	2.78	.46	.90	.20	.57	39.65	<.0001
# of Grade Held Back	1.68	1.31	.96	1.39	.19	.43	32.54	<.0001
# of Schools Attended	3.39	2.20	3.40	1.75	2.0	.87	20.72	<.0001

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caregivers to date are listed in Table 6. Analysis of variance revealed that there were significant differences when the three sub-groups were compared to the PSU group and NSU group with respect the following; 1) the number of caregivers up to age five – EC [ $F(2,191) = 139.44, p < .0001$ ], LC [ $F(2,183) = 28.57, p < .0001$ ], and AD [ $F(2,177) = 10.11, p < .0001$ ] and 2) the total number of caregivers to date - EC [ $F(2,191) = 171.39, p < .0001$ ], LC [ $F(2,183) = 16.45, p < .0001$ ], and AD [ $F(2,177) = 9.80, p < .0001$ ]. For the number of caregivers up to age five, the EC sub-group and LC sub-group reported significantly higher numbers than both the PSU group and the NSU group. However, it should be noted that the number reported by the EC sub-group was higher than the number reported by the LC sub-group. The AD sub-group reported a number that was significant different from the NSU group, but not the PSU group. For the total number of caregivers to date, the EC sub-group and LC sub-group again reported significantly higher numbers than both the PSU group and the NSU group with the EC sub-group reporting the highest number. No significant differences existed between the numbers reported by the AD sub-group and the PSU and NSU groups.

In the categories of the number of times a subject was relocated, number of best friends, number of important people, and number of family deaths, the overall mean scores for the 224 subjects were, respectively, 2.67, 7.78, 11.28, and 2.36. The mean score for each group for the number of times a subject was relocated, number of best friends, number of important people, and number of family deaths are listed in Table 5.

**Table 6. Means and Standard Deviations of the Demographic Variables in the Three Sub-Groups (EC, LC, and AD).**

Category	SUB-GROUPS					
	EC		LC		AD	
	M	SD	M	SD	M	SD
# of Caregivers (5)	4.77	1.99	2.89	1.91	2.00	1.28
Total # of Caregivers	11.62	5.11	4.28	4.04	2.25	1.82
# of Relocations	6.27	3.61	3.39	5.11	.67	1.55
# of Best Friends	.58	.71	5.89	6.44	6.08	3.83
# of Important People	2.50	9.70	9.44	9.89	8.58	8.44
# of Family Deaths	4.23	2.03	1.89	1.45	2.50	1.24
Age of First Use	3.50	.76	8.27	1.53	2.58	1.08
Age of Regular Use	4.73	1.76	10.35	2.20	12.92	1.08
# of Delinquent Acts	17.46	10.14	5.00	5.48	2.67	2.31
# of Assaults/Aggress.	5.38	3.98	1.00	2.17	.00	.00
# of Medical Prob.	4.38	2.68	.89	1.64	.42	.79
# of Grade Held Back	2.65	.85	1.11	1.18	.42	.52
# of Schools Attended	4.35	1.96	3.22	2.39	1.58	.90



Analysis of variance (see Table 5) revealed that there were significant differences among the three groups with respect to the number of times a subject was relocated [ $F(2,221) = 8.76, p < .0002$ ], number of best friends [ $F(2,221) = 14.82, p < .0001$ ], number of important people [ $F(2,221) = 9.98, p < .0001$ ], and number of family deaths [ $F(2,221) = 8.24, p < .0004$ ]. For the number of times a subject was relocated and the number of family deaths, the SU group reported significantly higher numbers than the PSU group which in turn had significantly higher numbers than the NSU group. For the number of best friends and important people, the SU group reported significantly lower numbers than both the PSU group and the NSU group whose reported numbers were not significantly different from each other.

With respect to the three sub-groups, the mean score for each sub-group for the number of times a subject was relocated, number of best friends, number of important people, and number of family deaths are listed in Table 6. Analysis of variance revealed that there were significant differences when the three sub-groups were compared to the PSU group and NSU group with respect the following; 1) the number of times a subject was relocated – EC [ $F(2,191) = 16.99, p < .0001$ ], LC [ $F(2,183) = 4.38, p < .0001$ ], and AD [ $F(2,177) = 5.03, p < .0001$ ]; 2) number of best friends – EC [ $F(2,191) = 17.58, p < .0001$ ], LC [ $F(2,183) = 1.81, p < .0001$ ], and AD [ $F(2,177) = 1.19, p < .0001$ ]; 3) number of important people - EC [ $F(2,191) = 11.71, p < .0001$ ], LC [ $F(2,183) = 1.90, p < .0001$ ], and AD [ $F(2,177) = 1.96, p < .0001$ ]; and 4) number of family deaths - EC [ $F(2,191) = 19.33, p < .0001$ ], LC [ $F(2,183) = 1.44, p < .0001$ ], and AD [ $F(2,177) = 1.63, p < .0001$ ]. For the number of times a subject was relocated, number of best friends, number of

important people, and number of family deaths, the EC sub-group was the only sub-group to report significantly higher numbers than the PSU group and the NSU group. Both the LC and AD sub-groups reported numbers that were not significantly different from the numbers reported by the PSU and NSU groups.

The age that substances were first used and regularly used, degree of substance use, the person who introduced the subjects to substance use, pattern of substance use (alone, with others, etc.), and the number of friends, sibling and parents who use substances distribution of the participants by group classification are given in Table 5 and Table 6. For the age that substances were first used and regularly used, the overall mean scores for the 131 subjects (total subjects from the SU and PSU groups) were, respectively, 9.22 and 10.65. The mean score for each group (SU and PSU) for the age substances were first used and the age substances were used regularly are listed in Table 5. Analysis of variance revealed that there were significant differences among the two groups (as seen in Table 5) with respect to the age that substances were first used [ $F(1,134) = 54.52, p < .0001$ ] and the age that substances were used regularly [ $F(1,129) = 63.597, p < .0001$ ]. The Levene test for homogeneity of variance confirmed group comparisons for the age substances were first used and regularly used as significantly different. For the age substances were first used and regularly used, the SU group reported significantly lower numbers than the PSU group.

With respect to the three sub-groups, the mean score for each sub-group for the age substances were first used and the age substances were used regularly are listed in Table 6. Analysis of variance revealed that there were significant differences when certain

sub-groups were compared to the PSU group for the age substances were first used – EC [ $F(1,104) = 272.39, p < .0001$ ], LC [ $F(1,96) = 21.00, p < .0001$ ], and AD [ $F(1,90) = 7.64, p < .0001$ ] and the age substances were used regularly – EC [ $F(1,100) = 321.19, p < .0001$ ], LC [ $F(1,91) = 14.70, p < .0001$ ], and AD [ $F(1,86) = .88, p < .0001$ ]. For the age substances were first and regularly used, the EC sub-group and LC sub-group reported significantly lower numbers than the PSU group with the EC sub-group reporting the lowest numbers. The AD sub-group reported a significantly higher number than the PSU group for the age substances were first used and a similar number for the age substances were used regularly.

Significant differences were noted among the two groups (SU and PSU) with regard to the degree of substance use [ $\chi^2(2) = 12.95, p < .002$ ], the person who introduced the subjects to substance use [ $\chi^2(1) = 1.85, p < .174$ ] and the pattern of substance use (alone, with others, etc.) [ $\chi^2(2) = 41.68, p < .0001$ ]. Significant differences were also noted among the three groups with regards to the number of friends [ $\chi^2(8) = 75.17, p < .0001$ ], sibling [ $\chi^2(2) = 95.20, p < .0001$ ] and parents [ $\chi^2(2) = 102.90, p < .0001$ ] who use substances.

As indicated in Table 4, the subjects from the SU group reported a higher percentage of severe use than did the PSU group, whereas the PSU group reported a higher percentage of moderate and minimal use than did the SU group. With regards to who introduced the subjects to substances, the SU group reported a higher percentage of being introduced to substances by adults than did the PSU group. However, the PSU group reported a higher percentage of being introduced to substances by peers than did

the SU group. Data gathered on pattern of use (alone or with others) by the two groups indicated that the SU group was the only group who reported using strictly alone. The PSU group listed a higher percentage of using alone and with others than the SU group. The PSU group also reported a higher percentage of always using with others than the SU group.

The category of the number of friends who use was assessed through the use of a five-point rating scale (i.e., none, a few, some, most, and all). The percentages reported by the groups are listed in Table 3 and indicate that the PSU group had the highest percentage of friends who didn't use followed by the NSU group with the SU group reporting a 0%. The NSU group also reported the highest percentage of a few friends who use substances followed by the PSU group and SU group who had similar percentages. For the category of having some friends who use substances, the NSU and PSU reported similar percentages that were higher than the SU group. The SU group reported a higher percentage of having the most friends who use substances than the PSU group who in turn was higher than the NSU group. The SU group also reported a higher percentage of having all friends who use substances than the PSU group who in turn was higher than the NSU group. For the categories of the number of siblings and parents who use substances, the SU group and PSU group reported similar percentages for both categories that were not significantly different from each other and yet, significantly higher than the numbers reported by the NSU group.

With regards to the comparison of the three sub-groups (EC, LC, and AD) of the SU group to the PSU group and NSU group, the degree of substance use, the person who

introduced the subjects to substance use, the pattern of substance use, and the number of friends, siblings, and parents who use distribution of the participants by sub-group and group classification are given in Table 3 and 4. Significant and non-significant differences were noted among the three sub-groups when certain comparisons were made to the PSU group and NSU group with regard to the degree of substance use: 1) EC [ $\chi^2$  (2) = 30.70,  $p < .0001$ ], 2) LC [ $\chi^2$  (2) = 2.13,  $p < .344$ ], and 3) AD [ $\chi^2$  (2) = 2.19,  $p < .024$ ]; the person who introduced the subjects to substance use: 1) EC [ $\chi^2$  (1) = .80,  $p < .370$ ], 2) LC [ $\chi^2$  (1) = .008,  $p < .931$ ], and 3) AD [ $\chi^2$  (1) = 5.17,  $p < .023$ ]; the pattern of substance use: 1) EC [ $\chi^2$  (2) = 80.58,  $p < .0001$ ], 2) LC [ $\chi^2$  (2) = 10.20,  $p < .006$ ], and 3) AD [ $\chi^2$  (1) = 2.73,  $p < .099$ ]; and the number of friends: 1) EC [ $\chi^2$  (8) = 71.91,  $p < .0001$ ], 2) LC [ $\chi^2$  (8) = 54.09,  $p < .0001$ ], and 3) AD [ $\chi^2$  (8) = 59.87,  $p < .0001$ ], siblings: 1) EC [ $\chi^2$  (2) = 78.63,  $p < .0001$ ], 2) LC [ $\chi^2$  (2) = 80.00,  $p < .0001$ ], and 3) AD [ $\chi^2$  (2) = 81.43,  $p < .0001$ ], and parents who use: 1) EC [ $\chi^2$  (2) = 97.74,  $p < .0001$ ], 2) LC [ $\chi^2$  (2) = 90.20,  $p < .0001$ ], and 3) AD [ $\chi^2$  (2) = 87.16,  $p < .0001$ ].

As can be seen in Tables 3 and 4, the EC sub-group reported the highest percentage of severe use with the PSU group and LC sub-group reporting similar percentages that were the next highest and the AD sub-group reporting the lowest percentage. The PSU group reported a higher percentage of moderate use than did the LC and AD sub-groups. For the category of minimal use, the EC sub-group reported the lowest percentage with the PSU group having the next highest and the LC sub-group and AD sub-group reporting the highest percentages, respectively. With regards to who introduced the subjects to substances, the AD sub-group reported a higher percentage of

being introduced to substances by adults than did the EC sub-group who in turn reported a higher percentage than the PSU group and LC sub-group who reported similar percentages. However, the PSU group and LC sub-group reported similar and yet higher percentages of being introduced to substances by peers than did the EC sub-group who in turn reported a higher percentage than the AD sub-group. Data gathered on pattern of use (alone, with others, etc.) by the two groups indicated that the EC sub-group had the highest percentage of using alone with the LC sub-group reporting the only other percentage which was a lot lower. The PSU group and LC sub-group listed similar and higher percentages of using alone and with others than the SU group. The PSU group also reported a higher percentage of always using with others than the AD sub-group who in turn reported a higher percentage than the EC sub-group.

For the category of the number of friends, the PSU group was the only group to report having some friends who didn't use substances. The PSU group, LC sub-group, and AD sub-group reported similar percentages for a few friends who use substances that were slightly higher than the percentage reported by the EC sub-group. For the category of having some friends who use substances, the PSU group and LC sub-group reported similar percentages that were higher than the AD sub-group who in turn was higher than the EC sub-group. The EC sub-group reported a higher percentage of having the most friends who use substances than the LC sub-group and PSU group who in turn had higher percentages than the AD sub-group. The AD sub-group reported a higher percentage of having all friends who use substances than the EC sub-group who in turn was higher than the PSU group and the LC sub-group who reported similar percentages. For the categories

of the number of siblings and parents who use substances, the PSU group reported the lowest percentages for both categories. The AD sub-group reported the highest percentage of siblings that used with the LC and EC sub-groups reporting lower percentages, respectively. For parents who use, the EC sub-group reported the highest percentage followed by the LC sub-group who in turn had a higher percentage than the AD sub-group.

For the number of delinquent acts, assaults or aggressive behaviour and medical problems, the overall mean scores for the 224 subjects were, respectively, 3.59, .89, and .85. The mean score for each group for the number of delinquent acts, assaults or aggressive behaviour and medical problems are listed in Table 6. Analysis of variance (see Table 6) revealed that there were significant differences among the three groups with respect to the number of delinquent acts [ $F(2,221) = 56.50, p < .0001$ ], assaults or aggressive behaviour [ $F(2,221) = 26.28, p < .0001$ ], and medical problems [ $F(2,221) = 39.65, p < .0001$ ]. For the number of delinquent acts, the SU group reported significantly higher numbers than the PSU group who in turn had significantly higher numbers than the NSU group. For the number assaults or aggressive behaviour and medical problems, the SU group reported significantly higher numbers than both the PSU group and the NSU group whose reported numbers were not significantly different from each other.

With respect to the three sub-groups, the mean score for each sub-group for the delinquent acts, assaults or aggressive behaviour and medical problems are listed in Table 6. Analysis of variance revealed that there were significant differences when certain sub-groups were compared to the PSU group for the delinquent acts – EC [ $F(2,191) = 144.97$ ,

$p < .0001$ ], LC [ $F(2,183) = 24.29, p < .0001$ ], and AD [ $F(2,177) = 19.08, p < .0001$ ], assaults or aggressive behaviour - EC [ $F(2,191) = 71.34, p < .0001$ ], LC [ $F(2, 183) = 3.83, p < .023$ ], and AD [ $F(2,177) = 2.62, p < .076$ ], and medical problems – EC [ $F(2,191) = 130.94, p < .0001$ ], LC [ $F(2, 183) = 5.25, p < .0001$ ], and AD [ $F(2, 177) = 2.57, p < .0001$ ]. For the number of delinquent acts, the EC and LC sub-groups (EC had a greater number than the LC sub-group) reported significantly higher numbers than the PSU and NSU groups. The AD sub-group reported a number that was only significantly different from the NSU group. Data collected on the number of assaults or aggressive behaviour indicates that the EC sub-group was the only sub-group to report a number that was significantly different from the PSU group and the NSU group. For the category of medical problems, the EC sub-group reported numbers that were significantly different from both the NSU and PSU groups. However, the number reported by the LC sub-group was only significant different from the NSU group and the AD sub-group was not significant different from either the NSU group or the PSU group.

Significant differences were noted among the three naturally occurring groups with regards to the number of subjects that had experienced suicidal ideation [ $\chi^2 (2) = 29.77, p < .0001$ ] and had been sexually [ $\chi^2 (2) = 27.08, p < .0001$ ] and/or physically abused [ $\chi^2 (2) = 85.88, p < .0001$ ]. A significant difference was also noted among the three groups with regards to attitude towards school [ $\chi^2 (2) = 47.36, p < .0001$ ].

As listed in Table 3, the subjects from the SU group reported a higher percentage of having experienced suicidal ideation than did the PSU group who in turn had a higher percentage than the SU group. Data collected about whether or not the subjects in each



group had been sexually and/or physically abused indicated that the SU group reported a higher percentage in both categories than the PSU group who in turn was higher in both categories than the NSU group. With regards to attitude towards school, the SU group reported the poorest attitude which was higher than the PSU group with the NSU group reporting the lowest percentage.

With regards to the comparison of the three sub-groups (EC, LC, and AD) of the SU group to the PSU group and NSU group, suicidal ideation, sexual abuse, physical abuse and attitude towards school distribution of the participants by sub-group and group classification are given in Table 3 and 4. Significant and non-significant differences were noted among the three sub-groups when certain comparisons were made to the PSU group and NSU group with regard to suicidal ideation: 1) EC [ $\chi^2 (2) = 37.80, p < .0001$ ], 2) LC [ $\chi^2 (2) = 14.02, p < .0009$ ], and 3) AD [ $\chi^2 (2) = 12.79, p < .001$ ]; sexual abuse: 1) EC [ $\chi^2 (2) = 32.33, p < .0001$ ], 2) LC [ $\chi^2 (2) = 23.57, p < .0001$ ], and 3) AD [ $\chi^2 (2) = 25.10, p < .0001$ ]; physical abuse: 1) EC [ $\chi^2 (2) = 92.16, p < .0001$ ], 2) LC [ $\chi^2 (2) = 63.00, p < .0001$ ], and 3) AD [ $\chi^2 (2) = 48.23, p < .0001$ ]; and attitude towards school: 1) EC [ $\chi^2 (2) = 62.06, p < .0001$ ], 2) LC [ $\chi^2 (2) = 34.12, p < .0001$ ], and 3) AD [ $\chi^2 (2) = 33.41, p < .0001$ ].

As can be seen in Tables 3 and 4, the EC sub-group reported the highest percentage of suicidal ideation with the AD sub-group and LC sub-group reporting similar percentages that were higher than the PSU group who in turn were higher than the NSU group. Data collected about whether or not the subjects had been sexually and/or physically abused indicated that the EC sub-group reported the highest percentages in

both categories. The PSU group and AD sub-group reported similar percentages of being sexually abused that higher than the NSU group who in turn reported a higher percentage than the LC sub-group. For the category of physical abuse, the LC sub-group reported a higher percentage than the AD sub-group and the PSU group who had similar percentages and were higher than the percentage reported by the NSU group. With regards to attitude towards school, the EC sub-group reported the poorest attitude which was higher than the PSU group and LC sub-group who had similar percentages that were higher than the AD sub-group, with the NSU group reporting the lowest percentage.

Finally, for the number of grades held back and schools attended, the overall mean scores for the 224 subjects were, respectively, .84 and 2.84. The mean score for each group for the number of grades held back and schools attended were, respectively, as follows: SU = 1.69; PSU = .96; NSU = .19 and SU = 3.39; PSU = 3.40; NSU = 1.98. Analysis of variance (see Table 3) revealed that there were significant differences among the three naturally occurring groups with respect to the number of grades held back [ $F(2,221) = 32.54, p < .0001$ ] and schools attended [ $F(2,221) = 20.72, p < .0001$ ]. For the number of grades held back, the SU group reported significantly higher numbers than the PSU group which in turn had significantly higher numbers than the NSU group. For the number of school attended, the SU and PSU groups reported similar numbers that were not significantly different and yet, were significantly higher than the number reported by the SU group.

With respect to the gender differences for the three groups (SU, PSU and NSU), the mean score for each group for the Number of Caregivers Up to Age Five, Total Number of

Caregivers to Date, Number of Relocations, Number of Best Friends, Number of Perceived Important People, Number of Family Deaths, Age Substances Were First Used, Age Substances Were Regularly Used, Number of delinquent acts, Assaults and Aggressive Behaviour, Medical Problems, Grades held back in School, and Schools Attended are listed in Table 7. Analysis of variance revealed that there were significant differences among the three groups in certain categories in the areas of gender by group interaction, group effect and gender effect. Significant gender by group interactions were noted in the following categories: 1) number of relocations [ $F(2,218) = 3.65, p < .028$ ] and 2) number of schools attended [ $F(2,218) = 7.83, p < .001$ ]. Significant group effects were noted in the following categories: 1) number of caregivers up to age five [ $F(2,218) = 66.90, p < .0001$ ], 2) total number of caregivers to date [ $F(2,218) = 51.02, p < .0001$ ], 3) number of relocations [ $F(2,218) = 7.67, p < .001$ ], 4) number of best friends [ $F(2,218) = 14.35, p < .0001$ ], 5) number of perceived important people [ $F(2,218) = 9.52, p < .0001$ ], 6) number of family deaths [ $F(2,218) = 8.98, p < .0001$ ], 7) age substances were first used [ $F(2,218) = 55.87, p < .0001$ ], 8) age substances were regularly used [ $F(2,218) = 62.72, p < .0001$ ], 9) number of delinquent acts [ $F(2,218) = 53.21, p < .0001$ ], 10) assaults and aggressive behaviour [ $F(2,218) = 23.87, p < .0001$ ], 11) medical problems [ $F(2,218) = 39.60, p < .0001$ ], 12) grades held back in school [ $F(2,218) = 30.81, p < .0001$ ], and 13) schools attended [ $F(2,218) = 18.73, p < .0001$ ]. Significant gender effects were also noted in the following categories: 1) number of relocations [ $F(2,218) = 6.75, p < .001$ ], 2) number of best friends [ $F(2,218) = 8.41, p < .004$ ], 3) age of first use [ $F(2,218) = 7.66, p < .006$ ], 4) number of delinquent acts [ $F(2,218) = 8.38, p < .004$ ], 5) number of

**Table 7. Means and Standard Deviations of Demographic Variables According to Gender in the Three Naturally Occurring Groups (SU, PSU, and NSU).**

Category	Gender	GROUPS					
		SU		PSU		NSU	
		M	SD	M	SD	M	SD
# of Caregivers (5)	Male	3.79	2.18	1.53	1.0	1.22	.56
	Female	3.26	2.12	1.52	.94	1.00	.22
Total # of Caregivers	Male	7.82	6.38	2.70	2.43	1.54	1.53
	Female	6.44	5.19	2.58	2.18	1.29	.51
# of Relocations	Male	4.88	5.17	4.15	6.49	1.15	1.45
	Female	3.09	2.68	1.46	2.12	1.64	1.71
# of Best Friends	Male	3.91	5.86	11.04	9.60	10.54	5.86
	Female	2.83	2.77	7.39	7.75	7.17	4.92
# of Important People	Male	6.70	11.38	15.30	13.80	12.26	9.82
	Female	5.09	7.49	12.82	10.47	11.48	8.82
# of Important People	Male	6.70	11.38	15.30	13.80	12.26	9.82
	Female	5.09	7.49	12.82	10.47	11.48	8.82
# of Family Deaths	Male	2.76	2.14	1.83	1.29	2.48	1.86
	Female	3.61	1.70	2.00	1.35	2.10	1.83
Age of First Use	Male	6.46	3.62	10.15	2.11	-	-
	Female	7.74	3.98	11.70	2.04	-	-

Category	Gender	GROUPS					
		SU		PSU		NSU	
		M	SD	M	SD	M	SD
Age of Regular Use	Male	8.06	3.82	11.98	1.77	-	-
	Female	8.55	4.11	12.97	2.01	-	-
# of Delinquent Acts	Male	12.09	11.17	3.72	5.28	.07	.25
	Female	7.70	8.05	1.46	1.70	.05	.31
# of Assaults/Aggress.	Male	3.42	4.37	.78	2.94	.00	.00
	Female	1.96	2.72	.15	.51	.00	.00
# of Medical Prob.	Male	2.24	2.54	.43	.77	.26	.68
	Female	2.65	3.13	.52	1.06	.14	.42
# of Grade Held Back	Male	1.88	1.30	1.21	1.61	.24	.43
	Female	1.40	1.30	.61	.90	.14	.42
# of Schools Attended	Male	3.94	2.46	3.94	1.86	1.80	.75
	Female	2.61	1.47	2.64	1.27	2.17	.96

aggressive acts [ $F(2,218) = 4.79, p < .03$ ], 6) number of grades held back [ $F(2,218) = 7.17, p < .008$ ], and 7) number of schools attended [ $F(2,218) = 12.75, p < .0001$ ].

As listed in Table 7, significant gender by group interactions revealed that the males in the SU and PSU groups reported a higher overall mean than the females except for the NSU group where the females reported a slightly higher overall mean than the males in the categories of number of relocations and number of schools attended. For gender effect in the number of relocations, the males in the SU and PSU reported similar numbers that were significantly higher than the males in the NSU group. The females in the SU group reported a number slightly lower than the males in the SU and PSU and yet significantly higher than the similar numbers reported by the females in the PSU and NSU groups. For the number of best friends, the males in the PSU and NSU group reported numbers that were significantly higher than the females with both gender's numbers being significantly higher than the similar numbers reported by the male and female subjects in the SU group. In the category of age of first use, both genders in the PSU group reported significantly higher numbers than the males and females in the SU group with the males reporting a slightly higher number than the females in both groups. For the number of delinquent acts, assaults, and aggressive behaviour, males and females in the SU group reported significantly higher numbers than the males and females in the PSU group, respectively, with the males reporting significant higher numbers than the females in both groups. Although both genders in the SU group reported higher numbers than both genders in the PSU group, who had higher numbers than the males and females

in the NSU group, the number reported by the males in the SU group was only slightly higher than the male number in the PSU group whereas, the number reported by the females in the SU group was significantly higher than the females in the PSU group. Finally, in the category of number of schools attended, the females in all three groups reported similar numbers that were slightly lower than the numbers reported by the males in the SU and PSU groups and slightly higher than the number reported by the males in the NSU group.

Gender differences were also noted for the SU group in the category of sexually abused [ $\chi^2 (1) = 22.43, p < .001$ ] and the PSU group in the categories of degree of use [ $\chi^2 (2) = 8.92, p < .012$ ], pattern of use [ $\chi^2 (1) = 4.53, p < .033$ ], siblings who use [ $\chi^2 (1) = 3.90, p < .048$ ], sexually abused [ $\chi^2 (1) = 7.59, p < .006$ ], and school attitude [ $\chi^2 (1) = 6.20, p < .013$ ] as well as for the NSU group in the categories of primary caregiver up until age 6 [ $\chi^2 (3) = 12.50, p < .006$ ] and parents usage [ $\chi^2 (1) = 5.81, p < .016$ ].

As can be seen in Table 8, females in the SU and PSU groups reported significantly higher percentages of being sexually abused than did the males. In the category of degree of use, the males in the PSU group reported a higher percentage of severe use than the females with the females reporting higher percentages of moderate and minimal use than the males. For pattern of use, the males in the PSU group reported a higher percentage of using alone and with others than the females and the females reported a higher percentage of using with others than the males. The males in the PSU group also reported a higher percentage of having a poor school attitude. Also, they reported a higher percentage of siblings who used than the females. For the NSU, the females reported

**Table 8. Numbers and Percentages of the Demographic Variables According to Gender in the Three Naturally Occurring Groups (SU, PSU, and NSU).**

		SUB-GROUPS					
		SU		PSU		NSU	
		n = 56		n = 80		n = 88	
Category	Gender	n	%	n	%	n	%
<b>Family Status</b>							
Biologically Intact	Male	8	24.2	14	29.8	27	58.7
	Female	6	26.1	14	42.4	23	54.8
Single-Parent	Male	14	42.4	22	46.8	13	28.3
	Female	7	30.4	14	42.4	7	16.7
Blended/Step	Male	7	21.2	11	23.4	6	13.0
	Female	8	34.8	5	15.2	12	28.6
Other (e.g., PGO)	Male	4	12.1	-	-	-	-
	Female	2	8.7	-	-	-	-
<b>Marital Status</b>							
Married	Male	11	33.3	15	31.9	27	58.7
	Female	8	34.8	10	30.3	21	50.0



		SUB-GROUPS					
		SU		PSU		NSU	
		n = 56		n = 80		n = 88	
Category	Gender	n	%	n	%	n	%
Other (e.g. divorced)	Male	22	66.7	32	68.1	19	41.3
	Female	15	65.2	23	69.7	21	50.0
Primary Caregiver (6)							
Mother	Male	7	21.2	18	38.3	4	8.7
	Female	1	4.3	15	45.5	14	33.3
Father	Male	-	-	2	4.3	6	13.0
	Female	-	-	-	-	-	-
Both Parents	Male	6	18.2	16	34.0	33	71.7
	Female	7	30.4	8	24.2	25	59.5
Grandparent	Male	8	24.2	4	8.5	3	6.5
	Female	9	39.1	5	15.2	3	7.1
Step-Parent	Male	1	3.0	1	2.1	-	-
	Female	-	-	1	3.0	-	-
Adoptive Parent	Male	1	3.0	1	2.1	-	-
	Female	2	8.7	1	3.0	-	-

		SUB-GROUPS					
		SU		PSU		NSU	
		n = 56		n = 80		n = 88	
Category	Gender	n	%	n	%	n	%
Extended Family	Male	5	15.2	4	8.5	-	-
	Female	4	17.4	3	9.1	-	-
Other (PGO, etc.)	Male	5	15.2	1	2.1	-	-
	Female	-	-	-	-	-	-
Degree of Use							
Severe	Male	20	60.6	22	46.8	-	-
	Female	14	60.9	5	15.2	-	-
Moderate	Male	4	12.1	15	31.9	-	-
	Female	3	13.0	15	45.5	-	-
Minimal	Male	9	27.3	6	26.1	-	-
	Female	6	26.1	13	39.4	-	-
Introduced By							
Adults	Male	17	51.5	19	40.4	-	-
	Female	12	52.2	13	39.4	-	-

		SUB-GROUPS					
		SU		PSU		NSU	
		n = 56		n = 80		n = 88	
Category	Gender	n	%	n	%	n	%
Peers	Male	16	48.5	28	59.6	-	-
	Female	11	47.8	20	60.6	-	-
Pattern of Use							
Alone	Male	14	42.4	-	-	-	-
	Female	9	39.1	-	-	-	-
Alone/With Others	Male	12	36.4	24	51.1	-	-
	Female	7	30.4	9	27.3	-	-
With Others	Male	7	21.2	23	48.9	-	-
	Female	7	30.4	24	72.7	-	-
Friends Who Use							
None	Male	-	-	1	2.1	7	15.2
	Female	-	-	-	-	7	16.7
Introduced By							
Adults	Male	17	51.5	19	40.4	-	-
	Female	12	52.2	13	39.4	-	-

		SUB-GROUPS					
		SU		PSU		NSU	
		n = 56		n = 80		n = 88	
Category	Gender	n	%	n	%	n	%
Most	Male	13	39.4	16	34.0	7	15.2
	Female	7	30.4	9	27.3	3	7.1
All	Male	9	27.3	10	21.3	-	-
	Female	11	47.8	10	30.3	-	-
Siblings Who Use	Male	29	87.9	44	93.6	11	23.9
	Female	20	87.0	26	78.8	9	21.4
Parents Who Use	Male	22	66.7	33	70.2	-	-
	Female	20	87.0	27	81.8	5	11.9
Suicidal Ideation	Male	23	69.7	22	46.8	10	21.7
	Female	17	73.9	20	60.6	13	31.0
Sexually Abused	Male	2	6.1	7	14.9	-	-
	Female	15	65.2	14	42.4	1	2.4
Physically Abused	Male	24	72.7	28	59.6	1	2.2
	Female	20	87.0	14	42.4	3	7.1

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		SUB-GROUPS					
		SU		PSU		NSU	
		n = 56		n = 80		n = 88	
Category	Gender	n	%	n	%	n	%

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Attitude – School							
Poor	Male	19	57.6	26	55.3	2	4.3
	Female	12	52.2	9	27.3	3	7.1
Good	Male	14	42.4	21	44.7	44	95.7
	Female	11	47.8	24	72.7	39	92.9

higher percentages of having a mother or both parents as their primary caregiver before age six than did the males who reported a higher percentage of having a father than the females. In the category of parents who use, the significant difference was due to the females reporting 11.9% and the males not reporting any percentage of their parents using substances.

### Psychological Measures

Psychological measures (i.e., IPPA, AAQ, FES, CFSEI-II, BDI-II, BHS, STAI, and PIY) were used to compare the three naturally occurring groups (SU: solvent users, PSU: poly-substance users, and NSU: non-substance users) in order to examine the pattern of attachment of each of the subjects in the study and their attachment relationships to their parents and peers as well as to explore their perception of well-being and social adaptation. Further comparison of the three naturally occurring groups was accomplished by dividing the SU group into three sub-groups based on age of onset for solvent use (EC - early childhood, ages 1 – 5; LC - late childhood, ages 6 – 10; and AD - adolescence, ages 11 – 18) which were compared to the PSU group and NSU group. The comparisons described above were accomplished by focusing on the following areas: 1) current perception of attachment patterns; 2) current perception of the available responsiveness of their attachment relationships (i.e., parents and peers); 3) degree of maladaptive cognitive and affective characteristics; 4) degree of interpersonal difficulties and social skills deficits; 5) degree of dysfunctional family characteristics; and 6) degree of antisocial attitude and behaviour.

### **Current Perception of Attachment Patterns**

The Adolescent Attachment Questionnaire (AAQ), which consists of four scales (Angry Distress, Unavailability, Lack of a Secure Base, and Role Reversal), was used to assess the subject's current perception of attachment. For the Angry Distress, Unavailability, Lack of a Secure Base, and Role Reversal scales, the overall mean scores for the 224 subjects were, respectively, 13.30, 10.99, 12.83, and 12.60. The mean score for each group for the Angry Distress, Unavailability, Lack of a Secure Base, and Role Reversal scales are listed in Table 9. Analysis of variance (see Table 9) revealed that there were significant differences among the three groups with respect to the four scales (Angry Distress, Unavailability, Lack of a Secure Base, and Role Reversal). On the Angry Distress and Lack of Security scales, the numbers reported by the SU group and PSU group were not significantly different from each other and yet, were significantly higher than the NSU group. On the Unavailability scale, the SU group reported significantly higher numbers than the PSU group which in turn had significantly higher numbers than the NSU group. For the Role Reversal scale, the PSU group reported significantly higher numbers than both the SU group and NSU group who reported similar numbers.

With regards to the comparison of the three SU sub-groups (EC, LC, and AD) to the PSU group and NSU group, the overall mean scores for each of the four scales (Angry Distress, Unavailability, Lack of a Secure Base, and Role Reversal) were, respectively, as follows: 1) EC – 12.90, 10.75, 12.14, and 12.57; 2) LC – 12.34, 9.25, 12.49, and 13.11;

**Table 9. Means and Standard Deviations for the Three Naturally Occurring Groups (SU, PSU, and NSU) With Respect to the Adolescent Attachment Questionnaire (AAQ).**

Category	GROUPS							
	SU		PSU		NSU		F	p
	n = 56		n = 80		n = 88			
	M	SD	M	SD	M	SD		
AAQ								
Angry Distress	17.20	3.41	16.65	4.11	7.76	2.56	193.41	<.0001
Unavailability	17.43	6.66	10.28	2.96	7.55	2.54	101.97	<.0001
Lack of Secure Base	15.38	3.91	14.95	3.89	9.28	3.82	61.15	<.0001
Role Reversal	10.77	3.72	17.06	4.00	9.68	4.00	81.72	<.0001



and 3) AD – 12.27, 9.04, 12.34, and 13.20. The mean score for each group for the Angry Distress, Unavailability, Lack of a Secure Base, and Role Reversal scales are listed in Table 10.

Analysis of variance revealed that there were significant differences among the three sub-groups (EC, LC, and AD) and the PSU group and NSU group with respect to the four scales: 1) EC - Angry Distress [ $F(2,191) = 208.40, p < .0001$ ], Unavailability [ $F(2,191) = 323.68, p < .0001$ ], Lack of a Secure Base [ $F(2,191) = 47.22, p < .0001$ ], and Role Reversal [ $F(2,191) = 93.78, p < .0001$ ]; 2) LC - Angry Distress [ $F(2,183) = 143.52, p < .0001$ ], Unavailability [ $F(2,183) = 31.00, p < .0001$ ], Lack of a Secure Base [ $F(2,183) = 61.75, p < .0001$ ], and Role Reversal [ $F(2,183) = 73.79, p < .0001$ ]; and 3) AD - Angry Distress [ $F(2,177) = 156.74, p < .0001$ ], Unavailability [ $F(2,177) = 25.28, p < .0001$ ], Lack of a Secure Base [ $F(2,177) = 57.97, p < .0001$ ], and Role Reversal [ $F(2,177) = 71.94, p < .0001$ ].

On the Angry Distress scale, the numbers reported by the EC sub-group were significantly higher than the PSU group who in turn had significantly higher numbers than the NSU group. The numbers reported by the LC and AD sub-groups and PSU group were not significantly different from each other and yet, were significantly higher than the NSU group. On the Unavailability scale, the EC sub-group reported significantly higher numbers than the PSU group who in turn had significantly higher numbers than the NSU group. The LC sub-group also reported significantly higher numbers than the PSU group who in turn had significantly higher numbers than the NSU group. However, the AD sub-group reported similar numbers to the PSU group that were significantly

**Table 10. Means and Standard Deviations of the Three Sub-Groups (EC, LC, and AD), PSU Group and NSU Group With Respect to the Adolescent Attachment Questionnaire (AAQ).**

	GROUPS									
	EC		LC		AD		PSU		NSU	
	n = 26		n = 18		n = 12		n = 80		n = 88	
	M	SD	M	SD	M	SD	M	SD	M	SD
Test Scales										
AAQ										
Anger Distress	18.81	1.94	15.61	4.50	16.08	2.57	16.65	4.11	7.76	2.56
Unavailability	23.08	2.73	13.06	5.54	11.75	3.96	10.28	3.00	7.55	2.54
Lack of a Secure Base	13.15	3.56	17.22	3.34	17.42	2.91	14.95	3.89	9.28	3.82
Role Reversal	8.50	2.61	12.33	3.31	13.33	3.68	17.06	4.00	9.68	4.00

higher than the numbers reported by the NSU group. With regards to the Lack of a Security Base scale, the EC sub-group and PSU group reported numbers that were not significantly different from each other and yet, were significantly higher than the numbers reported by the NSU group. In both cases, the LC and AD sub-groups reported significantly higher numbers than the PSU group who in turn had significantly higher numbers than the NSU group. Finally, on the Role Reversal scale, the PSU group reported numbers that were significantly higher than the numbers reported by the EC sub-group and the NSU group, that were not significantly different from each other. The LC sub-group reported significantly higher numbers than the PSU group who in turn had significantly higher numbers than the NSU group. Whereas, the PSU group reported significantly higher numbers than the AD sub-group who in turn had significantly higher numbers than the NSU group.

With respect to the gender differences for the three naturally occurring groups, the mean score for each group for the Angry Distress, Unavailability, Lack of a Secure Base, and Role Reversal scales are listed in Table 11. Analysis of variance revealed that there were some significant differences among the three groups with respect to gender differences among the four scales (Angry Distress, Unavailability, Lack of a Secure Base, and Role Reversal). A significant gender by group interaction was noted in the Lack of a Secure Base scale [ $F(2,218) = 3.58, p < .030$ ]. A significant group effect was noted in all four scales: 1) Anger Distress [ $F(2,218) = 188.30, p < .0001$ ], 2) Unavailability [ $F(2,218)$

**Table 11. Means and Standard Deviations of the Adolescent Attachment Questionnaire (AAQ) According to Gender.**

		GROUPS					
		SU		PSU		NSU	
Category	Gender	M	SD	M	SD	M	SD
AAQ							
Angry Distress	Male	17.06	3.38	16.75	3.82	7.61	2.56
	Female	17.39	3.51	16.52	4.55	7.93	2.57
Unavailability	Male	18.49	6.64	10.85	3.11	7.89	2.75
	Female	15.91	6.54	9.46	2.54	7.17	2.26
Lack of Secure Base	Male	16.09	4.12	14.57	3.79	8.46	2.97
	Female	14.35	3.41	15.49	4.04	10.19	4.43
Role Reversal	Male	10.15	3.90	16.81	4.20	9.30	3.24
	Female	11.65	3.34	17.42	3.73	10.10	4.7

= 297.93,  $p < .0001$ ], 3) Lack of a Secure Base [ $F(2,218) = 60.44$ ,  $p < .0001$ ], and 4) Role Reversal [ $F(2,218) = 80.11$ ,  $p < .0001$ ]. A significant gender effect was also noted in the Unavailability scale [ $F(2,218) = 7.91$ ,  $p < .005$ ]. For the gender by group interaction on the Lack of a Secure Base scales, the females in the PSU and NSU group reported a higher number than the males whereas, the males reported a higher number than the females in the SU group. On the Unavailability scale, the males in the SU, PSU, and NSU groups reported higher numbers than the females.

#### Current Perception of the Available Responsiveness of Attachment Relationships

The Inventory of Parent and Peer Attachment (IPPA) which consists of three scales [Relationship With Mother (MA), Relationship With Father (FA), and Relationship With Peers (PA)] with each scale being broken down further into three sub-scales [Mother – Trust (MAT), Father – Trust (FAT) , and Peer – Trust (PAT); Mother – Communication (MAC), Father – Communication (FAC), and Peer – Communication (PAC); and Mother – Alienation (MAA), Father – Alienation (FAA), and Peer – Alienation (PAA)] which are used to assess the subject's current perception of attachment with parents and close friends as well as how well these figures serve as sources of psychological security. For the three major scales (Relationship With Mother, Relationship With Father, and Relationship With Peers) and the nine sub-scales (Mother - Trust, Father - Trust, Peer - Trust, Mother – Communication, Father – Communication, Peer – Communication, Mother – Alienation, Father – Alienation, and Peer – Alienation), the overall mean scores for the 224 subjects were as follows: Relationship With Mother = 86.35; Relationship With Father = 82.17; Relationship With Peer = 87.67; Mother - Trust

= 36.03; Father - Trust = 34.34; Peer - Trust = 36.57; Mother – Communication = 30.31; Father – Communication = 28.84; Peer – Communication = 28.05; Mother – Alienation = 19.94; Father – Alienation = 19.13; Peer – Alienation = 23.17. The mean score for each group for the three major scales (Relationship With Mother, Relationship With Father, and Relationship With Peer) and the nine sub-scales (Mother - Trust, Father - Trust, Peer - Trust, Mother – Communication, Father – Communication, Peer – Communication, Mother – Alienation, Father – Alienation, and Peer – Alienation) are listed in Table 12.

Analysis of variance (see Table 12) revealed that there were significant differences among the three groups with respect to the following scales (Mother - Trust, Father - Trust, Peer - Trust, Mother – Communication, Father – Communication, Peer – Communication, Mother – Alienation, Father – Alienation, and Peer – Alienation) of the IPPA. On the Relationship With Mother and Relationship With Father scales, the NSU group reported significantly higher numbers than the PSU group who in turn had significantly higher numbers than the SU group. For the Relationship With Peer scale, the PSU group and NSU group reported similar numbers that were significantly higher than the numbers reported by the SU group. On the following scales (Mother - Trust, Father Trust, Mother – Communication, Father – Communication, Mother – Alienation, and Father – Alienation), the NSU group reported significantly higher numbers than the PSU group who in turn had significantly higher numbers than the SU group. On the Peer - Trust, Peer – Communication, and Peer – Alienation scales, the PSU group and NSU group reported similar numbers that were significantly higher than the numbers reported by the SU group.

**Table 12. Means and Standard Deviations for the Three Naturally Occurring Groups (SU, PSU, and NSU) With Respect to the Inventory of Parent and Peer Attachment (IPPA).**

		GROUPS							
		SU		PSU		NSU		F	p
		M	SD	M	SD	M	SD		
Scales									
MA	58.41	24.04	80.38	14.31	109.53	8.74	189.99	<.0001	
FA	54.93	24.20	74.83	18.30	106.08	12.11	148.74	<.0001	
PA	63.00	24.20	95.08	13.10	96.64	14.72	77.66	<.0001	
MAT	23.41	10.84	34.11	7.76	45.81	3.77	156.35	<.0001	
FAT	22.30	11.28	31.09	8.39	44.91	4.91	141.64	<.0001	
PAT	25.55	11.26	39.81	6.78	40.80	6.81	69.51	<.0001	
MAC	20.55	8.76	28.04	6.30	38.60	4.45	143.23	<.0001	
FAC	19.81	9.77	26.35	7.65	36.82	5.93	91.19	<.0001	
PAC	20.25	8.92	30.74	5.80	30.68	6.70	46.37	<.0001	
MAA	13.66	5.14	18.11	4.29	25.53	3.28	150.22	<.0001	
FAA	12.86	5.32	17.35	5.13	24.72	3.76	118.13	<.0001	
PAA	17.18	6.40	25.38	4.66	24.92	5.32	45.87	<.0001	

With regards to the comparison of the three SU sub-groups (EC, LC, and AD) to the PSU group and NSU group, the overall mean scores for the three major scales (Relationship With Mother, Relationship With Father, and Relationship With Peer) and the nine sub-scales (Mother - Trust, Father - Trust, Peer - Trust, Mother - Communication, Father - Communication, Peer - Communication, Mother - Alienation, Father - Alienation, and Peer - Alienation) were, respectively, as follows: 1) EC – 87.99, 83.74, 88.64, 36.85, 35.03, 37.05, 30.88, 29.23, 28.37, 20.38, 19.62, and 23.51; 2) LC – 93.10, 88.90, 94.08, 39.03, 37.25, 39.56, 32.67, 31.11, 30.11, 21.45, 20.69, and 24.72; and 3) AD – 94.96, 90.54, 95.31, 39.91, 38.10, 40.05, 33.32, 31.72, 30.60, 21.72, 20.92, and 24.85. The mean score for each group for the three major scales (Relationship With Mother, Relationship With Father, and Relationship With Peer) and the nine sub-scales (Mother - Trust, Father - Trust, Peer - Trust, Mother - Communication, Father - Communication, Peer - Communication, Mother - Alienation, Father - Alienation, and Peer - Alienation) are listed in Table 13.

Analysis of variance revealed that there were significant differences among the three sub-groups (EC, LC, and AD) and the PSU group and NSU group with respect to the following scales of the IPPA: 1) EC- Relationship With Mother [ $F(2,191) = 189.99$ ,  $p < .0001$ ], Relationship With Father [ $F(2,191) = 148.74$ ,  $p < .0001$ ], Relationship With Peer [ $F(2,191) = 77.66$ ,  $p < .0001$ ], Mother - Trust [ $F(2,191) = 156.35$ ,  $p < .0001$ ], Father - Trust [ $F(2,191) = 141.64$ ,  $p < .0001$ ], Peer - Trust [ $F(2,191) = 69.51$ ,  $p < .0001$ ], Mother - Communication [ $F(2,191) = 143.23$ ,  $p < .0001$ ], Father - Communication [ $F(2,191) = 91.19$ ,  $p < .0001$ ], Peer - Communication [ $F(2,191) = 46.37$ ,  $p < .0001$ ], Mother - Table



**13. Means and Standard Deviations for the Three Sub-Groups (EC, LC, and AD), PSU Group and NSU Group With Respect to the Inventory of Parent and Peer Attachment (IPPA).**

	GROUPS									
	EC		LC		AD		PSU		NSU	
	n = 26		n = 18		n = 12		n = 80		n = 88	
	M	SD	M	SD	M	SD	M	SD	M	SD
<b>Scales</b>										
MA	38.50	8.32	69.28	21.98	85.25	8.27	80.38	14.31	109.53	8.73
FA	35.23	10.72	66.61	21.09	80.08	12.24	74.82	18.30	106.08	12.11
PA	42.00	10.37	77.22	18.93	87.17	10.94	95.08	13.10	96.64	14.72
MAT	14.92	3.46	27.72	10.20	35.33	6.65	34.11	7.76	45.81	3.77
FAT	13.58	4.55	26.89	10.27	34.33	7.33	31.09	8.39	44.91	4.91
PAT	15.88	4.24	32.44	9.87	36.17	4.61	39.81	6.78	40.80	6.81
MAC	13.58	3.36	24.33	7.33	30.00	6.27	28.04	6.30	38.60	4.45
FAC	12.31	3.87	24.11	8.98	29.58	7.13	26.35	7.65	36.82	5.93
PAC	13.23	3.56	24.50	7.53	29.09	7.09	30.74	5.80	30.68	6.70
MAA	9.92	2.17	16.28	5.53	17.83	3.35	18.11	4.29	25.53	3.28
FAA	9.27	3.01	15.61	5.55	16.50	3.99	17.35	5.13	24.72	3.76
PAA	13.00	4.79	20.78	6.10	20.83	4.28	25.38	4.66	24.92	5.32

Alienation [ $F(2,191) = 150.22, p < .0001$ ], Father – Alienation [ $F(2,191) = 118.13, p < .0001$ ], and Peer – Alienation [ $F(2,191) = 45.87, p < .0001$ ]; 2) LC - Relationship With Mother [ $F(2,183) = 138.38, p < .0001$ ], Relationship With Father [ $F(2,183) = 99.10, p < .0001$ ], Relationship With Peer [ $F(2,183) = 13.70, p < .0001$ ], Mother - Trust [ $F(2,183) = 97.66, p < .0001$ ], Father - Trust [ $F(2,183) = 97.93, p < .0001$ ], Peer - Trust [ $F(2,183) = 10.32, p < .0001$ ], Mother – Communication [ $F(2,183) = 95.86, p < .0001$ ], Father – Communication [ $F(2,183) = 56.05, p < .0001$ ], Peer – Communication [ $F(2,183) = 7.61, p < .001$ ], Mother – Alienation [ $F(2,183) = 89.33, p < .0001$ ], Father – Alienation [ $F(2,183) = 66.18, p < .0001$ ], and Peer – Alienation [ $F(2,183) = 6.05, p < .003$ ]; and 3) LC - Relationship With Mother [ $F(2,177) = 138.30, p < .0001$ ], Relationship With Father [ $F(2,177) = 91.38, p < .0001$ ], Relationship With Peer [ $F(2,177) = 2.51, p < .085$ ], Mother - Trust [ $F(2,177) = 82.02, p < .0001$ ], [ $F(2,177) = 87.54, p < .0001$ ], Peer - Trust [ $F(2,177) = 2.63, p < .075$ ], Mother – Communication [ $F(2,177) = 80.37, p < .0001$ ], Father – Communication [ $F(2,177) = 49.69, p < .0001$ ], Peer – Communication [ $F(2,177) = .37, p < .692$ ], Mother – Alienation [ $F(2,177) = 88.11, p < .0001$ ], Father – Alienation [ $F(2,177) = 63.78, p < .0001$ ], and Peer – Alienation [ $F(2,177) = 4.37, p < .014$ ].

To begin with, on the Relationship With Mother, Relationship With Father, Mother - Trust, Mother – Communication, Mother – Alienation, Father - Trust, Father – Communication, and Father – Alienation scales, the numbers reported by the NSU group were significantly higher than the PSU group who in turn had significantly higher numbers than the EC sub-group. On the Relationship With Peer, Peer - Trust, Peer – Communication, and Peer – Alienation scales, the numbers reported by the NSU group

and PSU group were not significantly different from each other and yet, were significantly higher than the EC sub-group.

Secondly, on the Relationship With Mother, Mother - Trust, Mother – Communication, and Father - Trust scales, the numbers reported by the NSU group were significantly higher than the PSU group who in turn had significantly higher numbers than the LC sub-group. On the Relationship With Father, Mother – Alienation, Father – Alienation, and Father – Communication scales, the numbers reported by the NSU group were significantly higher than both the LC sub-group and PSU group whose numbers were not significantly different from each other. On the Relationship With Peer, Peer - Trust, Peer – Communication, and Peer – Alienation scales, the PSU group and NSU group reported numbers that were not significantly different from each other and yet, were significantly higher than the numbers reported by the LC sub-group.

Finally, on the Relationship With Mother, Relationship With Father, Mother - Trust, Mother – Communication, Mother – Alienation, Father - Trust, Father – Communication, and Father – Alienation scales, the numbers reported by the NSU group were significantly higher than both the AD sub-group and PSU group whose numbers were not significantly different from each other. On the Relationship With Peer and Peer - Trust scales, the NSU group reported significantly higher numbers than the AD sub-group. The numbers reported by the PSU group were not significantly different from either the NSU group or the AD sub-group. On the Peer – Communication scale, no significant differences were reported among the three groups. On the Peer – Alienation

scale, the numbers reported by the NSU group and PSU group were not significantly different from each other and yet, were significantly higher than the AD sub-group.

With respect to the gender differences for the three naturally occurring groups, the mean score for each scale (Relationship With Mother, Relationship With Father, Relationship With Peer, Mother - Trust, Father - Trust, Peer - Trust, Mother – Communication, Father – Communication, Peer – Communication, Mother – Alienation, Father – Alienation, and Peer – Alienation) on the IPPA are listed in Table 14. Analysis of variance revealed that there were some significant differences among the three groups with respect to gender differences among certain scales. No significant gender by group interaction was noted in any of the scales. Significant group effect was noted in all the scales: 1) Relationship With Mother [ $F(2,216) = 181.05, p < .0001$ ], 2) Relationship With Father [ $F(2,216) = 142.49, p < .0001$ ], 3) Relationship With Peer [ $F(2,216) = 83.10, p < .0001$ ], 4) Mother-Trust [ $F(2,216) = 148.79, p < .0001$ ], 5) Father - Trust [ $F(2,216) = 136.31, p < .0001$ ], 6) Peer - Trust [ $F(2,216) = 73.63, p < .0001$ ], 7) Mother – Communication [ $F(2,216) = 137.22, p < .0001$ ], 8) Father – Communication [ $F(2,216) = 86.85, p < .0001$ ], 9) Peer – Communication [ $F(2,216) = 47.77, p < .0001$ ], 10) Mother – Alienation [ $F(2,216) = 142.50, p < .0001$ ], 11) Father – Alienation [ $F(2,216) = 113.15, p < .0001$ ], and 12) Peer – Alienation [ $F(2,216) = 46.21, p < .0001$ ]. Significant gender effects were also noted in following scales: 1) Relationship With Peer [ $F(2,216) = 20.44, p < .0001$ ], 2) Peer - Trust [ $F(2,216) = 21.19, p < .0001$ ], 3) Peer – Communication [ $F(2,216) = 12.34, p < .001$ ], and Peer – Alienation [ $F(2,216) = 7.97, p < .005$ ]. For the gender effect on the Relationship With Peer, Peer - Trust, Peer – Communication and Peer –

**Table 14. Means and Standard Deviations of Gender Differences With Respect to the Inventory of Parent and Peer Attachment (IPPA).**

		GROUPS					
		SU		PSU		NSU	
Category	Gender	M	SD	M	SD	M	SD
IPPA							
MA	Male	55.94	24.47	79.91	13.29	109.52	8.54
	Female	61.96	23.47	80.75	16.24	109.55	9.05
FA	Male	52.42	24.12	72.63	17.50	107.70	10.61
	Female	58.52	24.40	77.81	19.51	104.31	13.47
PA	Male	59.91	24.45	92.28	11.66	89.13	12.96
	Female	67.44	23.66	99.53	13.99	104.86	11.96
MAT	Male	22.27	10.07	34.11	7.33	45.98	3.65
	Female	25.04	11.90	33.94	8.63	45.62	3.93
FAT	Male	21.55	11.30	29.76	8.34	45.52	4.66
	Female	23.40	11.42	32.94	8.36	44.24	5.14
PAT	Male	23.97	10.79	38.45	6.53	37.07	5.92
	Female	27.83	11.77	41.50	6.79	44.88	5.21
MAC	Male	19.52	8.72	27.91	5.52	38.13	4.63
	Female	22.04	8.79	28.06	7.49	39.07	4.24

		GROUPS					
		SU		PSU		NSU	
Category	Gender	M	SD	M	SD	M	SD
<hr/>							
FAC	Male	18.94	9.84	25.89	7.58	37.78	4.88
	Female	21.04	9.74	26.70	7.93	35.76	6.79
PAC	Male	19.39	8.84	29.83	5.13	27.96	6.94
	Female	21.48	9.10	31.94	6.42	33.67	5.01
MAA	Male	12.94	5.47	17.98	4.46	25.57	3.26
	Female	14.70	4.56	18,34	4.24	25.50	3.34
FAA	Male	12.58	5.20	16.99	4.97	24.94	3.43
	Female	13.26	5.58	17.84	5.47	24.48	4.13
PAA	Male	16.49	6.65	24.50	4.98	23.91	5.30
	Female	18.17	6.04	26.94	3.72	26.02	5.18

Alienation scales, the males in all three groups reported higher scores than the females.

But, the males in the PSU and NSU groups and females in the PSU and NSU groups reported similar scores that were significantly higher than the corresponding gender scores in the SU group.

#### Degree of Maladaptive Cognitive and Affective Characteristics

The Culture-Free Self-Esteem Inventory – 2nd Edition (CFSEI-2), Beck Depression Inventory – II (BDI-II), Beck Hopelessness Scale (BHS), and State-Trait Anxiety Inventory (STAI – Form Y) as well as the Cognitive Impairment, Impulsivity and Distractibility, Reality Distortion, Somatic Concern, and Psychological Discomfort scales on the Personality Inventory for Youth (PIY) were used to assess the subject's degree of maladaptive cognitive and affective characteristics.

For the CFSEI-2 which consists of four scales (General, Social/Peer, Academic/School, and Parental/Home), the overall mean scores for the 224 subjects were, respectively, 8.13, 4.08, 3.97, and 3.85. The mean score for each group for the General, Social/Peer, Academic/School, and Parental/Home scales are listed in Table 15.

Analysis of variance (see Table 15) revealed that there were significant differences among the three groups with respect to the four self-esteem scales (General, Social/Peer, Academic/School, and Parental/Home). On all four scales, the SU group reported significantly higher numbers than the PSU group who in turn had significantly higher numbers than the NSU group.

With regards to the comparison of the three SU sub-groups (EC, LC, and AD) to the PSU group and NSU group, the overall mean scores for each of the four self-esteem

Table 15. Means and Standard Deviations of the Culture-Free Self-Esteem Inventory 2nd Edition (CFSEI-2).

	GROUPS							F	p
	SU		PSU		NSU				
	M	SD	M	SD	M	SD			
Scales									
General	13.36	5.19	8.80	3.30	4.19	3.30	98.42	<.0001	
Social/Peer	6.79	1.93	3.83	1.81	2.60	1.69	94.42	<.0001	
Academic/School	6.13	2.58	4.33	2.30	2.26	1.78	55.01	<.0001	
Parental/Home	6.27	2.57	4.59	2.23	1.65	1.76	86.04	<.0001	



scales (General, Social/Peer, Academic/School, and Parental/Home) were, respectively, as follows: 1) EC – 7.81, 3.86, 3.91, and 3.76; 2) LC – 6.84, 3.45, 3.41, and 3.22; and 3) AD – 6.55, 3.29, 3.25, and 3.11. The mean score for each group for the General, Social/Peer, Academic/School, and Parental/Home scales are listed in Table 16.

Analysis of variance revealed that there were significant differences among the three sub-groups (EC, LC, and AD) and the PSU group and NSU group with respect to the four self-esteem scales: 1) EC – General [ $F(2,191) = 135.15, p < .0001$ ], Social/Peer [ $F(2,191) = 112.21, p < .0001$ ], Academic/School [ $F(2,191) = 95.39, p < .0001$ ], and Parental/Home [ $F(2,191) = 133.86, p < .0001$ ]; 2) LC – General [ $F(2,183) = 58.92, p < .0001$ ], Social/Peer [ $F(2,183) = 32.10, p < .0001$ ], Academic/School [ $F(2,183) = 27.57, p < .0001$ ], and Parental/Home [ $F(2,183) = 53.06, p < .0001$ ]; and 3) AD – General [ $F(2,177) = 45.80, p < .0001$ ], Social/Peer [ $F(2,177) = 15.88, p < .0001$ ], Academic/School [ $F(2,177) = 21.73, p < .0001$ ], and Parental/Home [ $F(2,177) = 46.30, p < .0001$ ].

On the General scale, the numbers reported by the EC and LC sub-group were significantly higher than the PSU group who in turn had significantly higher numbers than the NSU group. The numbers reported by the AD sub-group and PSU group were not significantly different from each other and yet, were significantly higher than the NSU group. On the Social Peer scale, the EC and LC sub-group reported significantly higher numbers than the PSU group who in turn had significantly higher numbers than the NSU group. The numbers reported by the AD sub-group and PSU group were not significantly different from each other and yet, were significantly higher than the NSU group.

**Table 16. Means and Standard Deviations for the Three Sub-Groups (EC, LC, and AD), PSU Group and NSU Group With Respect to the Culture-Free Self-Esteem Inventory (CFSEI-2).**

GROUPS										
EC		LC		AD		PSU		NSU		
n = 26		n = 18		n = 12		n = 80		n = 88		
M	SD	M	SD	M	SD	M	SD	M	SD	
Scales										
CFSEI-2										
GEN	17.04	5.00	11.06	2.69	8.83	1.90	8.80	3.30	4.19	3.30
S/P	8.23	1.18	6.00	1.57	4.83	1.27	3.83	1.81	2.59	1.69
A/S	8.19	1.23	5.00	1.97	3.33	1.78	4.33	2.30	2.26	1.78
P/H	8.35	1.38	4.83	1.76	3.92	2.07	4.59	2.23	1.65	1.76

With regards to the Academic/School scale, the EC sub-group reported significantly higher numbers than the PSU group who in turn had significantly higher numbers than the NSU group. The LC sub-group and PSU group reported numbers that were not significantly different from each other and yet, were significantly higher than the numbers reported by the NSU group. In the case of the AD sub-group, the numbers reported were not significantly different from the PSU or NSU groups. Finally, on the Parental/Home scale, the EC sub-group reported significantly higher numbers than the PSU group who in turn had significantly higher numbers than the NSU group. The LC and AD sub-group reported numbers that were not significantly different from the numbers reported by the PSU group and yet, were significantly higher than the numbers reported by the NSU group.

For the Beck Depression Inventory – II (BDI-II), Beck Hopelessness Scale (BHS), and the two scales (State and Trait) on the State-Trait Anxiety Inventory (STAI – Form Y), the overall mean scores for the 224 subjects were, respectively, 15.55, 7.35, 4.83 and 42.71. The mean score for each group for the BDI-II, BHS and the State and Trait scales of the STAI are listed in Table 17.

Analysis of variance (see Table 17) revealed that there were significant differences among the three groups with respect to the scores reported on the BDI-II, BHS and the State and Trait scales of the STAI. On the BDI-II, BHS, State scale and Trait scale, the SU group reported significantly higher numbers than the PSU group who in turn had significantly higher numbers than the NSU group.

**Table 17. Means and Standard Deviations of the Beck Depression Inventory – II (BDI-II), Beck Hopelessness Scale (BHS), and the State-Trait Anxiety Inventory (Form Y).**

	GROUPS							
	SU		PSU		NSU		F	p
	M	SD	M	SD	M	SD		
Tests								
BDI-II	25.73	6.94	21.21	9.68	3.92	4.88	184.76	<.0001
BHS	13.25	4.34	8.15	3.50	2.86	2.32	168.80	<.0001
STAI (State)	56.00	13.44	44.05	8.03	28.26	7.78	150.49	<.0001
STAI (Trait)	58.21	12.40	46.70	7.72	29.22	9.04	167.65	<.0001

With regards to the comparison of the three SU sub-groups (EC, LC, and AD) to the PSU group and NSU group, the overall mean scores for the BDI-II, BHS, and the State and Trait scales of the STAI were, respectively, as follows: 1) EC – 14.22, 6.95, 39.80, and 41.64; 2) LC – 13.30, 5.85, 37.08, and 38.71; and 3) AD – 12.97, 5.66, 36.39, and 38.35. The mean score for each group for the BDI-II, BHS, and the State and Trait scales of the STAI are listed in Table 18.

Analysis of variance revealed that there were significant differences among the three sub-groups (EC, LC, and AD) and the PSU group and NSU group with respect to the BDI-II, BHS, and the State and Trait scales of the STAI: 1) EC - BDI-II [ $F(2,191) = 168.28, p < .0001$ ], BHS [ $F(2,191) = 267.37, p < .0001$ ], State scale [ $F(2,191) = 244.24, p < .0001$ ], and Trait scale [ $F(2,191) = 251.85, p < .0001$ ]; 2) LC - BDI-II [ $F(2,191) = 125.36, p < .0001$ ], BHS [ $F(2,191) = 87.79, p < .0001$ ], State scale [ $F(2,191) = 93.81, p < .0001$ ], and Trait scale [ $F(2,191) = 97.98, p < .0001$ ]; and 3) AD - BDI-II [ $F(2,191) = 126.24, p < .0001$ ], BHS [ $F(2,191) = 80.96, p < .0001$ ], State scale [ $F(2,191) = 90.61, p < .0001$ ], and Trait scale [ $F(2,191) = 105.51, p < .0001$ ].

On the BDI-II, the numbers reported by the EC sub-group were significantly higher than the PSU group who in turn had significantly higher numbers than the NSU group. The numbers reported by the LC sub-group and PSU group were not significantly different from each other and yet, were significantly higher than the NSU group. Also, the AD sub-group and PSU group reported numbers that were not significantly different from each other and yet, were significantly higher than the numbers reported by the NSU group. On the BHS, both the EC and LC sub-groups reported significantly higher numbers than

Table 18. Means and Standard Deviations of the Three Sub-Groups (EC, LC, and AD), PSU Group and NSU Group With Respect to the Beck Depression Inventory – II (BDI-II), Beck Hopelessness Scale (BHS), and the State-Trait Anxiety Inventory (Form Y).

	GROUPS									
	EC		LC		AD		PSU		NSU	
	n = 26		n = 18		n = 12		n = 80		n = 88	
	M	SD	M	SD	M	SD	M	SD	M	SD
Tests										
BDI-II	27.58	5.19	23.94	8.81	24.42	6.67	21.21	9.68	3.92	4.88
BHS	17.08	1.83	10.22	3.28	9.50	2.20	8.15	3.50	2.86	2.32
STAI (State)	65.81	8.18	49.17	12.56	45.00	8.43	44.05	8.03	28.26	7.78
STAI (Trait)	68.12	6.40	49.61	11.79	49.67	5.35	46.70	7.72	29.22	9.04

the PSU group who in turn had significantly higher numbers than the NSU group.

However, the AD sub-group reported similar numbers to the PSU group that were significantly higher than the numbers reported by the NSU group. With regards to the State scale, the EC and LC sub-groups reported significantly higher numbers than the PSU group who in turn had significantly higher numbers than the NSU group. The AD sub-group reported numbers that were not significantly different from the PSU group and yet, were significantly higher than the numbers reported by the NSU group. Finally, on the Trait scale, the EC sub-group reported significantly higher numbers than the PSU group who in turn had significantly higher numbers than the NSU group. Whereas the LC and AD sub-groups reported numbers that were not significantly different from the PSU group and yet, were significantly higher than the numbers reported by the NSU group.

For the Cognitive Impairment, Impulsivity and Distractibility, Reality Distortion, Somatic Concern, and Psychological Discomfort scales, the overall mean scores for the 224 subjects were, respectively, 57.21, 57.25, 52.77, 52.93, and 54.05. The mean score for each group for the Cognitive Impairment, Impulsivity and Distractibility, Reality Distortion, Somatic Concern, and Psychological Discomfort scales are listed in Table 19. Analysis of variance (see Table 19) revealed that there were significant differences among the three groups with respect to the following four scales: Cognitive Impairment, Impulsivity and Distractibility, Reality Distortion, Somatic Concern, and Psychological Discomfort. On the Cognitive Impairment, Impulsivity and Distract-ability, Somatic Concern, and Psychological Discomfort scales, the SU group reported significantly

**Table 19. Means and Standard Deviations of the Cognitive Impairment (CI), Impulsivity and Distractibility (ID), Reality Distortion (RD), Somatic Concern (SC), and Psychological Discomfort (PD) scales on the Personality Inventory for Youth (PIY).**

	GROUPS							
	SU		PSU		NSU		F	p
	n = 56		n = 80		n = 88			
	M	SD	M	SD	M	SD		
Scales								
CI	70.59	12.30	57.76	7.78	48.20	7.99	101.81	<.0001
ID	64.77	8.65	61.15	10.59	48.89	9.97	53.84	<.0001
RD	57.96	8.18	55.98	11.04	46.55	8.05	33.48	<.0001
SC	58.02	6.90	54.96	9.89	47.84	7.89	28.45	<.0001
PD	65.60	10.14	55.04	8.67	45.81	7.26	92.43	<.0001



higher numbers than the PSU group which in turn had significantly higher numbers than the NSU group. For the Reality Distortion scale, the numbers reported by the SU group and PSU group were not significantly different from each other and yet, were significantly higher than the NSU group.

With regards to the comparison of the three SU sub-groups (EC, LC, and AD) to the PSU group and NSU group, the overall mean scores for each of the five scales (Cognitive Impairment, Impulsivity and Distractibility, Reality Distortion, Somatic Concern, and Psychological Discomfort) were, respectively, as follows: 1) EC – 56.48, 56.39, 51.64, 52.31, and 53.20; 2) LC – 53.78, 55.39, 51.81, 51.71, and 51.25; and 3) AD – 53.23, 55.37, 51.74, 51.68, and 50.69. The mean score for each group for the Cognitive Impairment, Impulsivity and Distractibility, Reality Distortion, Somatic Concern, and Psychological Discomfort scales are listed in Table 20.

Analysis of variance (see Table 20) revealed that there were significant differences among the three sub-groups (EC, LC, and AD) and the PSU group and NSU group with respect to the five scales: 1) EC – Cognitive Impairment [ $F(2,191) = 174.61, p < .0001$ ], Impulsivity and Distractibility [ $F(2,191) = 50.82, p < .0001$ ], Reality Distortion [ $F(2,191) = 24.15, p < .0001$ ], Somatic Concern [ $F(2,191) = 24.83, p < .0001$ ], and Psychological Discomfort [ $F(2,191) = 122.37, p < .0001$ ]; 2) LC - Cognitive Impairment [ $F(2,191) = 43.32, p < .0001$ ], Impulsivity and Distractibility [ $F(2,191) = 32.55, p < .0001$ ], Reality Distortion [ $F(2,191) = 26.41, p < .0001$ ], Somatic Concern [ $F(2,191) = 15.95, p < .0001$ ], and Psychological Discomfort [ $F(2,191) = 42.38, p < .0001$ ]; and 3) AD - Cognitive Impairment [ $F(2,191) = 35.82, p < .0001$ ], Impulsivity and Distractibility

**Table 20. Means and Standard Deviations of the Three Sub-Groups (EC, LC, and AD), PSU Group and NSU Group With Respect to the Cognitive Impairment (CI), Impulsivity and Distractibility (ID), Reality Distortion (RD), Somatic Concern (SC), and Psychological Discomfort (PD) scales on the Personality Inventory for Youth (PIY).**

	GROUPS									
	EC		LC		AD		PSU		NSU	
	n = 26		n = 18		n = 12		n = 80		n = 88	
	M	SD	M	SD	M	SD	M	SD	M	SD
Scales										
CI	80.58	7.18	63.33	9.67	59.83	6.79	57.76	7.78	48.20	7.99
ID	67.15	5.90	61.56	11.73	64.40	7.20	61.15	10.59	48.89	9.97
RD	55.54	7.10	59.06	8.58	61.58	8.70	55.98	11.04	46.55	8.05
SC	59.31	5.20	56.17	8.82	58.00	6.85	54.96	9.89	47.84	7.89
PD	72.53	6.41	61.00	8.67	57.50	9.21	55.04	8.67	45.81	7.26

[ $F(2,191) = 36.00, p < .0001$ ], Reality Distortion [ $F(2,191) = 27.32, p < .0001$ ], Somatic Concern [ $F(2,191) = 17.09, p < .0001$ ], and Psychological Discomfort [ $F(2,191) = 32.19, p < .0001$ ].

On the Cognitive Impairment scale, the numbers reported by the EC and LC sub-groups were significantly higher than the PSU group who in turn had significantly higher numbers than the NSU group. The numbers reported by the AD sub-group and PSU group were not significantly different from each other and yet, were significantly higher than the NSU group. On the Impulsivity and Distractibility scale, the EC sub-group reported significantly higher numbers than the PSU group who in turn had significantly higher numbers than the NSU group. However, the LC and AD sub-groups reported similar numbers to the PSU group that were significantly higher than the numbers reported by the NSU group. With regards to the Reality Distortion scale, the EC, LC and AD sub-groups and the PSU group reported numbers that were not significantly different from each other and yet, were significantly higher than the numbers reported by the NSU group. On the Somatic Concern scale, the EC, LC, and AD sub-groups and the PSU group also reported numbers that were not significantly different from each other and yet, were significantly higher than the numbers reported by the NSU group. Finally, on the Psychological Discomfort scale, the EC and LC sub-groups reported significantly higher numbers than the PSU group who in turn had significantly higher numbers than the NSU group. Whereas the numbers reported by the AD sub-group and the PSU group were not significantly different from each other and yet, were significantly higher than the numbers reported by the NSU group.

With respect to the gender differences for the three naturally occurring groups, the mean score for each scale on the Culture-Free Self-Esteem Inventory – 2nd Edition (CFSEI-2), Beck Depression Inventory – II (BDI-II), Beck Hopelessness Scale (BHS), and State-Trait Anxiety Inventory (STAI – Form Y) as well as the Cognitive Impairment, Impulsivity and Distractibility, Reality Distortion, Somatic Concern, and Psychological Discomfort scales on the Personality Inventory for Youth (PIY) are listed in Table 21.

Analysis of variance revealed that there were some significant differences among the three groups with respect to gender differences among certain scales. No significant gender by group interaction was noted in any of the scales. Significant group effects were noted in all the scales: 1) General [ $F(2,218) = 98.21, p < .0001$ ], 2) Social/Peer [ $F(2,218) = 90.11, p < .0001$ ], 3) Academic/School [ $F(2,218) = 53.76, p < .0001$ ], 4) Parental/Home [ $F(2,218) = 83.68, p < .0001$ ], 5) BDI-II [ $F(2,218) = 180.18, p < .0001$ ], 6) BHS [ $F(2,218) = 166.84, p < .0001$ ], 7) STAI (State) [ $F(2,218) = 145.69, p < .0001$ ], 8) STAI (Trait) [ $F(2,218) = 165.05, p < .0001$ ], 9) CI [ $F(2,217) = 99.73, p < .0001$ ], 10) ID [ $F(2,217) = 55.18, p < .0001$ ], 11) RD [ $F(2,217) = 31.70, p < .0001$ ], 12) SC [ $F(2,217) = 26.71, p < .0001$ ], 13) PD [ $F(2,217) = 87.72, p < .0001$ ]. Significant gender effects were also noted in following scales: 1) BHS [ $F(1,218) = 5.66, p < .018$ ], and 2) CI [ $F(1,217) = 10.72, p < .0001$ ]. For the gender effect in the BHS and CI scales, the males in all three groups consistently reported numbers higher than the females.

#### Degree of Interpersonal Difficulties and Social Skills Deficits

The Social Withdrawal and Social Skills Deficits Scales on the Personality Inventory for Youth (PIY) were used to assess the subject's degree of interpersonal difficulties and

Table 21. Means and Standard Deviations of gender differences with respect to the Culture-Free Self-Esteem Inventory – 2nd Edition (CFSEI-2), Beck Depression Inventory – II (BDI-II), Beck Hopelessness Scale (BHS), and State-Trait Anxiety Inventory (STAI – Form Y) as well as the Cognitive Impairment, Impulsivity and Distractibility, Reality Distortion, Somatic Concern, and Psychological Discomfort scales on the Personality Inventory for Youth (PIY).

		GROUPS					
		SU		PSU		NSU	
Category	Gender	M	SD	M	SD	M	SD
CFSEI-2							
General	Male	12.97	3.71	8.85	3.49	4.61	3.51
	Female	13.91	6.84	8.73	3.05	3.74	3.05
Social/Peer	Male	7.03	1.85	3.96	2.06	2.72	1.64
	Female	6.44	2.04	3.64	1.39	2.45	1.76
Academic/School	Male	6.21	2.60	4.85	2.20	2.09	1.66
	Female	6.00	2.61	3.58	2.26	2.45	1.90
Parental/Home	Male	6.30	2.34	4.81	1.97	1.80	1.76
	Female	6.22	2.92	4.27	2.54	1.48	1.77
BDI-II	Male	26.73	7.17	21.34	9.67	4.76	5.50
	Female	24.30	6.48	21.03	9.84	3.00	3.95

Category	Gender	GROUPS					
		SU		PSU		NSU	
		M	SD	M	SD	M	SD
BHS	Male	13.55	4.16	8.87	3.41	3.24	2.57
	Female	12.83	4.64	7.12	3.42	2.45	1.96
STAI (State)	Male	57.09	13.87	45.06	7.58	26.63	5.75
	Female	54.43	12.93	42.61	8.53	30.05	9.26
STAI (Trait)	Male	58.24	12.95	47.02	5.83	26.98	7.67
	Female	58.17	11.87	46.24	9.90	31.67	9.85
PIY							
CI	Male	72.40	12.32	59.17	7.48	50.35	7.74
	Female	68.00	12.06	55.76	7.87	45.90	7.77
ID	Male	62.82	7.76	60.83	10.00	50.61	9.71
	Female	67.56	9.25	61.61	11.52	47.27	10.00
RD	Male	57.88	7.10	56.02	12.07	46.59	7.55
	Female	58.09	9.69	55.91	9.57	46.71	8.67
SC	Male	59.49	6.61	53.98	10.53	48.46	7.27
	Female	55.91	6.90	56.36	8.87	47.46	8.44
PD	Male	66.42	9.60	55.23	9.30	46.80	6.41
	Female	64.43	9.60	54.76	7.81	44.93	7.99

social skills deficits. For the Social Withdrawal and Social Skills Deficits scales, the overall mean scores for the 224 subjects were, respectively, 56.97 and 54.01. The mean score for each group for the Social Withdrawal and Social Skills Deficits scales are listed in Table 22.

Analysis of variance (see Table 22) revealed that there were significant differences among the three groups with respect to the Social Withdrawal and Role Reversal scales. On the Social Withdrawal scale, the SU group reported significantly higher numbers than the PSU group who in turn had significantly higher numbers than the NSU group. On the Social Skills Deficits scale, the numbers reported by the SU group were significantly higher than the numbers reported by the PSU group and NSU group whose numbers were not significantly different from each other.

With regards to the comparison of the three SU sub-groups (EC, LC, and AD) to the PSU group and NSU group, the overall mean scores for each of the two scales (Social Withdrawal and Social Skills Deficits) were, respectively, as follows: 1) EC – 55.77 and 53.25; 2) LC – 54.09 and 50.22; and 3) AD – 54.21 and 49.91. The mean score for each group for the Social Withdrawal and Social Skills Deficits scales are listed in Table 23. Analysis of variance revealed that there were significant differences among the three sub-groups (EC, LC, and AD) and the PSU group and NSU group with respect to the two scales: 1) EC – Social Withdrawal [ $F(2,191) = 66.62, p < .0001$ ] and Social Skills Deficits [ $F(2,191) = 159.75, p < .0001$ ]; 2) LC – Social Withdrawal [ $F(2,183) = 20.26, p < .0001$ ] and Social Skills Deficits [ $F(2,183) = 15.12, p < .0001$ ]; and 3) AD – Social

**Table 22. Means and Standard Deviations of the Social Withdrawal (SW) and Social Skills Deficits (SSD) Scales on the Personality Inventory for Youth (PIY).**

Scales	GROUPS							
	SU		PSU		NSU		F	p
	n = 56		n = 80		n = 88			
	M	SD	M	SD	M	SD		
	SW	68.29	7.86	56.54	8.99	50.17	8.76	75.54
SSD	68.23	12.43	51.00	8.32	47.70	7.86	88.86	<.0001



**Table 23. Means and Standard Deviations of the Three Sub-Groups (EC, LC, and AD), PSU Group and NSU Group With Respect to the Social Withdrawal (SW) and Social Skills Deficits (SSD) Scales on the Personality Inventory for Youth (PIY).**

	GROUPS									
	EC		LC		AD		PSU		NSU	
	n = 26		n = 18		n = 12		n = 80		n = 88	
	M	SD	M	SD	M	SD	M	SD	M	SD
Scales										
SW	72.38	7.07	62.39	6.90	68.25	5.03	56.54	8.99	50.17	8.76
SSD	78.92	7.10	59.06	8.84	58.83	5.70	51.00	8.32	47.71	7.86

Withdrawal [ $F(2,177) = 28.10, p < .0001$ ] and Social skills Deficits [ $F(2,177) = 11.68, p < .0001$ ].

On the Social Withdrawal scale, the numbers reported by the EC, LC and AD sub-groups were significantly higher than the PSU group who in turn had significantly higher numbers than the NSU group. On the Social Skills Deficits scale, the EC, LC and AD sub-groups also reported significantly higher numbers than the PSU group who in turn had significantly higher numbers than the NSU group.

With respect to the gender differences for the three naturally occurring groups, the mean score for each scale on Social Withdrawal and Social Skills Deficits Scales on the Personality Inventory for Youth (PIY) are listed in Table 24. Analysis of variance revealed that there were no significant differences among the three groups with respect to gender and gender by group interactions. Significant group effects were noted in both scales: 1) SW [ $F(2,217) = 71.20, p < .0001$ ] and 2) SSD [ $F(2,217) = 84.58, p < .0001$ ].

#### Degree of Dysfunctional Family Characteristics

The Family Environment Scale (FES) which consists of ten sub-scales (Cohesion, Expression, Conflict, Independence, Achievement Orientation, Intellectual-Cultural Orientation, Active-Recreational Orientation, Moral-Religious Emphasis, Organization, and Control) and the Family Dysfunction scale on the Personality Inventory for Youth (PIY) were used to assess the subject's degree of dysfunctional family characteristics. For the ten sub-scales scales (Cohesion, Expression, Conflict, Independence, Achievement Orientation, Intellectual-Cultural Orientation, Active-Recreational Orientation, Moral-Religious Emphasis, Organization, and Control) on the Family

**Table 24. Means and Standard Deviations of Gender Differences With Respect to the Social Withdrawal (SW) and Social Skills Deficits (SSD) Scales on the Personality Inventory for Youth (PIY).**

Category	Gender	GROUPS					
		SU		PSU		NSU	
		M	SD	M	SD	M	SD
SW	Male	69.06	7.74	55.51	9.42	49.20	8.44
	Female	67.17	8.08	58.00	8.26	51.39	9.14
SSD	Male	68.58	12.40	49.40	7.10	48.22	8.50
	Female	67.74	12.74	53.27	9.46	47.37	7.09

Environment Scale and the Family Dysfunction scale on the Personality for Youth, the overall mean scores for the 224 subjects were, respectively, 37.03, 41.94, 53.72, 34.49, 43.55, 42.35, 43.69, 45.76, 41.28, 48.47, 58.00. The mean score for each group for the ten sub-scales scales (Cohesion, Expression, Conflict, Independence, Achievement Orientation, Intellectual-Cultural Orientation, Active-Recreational Orientation, Moral-Religious Emphasis, Organization, and Control) on the Family Environment Scale and the Family Dysfunction scale on the Personality Inventory for Youth are listed in Table 25.

Analysis of variance (see Table 25) revealed that there were significant differences among the three groups with respect to the ten sub-scales (Cohesion, Expression, Conflict, Independence, Achievement Orientation, Intellectual-Cultural Orientation, Active-Recreational Orientation, Moral-Religious Emphasis, Organization, and Control) on the FES and the Family Dysfunction Scale on the PIY. On the Expression, Conflict, Control and Family Dysfunction scales, the SU group reported significantly higher numbers than the PSU group who in turn had significantly higher numbers than the NSU group. On the Cohesion, Independence, Achievement Orientation, Intellectual-Cultural Orientation, Moral-Religious Emphasis and Organization scales, the SU group and PSU group reported numbers that were not significantly different from each other and yet, were significantly higher than the numbers reported by the NSU group. However, on the Active-Recreational scale, the PSU reported significantly higher numbers than the SU group who in turn had significantly higher numbers than the NSU group.

**Table 25. Means and Standard Deviations of the Ten Sub-Scales on the FES and the Family Dysfunction Scale on the PIY.**

Sub-Scales	GROUPS							
	SU		PSU		NSU		F	p
	n = 56		n = 80		n = 88			
	M	SD	M	SD	M	SD		
Cohesion	42.11	14.84	41.16	13.04	30.05	17.16	15.34	<.0001
Expression	51.21	12.85	42.94	9.13	35.13	12.26	40.49	<.0001
Conflict	66.13	11.72	56.23	9.28	43.58	10.21	85.67	<.0001
Independence	45.18	15.64	39.86	12.46	22.81	16.73	45.74	<.0001
Achiev. Orient.	50.41	15.76	46.89	9.01	36.16	13.54	25.57	<.0001
Intell.-Cult. Orient.	45.63	10.84	45.88	9.21	37.06	12.26	17.10	<.0001
Active-Recreat. Orient.	44.18	9.18	49.35	8.86	38.22	12.12	24.34	<.0001
Moral-Rel. Emphasis	52.25	11.34	49.94	8.75	37.84	10.29	45.89	<.0001
Organization	42.70	9.68	45.90	9.56	36.19	11.42	19.10	<.0001
Control	59.52	12.23	51.63	8.91	38.60	13.07	60.93	<.0001
Family Dysfunct.	71.14	9.80	60.25	8.91	47.59	7.90	127.62	<.0001

With regards to the comparison of the three SU sub-groups (EC, LC, and AD) to the PSU group and NSU group, the overall mean scores for each of ten sub-scales scales (Cohesion, Expression, Conflict, Independence, Achievement Orientation, Intellectual-Cultural Orientation, Active-Recreational Orientation, Moral-Religious Emphasis, Organization, and Control) on the Family Environment Scale and the Family Dysfunction scale on the Personality for Youth were, respectively, as follows: were, respectively, as follows: 1) EC – 36.90, 41.67, 52.88, 34.03, 43.34, 41.89, 43.04, 44.63, 40.76, 47.91, and 56.86; 2) LC – 35.50, 39.43, 50.50, 31.64, 41.37, 41.75, 43.79, 44.45, 41.05, 45.60, and 54.72; and 3) AD – 35.59, 39.05, 50.28, 31.28, 41.77, 41.42, 43.97, 44.31, 41.22, 45.19, and 54.44. The mean score for each group for the ten sub-scales scales [Cohesion (CO), Expression (EXP), Conflict (CONF), Independence (IND), Achievement Orientation (AO), Intellectual-Cultural Orientation (ICO), Active-Recreational Orientation (ARO), Moral-Religious Emphasis (MRE), Organization (ORG), and Control (CONT), and the Family Dysfunction (FD) scale] are listed in Table 26.

Analysis of variance revealed that there were significant differences among the three sub-groups (EC, LC, and AD) and the PSU group and NSU group with respect to the ten sub-scales scales (Cohesion, Expression, Conflict, Independence, Achievement Orientation, Intellectual-Cultural Orientation, Active-Recreational Orientation, Moral-Religious Emphasis, Organization, and Control) on the Family Environment Scale and the Family Dysfunction scale on the Personality for Youth four self-esteem scales: 1) EC - Cohesion [ $F(2,191) = 16.60, p < .0001$ ], Expression [ $F(2,191) = 62.34, p < .0001$ ], Conflict [ $F(2,191) = 109.99, p < .0001$ ], Independence [ $F(2,191) = 55.37, p < .0001$ ],

Table 26. Means and Standard Deviations of the Three Sub-Groups (EC, LC, and AD), PSU Group and NSU Group With Respect to the Ten Sub-Scales on the FES and the Family Dysfunction (FD) Scale on the PIY.

	GROUPS									
	EC		LC		AD		PSU		NSU	
	n = 26		n = 18		n = 12		n = 80		n = 88	
	M	SD	M	SD	M	SD	M	SD	M	SD
Scales										
CO	47.00	18.29	37.00	10.79	39.17	7.21	41.16	13.04	30.05	17.16
EXP	59.89	12.26	44.89	6.88	41.92	8.60	42.94	9.13	35.13	10.08
CONF	74.08	8.13	58.89	10.15	59.75	9.92	56.23	9.28	43.58	10.21
IND	54.08	14.47	38.28	11.93	36.25	13.25	39.86	12.46	22.81	16.73
AO	56.73	17.01	42.33	12.09	48.83	12.41	46.89	9.01	36.16	13.54
ICO	46.00	12.90	46.39	8.75	43.67	9.26	45.88	9.21	37.06	12.26
ARO	39.92	8.80	46.28	8.20	50.25	7.18	49.35	8.86	38.23	12.12
MRE	51.27	14.08	52.39	9.04	54.17	7.71	49.94	8.75	37.84	10.29
ORG	40.39	11.27	43.28	8.63	46.83	5.72	45.90	9.56	36.19	11.42
CONT	68.04	10.28	53.11	8.84	50.67	7.92	51.61	8.91	38.60	13.07
FD	77.81	6.76	65.00	9.83	65.92	5.53	60.25	8.91	47.59	7.90

Achievement Orientation [ $F(2,191) = 32.93, p < .0001$ ], Intellectual-Cultural Orientation [ $F(2,191) = 15.02, p < .0001$ ], Active-Recreational Orientation [ $F(2,191) = 25.01, p < .0001$ ], Moral-Religious Emphasis [ $F(2,191) = 35.22, p < .0001$ ], Organization [ $F(2,191) = 17.37, p < .0001$ ], Control [ $F(2,191) = 77.32, p < .0001$ ], and Family Dysfunction [ $F(2,191) = 147.95, p < .0001$ ]; 2) LC - Cohesion [ $F(2,191) = 11.65, p < .0001$ ], Expression [ $F(2,191) = 17.76, p < .0001$ ], Conflict [ $F(2,191) = 42.07, p < .0001$ ], Independence [ $F(2,191) = 30.64, p < .0001$ ], Achievement Orientation [ $F(2,191) = 17.82, p < .0001$ ], Intellectual-Cultural Orientation [ $F(2,191) = 16.00, p < .0001$ ], Active-Recreational Orientation [ $F(2,191) = 24.14, p < .0001$ ], Moral-Religious Emphasis [ $F(2,191) = 40.59, p < .0001$ ], Organization [ $F(2,191) = 18.69, p < .0001$ ], Control [ $F(2,191) = 33.46, p < .0001$ ], and Family Dysfunction [ $F(2,191) = 6.50, p < .0001$ ]; and 3) AD - Cohesion [ $F(2,191) = 11.93, p < .0001$ ], Expression [ $F(2,191) = 14.51, p < .0001$ ], Conflict [ $F(2,191) = 40.99, p < .0001$ ], Independence [ $F(2,191) = 28.73, p < .0001$ ], Achievement Orientation [ $F(2,191) = 20.10, p < .0001$ ], Intellectual-Cultural Orientation [ $F(2,191) = 14.19, p < .0001$ ], Active-Recreational Orientation [ $F(2,191) = 25.77, p < .0001$ ], Moral-Religious Emphasis [ $F(2,191) = 41.04, p < .0001$ ], Organization [ $F(2,191) = 20.38, p < .0001$ ], Control [ $F(2,191) = 30.32, p < .0001$ ], and Family Dysfunction [ $F(2,191) = 61.85, p < .0001$ ].

On the Expression, Conflict, Independence, Achievement Orientation, Control, and Family Dysfunction scales, the numbers reported by the EC sub-group were significantly higher than the PSU group who in turn had significantly higher numbers than the NSU group. On the Cohesion, Intellectual-Cultural Orientation, and Active-



Recreational Orientation scales, the numbers reported by the EC sub-group and PSU group were not significantly different from each other and yet, were significantly higher than the NSU group. On the Moral-Religious Emphasis and Organization scales, the PSU group reported numbers that were significantly higher than the numbers reported by the EC sub-group and NSU group whose numbers were not significantly different from each other.

Secondly, on the Expression, Conflict, Independence, Achievement Orientation, Intellectual-Cultural Orientation, Active-Recreational Orientation, Moral-Religious Emphasis, Organization, Control and Family Dysfunction scales, the numbers reported by the LC sub-group and PSU group were not significantly different and yet, were significantly higher than the NSU group. On the Cohesion scale, the numbers reported by the PSU group were significantly higher than the NSU group with the numbers reported by the LC sub-group not being significantly different from either the NSU or PSU group.

Finally, on the Expression, Conflict, Independence, Achievement Orientation, Active-Recreational Orientation, Moral-Religious Emphasis, Organization, Control and Family Dysfunction scales, the AD sub-group and PSU group whose numbers were not significantly different from each other were significantly higher than those numbers reported by the NSU group. On the Cohesion and Intellectual-Cultural Orientation scales, the numbers reported by the PSU group were significantly higher than the NSU group with the numbers reported by the LC sub-group not being significantly different from either the NSU or PSU group.

With respect to the gender differences for the three naturally occurring groups, the mean score for the ten sub-scales scales (Cohesion, Expression, Conflict, Independence, Achievement Orientation, Intellectual-Cultural Orientation, Active-Recreational Orientation, Moral-Religious Emphasis, Organization, and Control) on the FES and the Family Dysfunction scale on the PIY are listed in Table 27. Analysis of variance revealed that there were no significant gender by group interactions in any of the scales. Significant group effect was noted in all the scales: 1) cohesion [ $F(2,218) = 15.17, p < .0001$ ], 2) expression [ $F(2,218) = 39.14, p < .0001$ ], 3) conflict [ $F(2,218) = 81.41, p < .0001$ ], 4) independence [ $F(2,218) = 44.49, p < .0001$ ], 5) achievement orientation [ $F(2,218) = 25.56, p < .0001$ ], 6) intellectual-cultural orientation [ $F(2,218) = 18.63, p < .0001$ ], 7) active-recreational orientation [ $F(2,218) = 26.16, p < .0001$ ], 8) moral-religious emphasis [ $F(2,218) = 47.86, p < .0001$ ], 9) organization [ $F(2,218) = 18.98, p < .0001$ ], 10) control [ $F(2,218) = 58.96, p < .0001$ ], and 11) family dysfunction scale [ $F(2,218) = 124.02, p < .0001$ ]. Significant gender effects were also noted in the following scales: 1) intellectual-cultural orientation [ $F(1,218) = 11.54, p < .001$ ] and 2) active-recreational orientation [ $F(1,218) = 5.57, p < .019$ ]. For the gender effects in the intellectual-cultural orientation and active-recreational orientation scales, the males in all three groups reported numbers lower than those reported by the females.

#### Degree of Antisocial Behaviour

The Delinquency Scale on the Personality Inventory for Youth (PIY) was used to assess the subject's degree of antisocial behaviour. For the Delinquency Scale, the overall mean scores for the 224 subjects was 59.97. The mean score for each group for the

**Table 27. Means and Standard Deviations of Gender Differences With Respect to the Ten Sub-Scales on the FES and the Family Dysfunction Scale on the PIY.**

Category	Gender	GROUPS					
		SU		PSU		NSU	
		M	SD	M	SD	M	SD
Cohesion	Male	43.82	15.55	39.26	12.00	28.85	17.15
	Female	39.65	13.72	43.89	14.15	31.36	17.28
Expression	Male	51.40	12.88	43.28	9.14	33.07	7.71
	Female	50.95	13.10	42.46	9.24	37.38	11.85
Conflict	Male	67.67	12.41	56.62	8.88	43.02	10.45
	Female	63.91	10.53	55.67	9.94	44.19	10.03
Independence	Male	47.00	13.05	38.38	12.66	22.65	15.76
	Female	42.57	18.75	41.97	12.04	22.98	17.92
Achiev. Orient.	Male	50.09	17.84	45.68	9.17	33.40	14.27
	Female	50.87	12.56	48.61	8.61	39.19	12.16
Intell.-Cult. Orient.	Male	42.85	9.74	44.81	10.02	34.37	9.33
	Female	49.61	11.29	47.39	7.81	40.00	14.37
Active-Recreat. Orient.	Male	42.97	9.40	47.23	7.75	37.30	12.51
	Female	45.91	8.78	52.36	9.57	39.24	11.74

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Category	Gender	GROUPS					
		SU		PSU		NSU	
		M	SD	M	SD	M	SD

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Moral-Rel. Emphasis	Male	49.49	11.29	50.13	8.30	37.11	10.00
	Female	56.22	10.39	49.67	9.48	38.64	10.66
Organization	Male	43.36	11.18	45.21	9.46	33.94	10.79
	Female	41.74	7.12	46.88	9.76	38.67	11.69
Control	Male	59.55	13.24	52.17	8.84	37.04	12.29
	Female	59.48	10.90	50.82	9.10	40.31	13.82
Family Dysfunct.	Male	71.39	9.82	61.72	8.49	48.44	7.33
	Female	70.78	10.00	58.15	9.20	46.66	8.57

Delinquency Scale was as follows: SU = 72.30; PSU = 64.53; NSU = 47.99. Analysis of variance revealed that there were significant differences among the three groups with respect to the Delinquency Scale [ $F(2,221) = 162.82, p < .0001$ ]. On the Delinquency Scale, the SU group reported significantly higher numbers than the PSU group who in turn had significantly higher numbers than the NSU group. With regards to the comparison of the three SU sub-groups (EC, LC, and AD) to the PSU group and NSU group, the overall mean scores for each of the Delinquency Scale ) were, respectively, as follows: 1) EC – 58.90; 2) LC – 56.94; and 3) AD – 56.60. The mean score for each group for the Delinquency Scale scales were, respectively, as follows: EC = 78.50; LC = 67.00; AD = 66.83; PSU = 64.53; NSU = 48.00.

Analysis of variance revealed that there were significant differences among the three sub-groups (EC, LC, and AD) and the PSU group and NSU group with respect to the Delinquency Scale: EC – [ $F(2,191) = 192.93, p < .0001$ ]; 2) LC – [ $F(2,183) = 104.06, p < .0001$ ]; and 3) AD – [ $F(2,177) = 109.21, p < .0001$ ].

On the Delinquency Scale, the numbers reported by the EC sub-group were significantly higher than the PSU group who in turn had significantly higher numbers than the NSU group. The numbers reported by both the LC and AD sub-groups were not significantly different than the numbers reported by the PSU group and yet, were significant higher than the numbers reported by the NSU group.

With respect to the gender differences for the three naturally occurring groups, the mean score for the male and female subjects on the Delinquency scale of the PIY are as follows: 1) SU – Male (70.57), Female (74.78); 2) PSU – Male (64.28), Female (64.88);

and 3) NSU – Male (48.28), Female (44.56). Analysis of variance revealed that there were no significant differences among the three groups with respect to gender and gender by group interactions. A significant group effect was noted for the Delinquency scale [ $F(2,217) = 162.37, p < .0001$ ].

## CHAPTER FIVE

### DISCUSSION

The purpose of this study was to examine the perceived pattern of attachment of the three naturally occurring groups of Native adolescents: solvent users; poly-substance users; and substance non-users and their attachment relationships to their parents and peers as well as to explore their perception of well-being and social adaptation based on early experiences with attachment figures. In this chapter, the results of this study will be summarized and interpreted with respect to the significant and nonsignificant findings. Following this, the limitations of the study and implications for practical, theory and future research will be discussed.

Data obtained for this study revealed no significant differences in the number of females and males in each of the three groups. However, results did reveal that there was a significant difference in the mean age between certain groups where the PSU group had a significantly higher mean age than both the SU and NSU groups who were not significantly different from each other.

#### Psychological Measures

##### Current Perception of Attachment Patterns and Perceived Available Responsiveness of Attachment Relationships

In general, the results of this study demonstrate that attachment status differentiates Native adolescents with a history of solvent or substance abuse from those without such a history. The evidence seems to support a direct relationship between certain attachment patterns and different types of substance users (e.g., SU, PSU, and

NSU groups and the EC, LC, and AD subgroups) as well as the positive and negative affective/cognitive dimension of adolescents' relationships with parents and peers.

For the three naturally occurring groups (SU, PSU, and NSU), as assessed by the AAQ, high scores for both genders on the Unavailability scale were associated with being in the SU group. Moderate scores were noted in the PSU group with the lowest scores being reported in the NSU group. The Unavailability attachment scale assesses the extent to which the attachment figure is viewed as reliably accessible. Individuals who score high on this scale perceive their attachment figures as unavailable and unresponsive. The results suggest that the subjects in the SU group tend to perceive their attachment figures as unreliable and unresponsive and they are at increased risk of not being able to adapt and cope constructively in the face of perceived threats as well as presenting as socially and emotionally maladjusted. Although not to the same degree as the SU group, the scores gathered from the PSU group suggest some degree of vulnerability towards characteristics reflective of individuals with higher scores on the Unavailability attachment scale. The scores reported by the NSU group are characteristic of individuals who are likely to respond to felt distress in constructive and adaptive ways; that is, they feel that others can be counted on for support, are well-adjusted psychologically, and have the ability to cope constructively.

When differences were compared among the three age of onset sub-groups (EC - early childhood, ages 1 – 5; LC - late childhood, ages 6 – 10; and AD - adolescence, ages 11 – 18) of the SU group on the Unavailability attachment scale to the scores reported by the PSU group, it was interesting to note that the subjects in the EC sub-group reported



the highest mean score, with the subjects in the LC and AD sub-groups reporting mean scores that were lower than the mean score of the EC sub-group and slightly higher than the mean score of the PSU group. The results, as assessed by the AAQ, indicate that the subjects in the EC sub-group are at the greatest risk of perceiving their attachment figure as unavailable and unresponsive and, therefore, at greater risk of not being able to adapt and cope constructively in the face of perceived threats as well as presenting as socially and emotionally maladjusted. The results also suggest that as the age of onset increases (e.g., the LC and AD subgroups recorded significantly lower scores, respectively, than the EC subgroup), the risk of having, or degree to which the subject presents with, traits characteristic of the Unavailable attachment scale decreases.

A possible explanation for the pattern of scores reported by the three naturally occurring groups on the Unavailability scale may be found in the responses on several variables of the Solvent Abuse/Attachment Questionnaire. On the variables for the “number of caregivers up to age 5” and the “number of caregivers in total”, the SU group reported the highest number with the PSU group reporting the next highest and the NSU group reporting the lowest. Bowlby (1977) argued that the child’s confidence in the availability of an attachment figure in times of need is largely determined by early experiences. Ainsworth et al. (1978) relate that the dimension of maternal behaviour that bears the strongest relation with childhood attachment classification is sensitivity to the infant’s signals. It is during the first year that the development of basic trust and security occurs through consistent, appropriate and reliable fulfillment of needs (Thompson, 1999). As a result, it would make sense that children who are exposed to multiple

caregivers during their early formative years may be at greater risk of receiving inconsistent and unresponsive care. One might also conclude that the greater the number of caregivers the greater the probability of experiencing multiple rejections and perceiving one's caregivers as unresponsive and unavailable. The results of this study do support this line of reasoning that the SU group who reported the highest score on the Unavailability scale also reported the greatest number of caregivers with the PSU group reporting a more moderate score on the Unavailability scale and a lower number of caregivers. The NSU group reported the greatest degree of availability and the lowest number of caregivers. For the three age of onset sub-groups, a similar pattern occurred where the degree to which the sub-group perceived their caregiver as unavailable correlated to the number of caregivers they had during their early formative years. The greater the scores on the Unavailable scale the greater the number of caregivers.

High scores for both genders on the Lack of a Secure Base attachment scale were associated with being in either the SU group or the PSU group, with the SU group reporting a slightly higher score. The Lack of a Secure Base attachment scale assesses to what degree the adolescent lacks confidence in the strength of the attachment bond in the absence of the attachment figure (Sheldon-Keller et al., 1993). Bowlby (1977) identified that the provision of a secure base from which the child is encouraged to explore and return to when needed as an important attachment figure role. First introduced by Ainsworth (Ainsworth & Wittig, 1969), secure base effect was considered a central feature distinguishing attachment from other affectional relationships. Weiss (1982) defined "secure base" as the "increased comfort and diminished anxiety that occurs in the

presence of the attachment figure” (p. 173). The extent to which caregivers recognize and respect the child’s attachment desires, needs, and behaviours determines the adequacy of the secure base. Those individuals who are unable to maintain feelings of security in the absence of the attachment figure are viewed to have a lack of secure base. In the description of their scale, Sheldon-Keller et al. (1993) report that high scores on this scale reflect a lack of a secure base. They also indicated that high scores on this scale appear to tap into an enmeshed style of relating to attachment figures. Overall, it would appear that both the SU group and PSU group reported scores that are reflective of greater insecurity with respect to attachment. Although one of the components of the operational definition of insecure attachment used in this study was extreme lack of a secure base, the hypothesis that solvent users would be significantly more likely than poly-substance users to reflect a greater lack of a secure base was not supported by the data. Both the SU group and PSU reported scores associated with a lack of a secure base – unable to maintain feelings of security in the absence of the attachment figure – suggesting that they both could be reflecting an insecure attachment and that the pattern of attachment might be different.

Although the SU reported higher scores than the PSU group on the Unavailability scale, both groups reporting similar scores on the Lack of a Secure Base scale may be due to caregivers (no matter how many) not being consistently responsive to the child’s signals and therefore, not nurturing a secure base. The only difference between one or five caregivers not respecting a child’s attachment desires, needs and behaviours which

determines the adequacy of the secure base might be the reinforcing influence resulting from the repetitive neglect from numerous inadequate caregivers.

Similar results were obtained when differences were compared among the three sub-groups (EC, LC, and AD) of the SU group to the scores reported by the PSU group. However, a slight difference was noted in that the scores reported by the LC and AD sub-groups were similar to each other and slightly higher than the score reported by the EC sub-group. A possible explanation for this difference might be due to the low numbers in each sub-group or the LC and AD subgroups reporting scores reflecting a different variation or type of an attachment pattern than the EC sub-group.

The Role Reversal attachment scale was developed to evaluate the adolescent's sense of responsibility for the parent's well-being. In describing the development of the attachment bond, Bowlby (1969) and Ainsworth (1991) both speak of a progression towards a "goal-corrected partnership" in which children begin to perceive and respond to the attachment figure as someone who has his/her own plans and desires. Empathetic to the attachment figure's needs and feelings, children draw upon their developing language skills to facilitate negotiation of mutually acceptable ways of meeting each other's needs. Ainsworth (1991) states that "confidence in the stability of this mutual understanding becomes built into the child's working model of his relationship with his mother figure, and enables him to tolerate separation from her for longer periods and with less distress" (p. 34).

High scores for both genders on the Role Reversal attachment scale were associated with being in the PSU group suggesting that subjects in the PSU group are at

greater risk of feeling responsible for the attachment figure's feelings. When differences were compared among the three sub-groups (EC, LC, and AD) of the SU group to the scores reported by the PSU group, the EC sub-group reported the lowest mean score. The LC and AD sub-groups had similar mean scores that were higher than the EC sub-group and lower than the PSU group. However, it was interesting to note that the scores reported by the LC and AD sub-groups were closer to the mean score reported by the PSU group than the EC sub-group. These results may suggest that the subjects in the LC and AD sub-groups could be at some risk of feeling responsible for the attachment figure's feelings with the subjects in the EC sub-group being at the least risk.

In the development of the AAI, Main and colleagues reported that some individuals described childhood experiences that suggested a relationship beyond "goal-corrected partnership" in which the parent's needs dominate the child's attention (Main & Goldwyn, 1985/1994). Bowlby (1980) also referred to a similar trait he referred to as "compulsive care-giving". This may be a possible reasoning why the PSU group reported such a high score on the Role Reversal scale. Sue and Sue (1990) point out that many parents in the Aboriginal communities have not been prepared for the task of parenting as a result of many detrimental influences that have impacted their cultural practices, communities and extended families (e.g., significant levels of alcoholism and substance abuse, residential schools not allowing parents to care for their children and role model parenting skills). Many Aboriginal families are characterized by parents who are not in a position to nurture their children in light of their own level of neediness and inability to care for themselves. As a result, dysfunctional parents may be inclined to look to their

children to meet their needs resulting in the children feeling forced to take on a parentified role. The child assumes roles and responsibilities ordinarily assumed by the parents and presents with controlling behaviours towards the caregiver that are either caregiving (e.g., oversolicitous) or punitive (e.g., bossy, rejecting, hostile) (Levy & Orlans, 1998). The EC sub-group may have scored lower on this scale because they have not been with a caregiver long enough to develop a “compulsive care-giving” trait in light of having reported experiencing the highest number of caregivers prior to age 5 and caregivers overall. The subjects in the EC sub-group may also be characteristic of a very severe type of insecure attachment pattern (e.g., unresolved/disorganized) where they do not know how to maintain access to the attachment figure in times of stress and therefore, are not capable of caring for anyone else (i.e., parent). Whereas, the scores of the LC and AD sub-groups may have been closer to those of the PSU group possibly reflecting a similar attachment pattern where they might attempt to care for their parents. However, it is likely that the dysfunctional attachment interaction is based on an insecure strategy.

The Angry Distress attachment scale taps into the adolescent’s negative affective responses to the perceived unavailability of his/her attachment figure. Bowlby (1973) viewed Angry directed towards an attachment figure as a response to frustration resulting from unmet attachment needs. Bowlby (1973) stated that “being anxious, especially that an attachment figure may be inaccessible or unresponsive when wanted, increases hostility”(p. 255). The results with respect to the Angry Distress attachment scale indicated that high scores for both genders were predictive of the SU group and the PSU group. However, when differences were compared among the three sub-groups (EC, LC,

and AD) of the SU group to the scores reported by the PSU group, the EC group reported a significantly higher mean score while the LC sub-group, AD sub-group and the PSU group reported mean scores that were not significantly different from each other. These results would suggest that the EC sub-group is at greatest risk of experiencing anger in reaction to unmet attachment needs and that the LC and AD sub-groups and the PSU group are of approximately equal risk, although lesser than the EC sub-group.

Again, the EC sub-group's greater degree of anger may be due to the fact that they were exposed to higher numbers of caregivers and extreme forms of neglect during their early formative years which in turn placed them at greater risk of not having their attachment needs met. However, the LC and AD sub-groups and the PSU group also reported elevated scores on the Anger Distress attachment scale. A possible explanation might be due to the frustration of a natural developmental process that all families are faced with. All families must make the transition from patterns of relationships appropriate to parents and children to those suitable to parents and young adults. This transition involves changes in behaviours, demands, expectations and family processes. Steinberg (1987) relates that because changes in family relationships are likely to be negotiated over relatively long periods of time, periods of disequilibrium may occur before the family system has fully adapted to changes in its members. However, if the caregivers of the subjects of the LC and AD sub-group and PSU group were not in a position to negotiate this developmental change due to the many dysfunctional aspects facing Aboriginal families and communities, one might expect degrees of neglect and therefore, frustration resulting from unmet attachment needs.

As assessed by the AAQ, results indicated a gender effect where the males in all three groups reported higher scores on the Unavailability scale than the females. Although the results could be due to chance, this gender difference might have been influenced by certain socializing patterns where males are encouraged to be independent and females to be more passive and dependent. Caregivers may tend to present as more distant with males in order to encourage a greater sense of independence and interact with females in a more protective manner. If these socializing influences do exist, it would make sense that males might perceive their attachment figures as less available. Another possible explanation for this difference might be the effect of gender. In one study, where the AAQ was used to investigate the attachment patterns of adolescent subjects who had been classified as insecure, it was reported that the male subjects tended to report higher scores than the female subjects on certain scales (McDonald, 1996). Since all the groups had a larger number of male subjects, it may have been possible that the mean score reported by the male subjects on the Unavailability attachment scale could have been elevated because of the larger number of male than female responses.

For the gender by group interaction on the Lack of a Secure Base scale, the males in the PSU and NSU groups reported a greater secure base than the females and the males in the SU group reported a greater lack of security than the females. A possible explanation for this unique interaction might be because of the different types of infant-parent the subjects in the SU group experienced. It is interesting to note that a certain number of male and female subjects in the SU group reported no attachment relationships with a father as their primary caregiver. A number of male subjects also reported a



significantly higher number than the females of having a primary attachment with a mother. Drawing upon psychoanalytic theory, Chodorow (1978) maintained that child-mother relationships exert quite different influences on the future relational tendencies of males and females. Berlin and Cassidy (1999) suggest that the infant-father attachment simply exerts a different type of influence than does the infant-mother attachment. They also relate that these influences may differ by the sex of the infant. As a result, it may be that the lack of a father attachment and having an infant-mother attachment for certain males impacts their attachment desires, needs, and behaviours and plays an important role in determining the adequacy of the secure base.

As predicted, the subjects in the SU group presented as insecure by meeting the four criteria of the operationalized definition of insecure attachment as outlined in this study. However, it was interesting to note that according to Sheldon-Keller et al. (1993), the scores reported by the PSU group are also suggestive of a certain type of insecure attachment pattern. Sheldon-Keller et al. (1993) indicated that subjects who were classified as “preoccupied” by the AAI had higher mean scores on the Angry Distress scale and did not meet the criteria for other attachment classifications. Two types of a preoccupied state of mind classification are the E1 and E2 subcategories. As assessed by the AAI, the E1 and the E2 subcategories are characterized by a focus on relationships with parents in either a passive or angry manner, respectively. The E2 classification has been reported to be consistent with high scores on the Angry Distress attachment scale of the AAQ (Sheldon-Keller et al., 1993). High scores on the Angry Distress attachment scale were reported by both genders of the SU and PSU groups suggesting that their

relationships with attachment figures are characterized by anger as opposed to a passive manner which does find support in the research literature (Bachrach & Sandler, 1985; Lawson & Lawson, 1992; Oetting et al., 1988). When the three subgroups (EC, LC, and AD) were compared, both genders for the EC subgroup reported the highest score on the Angry Distress attachment scale with the LC and AD subgroups reporting slightly lower scores similar to the PSU group. This may suggest that the subjects in the EC subgroup have a greater tendency or propensity towards acting out their anger as opposed to expressing it in a passive manner, than the LC and AD subgroups, as well as the PSU group.

Sheldon-Keller et al. (1993) also reported that the subjects who were classified as unresolved/disorganized on the AAI had higher mean scores on the Unavailability attachment scale, lower mean scores on the Role Reversal attachment scale and higher mean scores on the Angry Distress attachment scale. It is interesting to note that both genders of the EC sub-group reported mean scores consistent with the finding by Sheldon-Keller et al. (1993). As a result, it would appear that solvent abusers who start using solvent at an extremely young age (i.e., EC sub-group) may also reflect an unresolved/disorganized pattern of insecure attachment – behaviours appear to be very poorly organized, involving idiosyncratic, almost self-contradictory combinations of proximity seeking and avoidance, no clear strategy as to how to engage and interact with others and tendency to be suspicious of and aggressive with others, especially caregivers (Durkin, 1995).

A possible explanation for the EC group reflecting both the preoccupied and unresolved/disorganized patterns of attachment has been proposed by Pearce and Pezzot-Pearce (1997). They suggest that the unresolved-disorganized behaviours do not represent a fourth organized strategy for maintaining access to an attachment figure and only make sense “if interpreted as reflecting fear and confusion about the caregiver and unresolved conflict concerning whether or how to maintain access to the attachment figure in times of stress”(p. 16). If pervasive enough, the characteristics of fear and conflict could impede the infant’s organization of a consistent attachment-oriented strategy. Main and Solomon (1990) support this perspective by proposing that the conflict and disorganization resulting from the unresolved-disorganized pattern of attachment might occur in the context of a strategy that was otherwise secure. Disorganization might exist in relation to the other two coherent strategies, avoidant-dismissing and ambivalent-preoccupied. They suggest that one should code the best-fitting classification according to the subject’s underlying attachment strategy which is referred to as the “forced” classification (Main & Solomon, 1990). With this perspective in mind, the EC group could be coded with an unresolved-disorganized pattern of attachment, the forced-preoccupied type. If true, this may help to partially explain why researchers have observed that certain chronic solvent abusers demonstrate characteristics (e.g., anger, hostility, aggression) reflective of a preoccupied pattern of coping as well as disorganized behaviours (e.g., lack of a consistent or organized strategy to respond to the need for comfort and security when under stress, oppositional behaviors, less affectionate, strong feelings of alienation and

isolation, emotional distress, etc.) characteristic of an unresolved-disorganized pattern of coping (Gay et al., 1982; Guitierrez et al., 1978).

The results of this study, as assessed by the IPPA, also support the second hypothesis where it was proposed that the SU group would show an insecure attachment towards both parents and peers. The lower scores reported by the SU group on all the major scales (Relationship With Mother, Relationship With Father, and Relationship With Peer) and sub-scales (Mother - Trust, Father - Trust, Peer - Trust, Mother – Communication, Father – Communication, Peer – Communication, Mother – Alienation, Father – Alienation, and Peer – Alienation) reflected an insecure attachment towards both parents and peers. The NSU group reported the highest scores on all the major scales and sub-scales of the IPPA indicating attachment towards both parents and peers marked by high security. It was interesting to observe that on the one hand, the PSU group reported scores on two of the major scales (Relationship With Mother and Relationship With Father) and the related sub-scales (Mother - Trust, Father - Trust, Mother – Communication, Father – Communication, Mother – Alienation, and Father – Alienation) that were higher than the SU group and yet, lower than the NSU group. On the other hand, the PSU group reported scores on the Relationship With Peer scale and the sub-scales (Peer - Trust, Peer – Communication, and Peer – Alienation) that were similar to the NSU group indicating attachment towards peers marked by high security. Overall, these results indicate that the subjects in the SU group showed insecure attachments and the NSU group showed secure attachments towards both parents and peers. However,

results from the PSU indicate some degree of insecure attachments (not as low as the SU group) towards both parents and yet, secure attachment towards peers.

When the scores of the three subgroups (EC, LC, and AD) were compared to the PSU and NSU groups, the EC group reported the lowest scores on all the major scales and sub-scales of the IPPA indicating the greatest degree of insecure attachment towards both parents and peers. The LC sub-group reported scores on the three major scales and the following related sub-scales (Mother - Trust, Father - Trust, Peer - Trust, Mother – Communication, Father – Communication, and Peer – Communication) indicating a degree of insecure attachment that was not as low as the EC sub-group and yet, lower than the degree of insecurity demonstrated by the AD sub-group and PSU group which was similar. On the alienation sub-scales related to the mother and father categories, the LC and AD subgroups as well as the PSU group reported similar scores. However, the LC sub-group reported a similar level of alienation towards peers that the AD sub-group did which was significantly lower than the similar scores of the PSU and NSU groups.

With respect to gender, significant gender effects were noted in the Relationship With Peer scale and Peer - Trust, Peer – Communication, and Peer – Alienation sub-scales where the female subjects from all three groups reported scores that were higher than the scores reported by male subjects. Significant gender differences have been noted in previous studies that have used the IPPA (Armsden & Greenberg, 1987; Hunter & Youniss, 1982) where the female subjects scored higher on certain scales than their male counterparts. This may be due in part to chance because of the low number of subjects when gender differences are considered or possibly to the observation of Bowlby (1973)

where he noted a greater occurrence of anxious, clinging attachment in girls while among boys, detachment was more common.

Overall, the results from the IPPA assessment in this study indicate that the subjects from the SU and, more specifically, the EC sub-group are strongly characterized by insecure attachments towards both parents and peers. However, as the age of onset for solvent use rises, the degree of insecurity seems to decrease to the point where the AD sub-group reported similar levels of insecure attachment to those of the PSU group. Also, it was interesting to note that the AD sub-group and PSU and NSU groups all presented with secure attachments towards peers except in the sub-scale of peer alienation where only the PSU and NSU presented as secure. A possible explanation for this unique trend may be found in the results of the AAQ assessment and the attachment classifications outlined by Sheldon-Keller et al. (1993). For example, the EC sub-group may have presented with a strong insecure attachment to both parents and peers because of a possible unresolved-disorganized pattern of attachment. Individuals with an unresolved-disorganized attachment appear to possess no coherent coping mechanism and struggle in all their attachment interactions. If the subjects in the EC sub-group are characteristic of an unresolved-disorganized pattern of attachment (the forced-preoccupied type) and are experiencing fear and confusion, as well as a lack of an organized strategy to respond to their need for comfort and security, it would make sense that they would consistently present as insecure in their attachment towards both parents and peers. The fact that the LC and AD sub-groups and the PSU group all presented to a lesser degree with an insecure attachment pattern (the LC sub-group towards both parents and peers and the

AD sub-group and PSU group towards both parents) may be due to having a preoccupied attachment pattern based on the classification criteria outlined by Sheldon-Keller et al. (1993). All three groups (LC, AD, and PSU) would have some coherent attachment strategy to deal with stress and meet their nurturing need to some degree, even if it was insecure. This might explain the varying degrees of insecurity among the groups and why the LC and AD sub-groups had a lesser degree of insecure attachment, respectively, than the EC sub-group.

Another possible reason for the different attachment patterns and differing degrees of insecure attachment might be related to the age at which the subjects started to abuse solvents and the resulting developmental consequences. Although a great deal of controversy exists around whether or not chronic solvent abuse can cause permanent neurological, biological, and intellectual deficits, some researchers have indicated that prolonged use of solvents can lead to significant biological defects and brain damage that can be life threatening and irreversible (Bruhn, Arlien-Soborg, Gyldensted, & Christensen, 1981; Byrne, Kirby, Zibin, & Ensminger, 1991; Fornazzari, 1990; Zur, & Yule, 1990). In addition, researchers point out that the pathology of carbon monoxide (CO) poisoning is evident in several organ systems, but particularly in the brain (Lezak, 1995). Brain structures affected include the cortical white and sometimes gray matter, hippocampus, cerebellum, and corpus striatum. Researchers have found that because of the frequency of anoxic damage to hippocampal structures, one commonly finds anterograde memory impairments for both verbal and visual-spatial information. Affected individuals are often troubled by increased distractibility and deficits in controlled

deployment of attention (Olsen, 1984). Visual agnosia (Sparr, Jay, Drislane, & Venna, 1991) and ideational apraxia (Motomura & Yamadori, 1994) may result. Frontal lobe deficits may result in cognitive and behavioural impairments such as impaired executive functioning, reduced mental flexibility, apathy, inertia, and impulsivity may emerge as a result of damage to the globus pallidus in light of its key role in frontal-subcortical circuitry (Lezak, 1995). Physically, individuals who have experienced CO poisoning show abnormal reflexes, along with motor, sensory, and cerebellar deficits (Thorpe, 1994). Since solvents are toxic and reduce the oxygen-carrying capacity of the blood, one would think that the potential negative effects could impede or delay certain crucial developmental stages of physical, emotional and cognitive growth depending at what age the toxic solvents were being introduced to the body.

It is generally agreed that at each developmental stage, a person confronts specific developmental tasks that are central to that age (Cicchetti & Rogosch, 1994). Completion of each developmental task is considered critical to the child's continual adaptation, although decreasing in salience to the newly emerging tasks. Under the right conditions, the child should successfully negotiate through the progression of stage-salient issues and move through a course of increasing competence and adaptation. For example, Bowlby (1969) related that between a child's third and fourth birthdays, the child becomes capable of a "goal-corrected partnership". He suggests that this developmental phase is triggered by certain cognitive advances. Marvin and Greenberg (1982) support this in their research by concluding that the onset of simple cognitive perspective taking enables the child to begin to grasp something of the parents' motivation. Therefore, the child



becomes more able to persuade the parents to change their plans so that they more closely agree with the child's own plans. If the EC sub-group started to use solvents before age five, it would be logical to presume that the toxicity of the solvents may interfere with and possibly impair crucial neurological, biological, psychosocial and cognitive developmental processes essential to healthy growth and adaptation as well as the ability to develop a secure attachment style. If the toxins are introduced at later developmental periods, the solvent abuser would only experience certain or limited impairments according to the developmental stages being interfered with. As a result, since the subjects in the EC sub-group started at such an early and crucial age developmentally, one would expect the EC sub-group to experience greater difficulty negotiating certain developmental tasks, (e.g., behavioural and emotional self-regulation, development of self, academic functioning, language and cognitive development, interpersonal skills and peer relationships, etc.) whose outcomes in turn may have a significant effect upon the attainment of future developmental tasks. It was also interesting to note that the EC sub-group reported the largest percentage of "severe" users (96%) with the LC and AD sub-groups reporting 33% and 25%, respectively. The degree of use may also play a role in the degree of difficulty a person has in negotiating certain developmental tasks, especially if the severity of use was also initiated at a young age. The developmental delays the EC sub-group, potentially incurred by starting to abuse solvents at an early age, may play a role in the development of an unresolved-disorganized (forced preoccupied type) attachment pattern instead of a preoccupied attachment pattern assigned to the LC and AD sub-groups and the PSU group.

The NSU group presented as securely attached to both parents and their peers which seems to support the researchers who propose that attachment strategies once formed tend to persist (Ainsworth, 1989; Sable, 1992) and that secure attachment with parents is highly correlated with positive self-esteem and the ability to securely interact with others (Greenberg, Siegel, & Leitch, 1983). However, it was interesting to note that the PSU group reported scores reflecting an insecure attachment towards their parents as well as attachment strategy reflective of a secure pattern towards their peers. In a similar manner, the AD sub-group reported scores reflecting an insecure pattern of attachment towards both parents and scores that leaned towards a somewhat secure attachment pattern towards peers – especially on the Peer Communication scale where the score was not significantly different from the NSU group. One might assume that if a person was insecurely attached to a parent, the insecure attachment pattern would also be clearly expressed in peer relationships. Youngblade and Belsky (1989) reported in their study that a strong association between child maltreatment and attachment insecurity existed. They related that the degree of maltreatment a child received impacted the attachment relationship with the primary caregiver. Strong indications were also noted in their study that maltreatment was associated with dysfunctional peer relations. It may be that the subjects in the EC sub-group experienced a certain degree or severity of maltreatment that was different from the LC and AD sub-groups and PSU group which has negatively impacted their ability to attach in constructive ways to peers during adolescence.

Another possible explanation for this apparent discrepancy may be due to some of the characteristics of the preoccupied attachment pattern. Pearce and Pezzot-Pearce

(1997) point out that individuals with a pre-occupied attachment tend to use angry and aggressive behaviour to provoke the attachment figure to meet their needs. Parents, especially if frustrated or insecure themselves, may draw away from or resist meeting their children's attachment needs resulting in a degree of uncertainty on behalf of the child as to whether their needs will be met. With uncertainty about whether the parents will be available, responsive or helpful, Ainsworth (1989) points out that the child tends to develop dependent and anxious traits. If an adolescent develops these insecure traits, attachment behaviour may be directed towards non-parental (non-caretaking) figures as a way to compensate for poor parental relationships and a way to cope with certain developmental challenges (e.g., identity development, striving towards emotional autonomy, etc.) (Weiss, 1982). According to Bowlby (1969), parental figures tend to be permanent members of the hierarchy, but their positions naturally change as the child matures. This normal developmental shift leads a young person to begin a search for a partnership with a peer – a relationship in which the reproductive and care-giving systems as well as the attachment systems are involved (Ainsworth, 1989). Therefore, certain peer relationships can become a positive experience and a type of attachment relationship that Weiss (1982) considers to be essential to an adolescent's emotional growth. It may also be that adolescents who experience poor attachment with their primary caregiver did experience a relationship with a surrogate figure who may have played an important role in their lives. If a child experienced some degree of security in the surrogate relationship (e.g., older sibling, grandparent, teacher, etc.), this may have helped them develop some type of internal working model that allows them to attach to peers during adolescence in a

more secure way. Bowlby (1988) lends support to this idea when he proposes that subsidiary attachment figures are sought only if the primary attachment figure is either unavailable or unable to provide sufficient reassurance. Therefore, the subjects classified as insecure-preoccupied (AD, PSU and, to some degree, the LC) may have been able to present as more securely attached to peers than to parents because of past interactions with positive subsidiary attachment figures. However, the concept of surrogate attachment figures deserves more research attention and what role they play in helping a child develop their internal working models.

The scores of the LC and AD subgroups that were significantly lower than the similar scores reported by the PSU and NSU group indicates some degree of feeling alienated by their peers may also be due to the type of substance being abused. In general, a derogatory attitude exists in the drug culture towards solvent users. Solvents are not considered a “cool” or sophisticated substance by teenagers who are often preoccupied with behaving in ways that nurtures acceptance from their peers. Solvent users likely experience a certain amount of alienation and rejection because of the negative stigma solvents have that adolescents who use other substances would not. This may have been reflected in their scores on the Peer – Alienation sub-scale. Also, the PSU and NSU scores might have been similar because of the general acceptance of alcohol and drug use and would not result in the same type of negative stigmatization associated with solvent use.

Although the current study appears to support the first and second hypotheses, the results also raise the question as to whether age of onset and the type of substance being

used (solvent versus poly-substance) are contributing factors in the subjects reporting varying degrees of insecure attachment and potentially different types of insecure attachment patterns. In an attempt to answer this question, subjects from the SU and PSU groups who reported an age of onset between the ages of six to eight were compared on the AAQ and IPPA. The results (see Appendix D) as assessed by the AAQ are similar to the results obtained from all the subjects in the SU and PSU group. The six to eight age of onset subjects in the PSU group presented with a pre-occupied attachment pattern and the six to eight age of onset subjects in the SU group reflected an unresolved-disorganized pattern according to the classification criteria outlined by Sheldon-Keller et al. (1993). Results on the IPPA were similar to the larger group of subjects in the SU and PSU groups except on the major Relationship With Father scale and related sub-scales (Father – Alienation, Father – Communication, Father - Trust). The six to eight age of onset subjects in the SU group presented as insecurely attached to the mother and peers and the six to eight age of onset subjects in the PSU group presented as insecurely attached to the mother and securely attached to peers. The scores on the Relationship With Father scale and Father – Alienation, Father – Communication, and Father - Trust sub-scales reported by the six to eight age of onset subjects in the SU and PSU groups would still be considered indicating an insecure attachment. However, the SU subjects aged six to eight tended to report higher mean scores than the larger SU group and the PSU subjects aged six to eight tended to report lower mean scores than the larger PSU group. This may have been due in part to the low n numbers (SU, n = 10 and PSU, n = 13). Overall, it would appear that the results reported by the six to eight age of onset subjects in the SU and

PSU groups were similar to the overall results reported by the larger SU and PSU groups.

This conclusion suggests that the substance used is a significant contributing variable to the subjects' reporting varying degrees of insecure attachment, well-being and social adaptation, and potentially different types of insecure attachment patterns.

A fairly consistent pattern seems to emerge with regards to the last three hypotheses proposed in this study. When the three naturally occurring groups (SU, PSU, and NSU) were compared, the results supported the third (maladaptive cognitive and affective characteristics) and fourth (interpersonal difficulties and social skills deficit) hypotheses and partially supported the fifth (dysfunctional family characteristics and antisocial behaviours) hypothesis where it was proposed that the solvent users would be significantly more likely to exhibit a greater degree of dysfunctional family characteristics and antisocial behaviour followed in turn by the poly-substance users and then the substance non-users. Also, when the scores of the three subgroups (EC, LC, and AD) were compared to the PSU and NSU groups, not all the responses by the subjects in the SU group fully supported each of the proposed hypotheses which will now be described in more detail.

#### Degree of Maladaptive Cognitive and Affective Characteristics

The results from comparing the three naturally occurring groups (SU, PSU, and NSU) support the proposed third hypothesis that the solvent users would be the most likely to exhibit a greater degree of maladaptive cognitive and affective characteristics followed by the poly-substance users and the substance non-users. Subjects in the SU group reported significantly greater degrees of poor self-esteem (on all four sub-scales of

the CFSEI-2), depression (BDI-II), hopelessness (BHS), anxiety proneness (STAI – Trait), present level of anxiety (STAI- State), negative appraisal and confidence in academic ability (PIY – CI), lack of impulse control and ability to attend (PIY – ID), somatic concerns (PIY – SC) and psychological discomfort (PIY – PD) than the PSU group who reported higher degrees than the NSU group. It should be noted that on the Reality Distortion scale, the SU group reported a mean score that was not significantly different from that of the PSU group. A possible explanation for this inconsistent finding is that both the SU and PSU subjects tend to experience similar mind altering experiences and negative emotional reactions as a result of their substance abusing behaviour. This may have invoked a similar mindset when responding to the items on the Reality Distortion scale that assess to what degree a person might feel different from others and characterize their thoughts and behaviours as strange or unusual.

The EC group reported scores indicating the greatest degrees of poor self-esteem (on all four sub-scales of the CFSEI-2), depression (BDI-II), hopelessness (BHS), anxiety proneness (STAI – Trait), present level of anxiety (STAI- State), negative appraisal and confidence in academic ability (PIY – CI), lack of impulse control and ability to attend (PIY – ID), and psychological discomfort (PIY – PD). On the Reality Distortion and Somatic Concern scales of the PIY, the EC sub-group reported scores similar to the LC and AD sub-groups as well as the PSU group which again might be due to the fact that the cognitive/emotional symptoms being assessed are a common psychological phenomenon to both solvent and poly-drug users.

It would appear that the EC sub-group experience the greatest degree of maladaptive cognitive and affective difficulties with the AD sub-group and PSU group reporting similar degrees of difficulty and the LC sub-group reporting degrees of difficulty that were slightly higher (still significantly lower than the EC sub-group) than those of the AD sub-group except on certain scales (CFSEI-2 – Social/Peer and Parental/Home; BDI-II; and STAI – Trait; PIY – Impulsivity/Distractibility) where the scores were similar. Consistent with this pattern, the EC sub-group also presented with the highest percentages on several sociodemographic factors that are related to cognitive/emotional difficulties (i.e., suicidal ideation and having poor attitude towards school as well as the number of grades held back at school).

With regards to gender differences, a significant gender effect was noted on the BHS and CI scale of the PIY as well as the sociodemographic variable of number of grades held back where the males in all three groups reported higher numbers than the females. A possible explanation as to why males might experience greater levels of hopelessness and difficulty at school may be due to the devastating acculturation stressors that have impacted many Native communities. Clarity of the male role and hope for a different and brighter future is minimized by the significant levels of unemployment and poverty, dysfunctional family and community interactions, and societal stereotypes of what it means to be a Native male. These negative influences and lack of positive male role models may cause male adolescents to feel hopeless about their future and question whether applying oneself to the academic tasks at school is worthwhile. Struggling with school expectations and being held back academically also places one at risk of



developing a negative appraisal of intellectual self-worth which in turn places a person at greater risk of falling behind academically and feeling hopeless. It is interesting to note that the males in the SU and PSU reported higher numbers than females for the variables of the number of schools attended and relocations. This may play a role in males experiencing greater difficulty at school since transitioning to a new school can be difficult with all the pressures of trying to adjust to and fit in with a new peer group. The females in the NSU group reported similar (although slightly higher) numbers to those of the males suggesting greater stability at school and home.

#### Degree of Interpersonal Difficulties and Social Skills Deficits

Comparisons were made on the Social Withdrawal and Social Skills Deficit scales of the PIY. These scales were used to assess the fourth hypothesis where it was proposed that the solvent users would be significantly more likely to exhibit a greater degree of interpersonal difficulties and social skills deficits followed by the poly-substance users and the substance non-users, respectively. The results indicated that the SU group reported the greatest degree difficulty around social discomfort and avoidance of others as assessed by the Social Withdrawal scale with the PSU group reporting the next highest and the NSU group reporting the lowest. Although the SU group again reported the highest degree of feeling unpopular and unskilled in forming and maintaining friendships as assessed by the Social Skills Deficit scale, the PSU and NSU group reported similar scores that were not significantly different which does not fully support the proposed hypothesis. A possible explanation might be that both the SU and PSU groups may experience some degree of alienation or rejection by certain members of their community.

The higher scores reported by solvent users may reflect the fact that they may feel more isolated and alienated due to the more stigmatized view that solvents have as a low-status way to get high. However, the scores on the Social Skills Deficit scale suggest that the solvent users may experience difficulty in their ability to initiate and interact with others. The PSU and NSU group reported similar scores on the Social Skills Deficit scale suggesting that subjects in the PSU group do not perceive themselves as lacking the necessary social skills and ability to interact with others. Rather, they may choose not to develop a wider circle of friends and may not feel comfortable hanging out with peers or adults who are not condoning their substance abusing behaviour. As adolescents begin to form peer groups, they are more likely to choose friends with similar interests. As a result, adolescents who use substances tend to feel comfortable and interact with a more limited group of peers and adults who support their substance abusing lifestyle (Huba, Wingard, & Bentler, 1979).

When the three sub-groups were compared, the EC group reported scores indicating the greatest degrees of experiencing interpersonal difficulties and social skills deficits followed by the LC and AD sub-groups who reported similar scores that were significantly higher than the PSU group. These results support the idea that differences do exist within the solvent group and that the EC sub-group presents with a potentially different and more severe insecure attachment. The degree of deficiency in social skills and confidence around being able to interact with others may be a result of the potential developmental delays from the early abuse of solvents. The fact that the LC and AD sub-groups reported similar scores that were higher than the PSU group and yet lower than the

EC sub-group may be partly due to more moderate, negative effects resulting from a later age of onset with regards to solvent use and the negative socializing stigma of belonging to a solvent culture.

On the sociodemographic variables related to interpersonal difficulties and social skills deficits, the EC sub-group reported having the least number of best friends and people who were important to them. The LC and AD sub-groups reported numbers in both categories that were not significantly different from the PSU and NSU group indicating that they do perceive themselves as being able to develop friendships even if they occur within a narrow, substance-using group of potential friends. It was interesting to note that most of the LC subjects (89%) and all of the AD subjects reported using solvents in the categories of “alone/with others” and “with others”, indicating that using solvents has a strong socializing factor. The EC sub-group presented as extremely limited in their ability to initiate and maintain friendships which was also demonstrated by the fact that most of the EC sub-group (81%) claimed to use solvents alone as opposed to using with friends.

With regards to gender differences, females in the SU and PSU reported significantly higher percentages of having been sexually abused than their male counterparts with the females in the SU group reporting the highest percentage. In light of these results, one might conclude that the females who reported higher percentages of histories of sexual abuse would demonstrate greater difficulties in areas of interpersonal interactions, self-perception difficulties, and social competence. However, the low percentages of sexual abuse reported by the males may not be an accurate picture. James

and Nasjleti (1983) point out that prevalence rates of sexual abuse for males is likely under reported since boys do not report being sexually victimized as readily. They tend to equate victimization with the loss or absence of masculinity. Males are socialized to be physically aggressive, self-reliant, independent and emotionally self-sufficient. They are not commonly encouraged or given permission to express feelings of vulnerability. As a result, the percentages for males are likely higher than what was reported in this study. Another reason why the males may demonstrate similar levels of dysfunction to their female counterparts is found in research investigating the interactions between maltreatment and other variables. For example, Manly, Cicchetti, and Barnett (1994) reported that although maltreated children (sexually and physically abused) generally demonstrate poor adaptation, the severity of the maltreatment, the frequency of child protective service reports, and the interactions between severity and frequency of the maltreatment were significant predictors of functioning. Males may have experienced similar degrees and frequency of physical abuse (both males and females in the SU and PSU groups reported similar percentages, respectively) and higher levels of sexual abuse than what was reported which would place them at a similar level of risk for poor adaptation.

#### Degree of Dysfunctional Family Characteristics and Antisocial Behaviour

With regards to the scores reported by the three naturally occurring groups (SU, PSU, and NSU) on the sub-scales of the FES and the Family Dysfunction and Delinquency scales on the PIY, the NSU group reported scores in all categories reflecting strong family support and positive social integration traits. Low scores were also reported

by the NSU group on the Family Dysfunction and Delinquency scales on the PIY. The SU group only reported significantly higher scores than the PSU group on three sub-scales (Expression, Conflict, and Control) of the FES as well as the Family Dysfunction and Delinquency scales of the PIY. On the other sub-scales (Cohesion, Independence, Achievement Orientation, Intellectual-Cultural Orientation Moral-Religious Emphasis, and Organization) of the FES, the SU group reported scores similar to the PSU group. Although the scores reported by the SU group on the Family Dysfunction and Delinquency scales of the PIY support the fifth hypothesis, certain responses on several sub-scales of the FES do not. A similar pattern was noted when the three sub-groups were compared where the EC sub-group reported significantly higher scores on the Family Dysfunction and Delinquency scales of the PIY and certain sub-scales (Expression, Conflict, Independence, Achievement Orientation and Control) of the FES. On all scales of the PIY used to assess family dysfunction and antisocial behaviour, the LC and AD sub-groups reported scores similar to the PSU group and significantly higher than the NSU group.

A possible reason why the SU group and EC sub-group did not consistently report higher degrees than the PSU group on all the sub-scales of the FES might be due to the different focuses of the Family Dysfunctional scale of the PIY and the ten sub-scales of the FES. The Family Dysfunctional scale of the PIY focuses on the quality of the relationship between the particular child and their primary caregiver and to what degree the caregiver presents as uncaring, unknowing, impatient and angry. It would make sense that a person classified as insecure would present with elevated scores and that

individuals with a disorganized attachment orientation would present with even higher scores due to their lack of being able to utilize effective (and coherent for the disorganized pattern) attachment strategies. However, the FES is a more general tool that assesses certain concepts of family support and social integration involving a more general overview of the whole family and its members rather than a focus on the specific relationship of the subject with his primary caregiver. Also, many Aboriginal communities have experienced chronic unemployment, poverty, and low education levels, substandard housing, malnutrition, inadequate health care, lack of community resources (i.e., social, economic, and recreational) and acculturational pressures toward urbanization that have negatively impacted the families of both solvent and poly-substance using youth (Hill & Hill, 1992). As a result, it may be that both solvent and poly-substance users would present with similar scores on many of the sub-scales of the FES. The sub-scales on which the SU group and EC sub-group scored higher may have allowed the subjects to think in terms of their own personal experience as opposed to how the family members, in general, interact or present. Also, certain subjects from the EC sub-group may have responded in a negative manner with high scores because they have not been exposed to the concepts that the specific sub-scales were assessing if they had been raised in institutions or caregiver environments (i.e., subjects in the EC sub-group reported the having highest scores for the number of total caregivers before age 6 and number of relocations as well as the highest percentages of being raised in foster-care or an institution and not having a biological parent as a caregiver) where the social dynamics of a family atmosphere do not exist.

It is interesting to note that the SU group reported a lower score on the Active-Recreational Orientation scale than the PSU group. This may be partly due to a larger number of subjects in the SU group being raised in institutional or foster-care settings off the reserve where family-oriented recreational activities would not be possible. It may also be that individuals who abuse solvents tend to be more preoccupied with using solvents because of the constant need to be inhaling in order to maintain a high. If true, one would not be focused or open to recreational opportunities that a family or community might be able to offer. The gender effect of the females in all three groups reporting higher scores than their male counterparts on the Intellectual-Cultural and Active Recreational Orientation scales may be due to chance or a reflection of the potential gender differences in the FES. For example, it was found that females tended to see their family from a slightly more positive perspective than males, especially in terms of higher intellectual and recreational orientation, moral-religious emphasis, and organization (Moos & Moos, 1994).

On the ad hoc Solvent Abuse/Attachment Questionnaire, variables related to dysfunctional family and antisocial behaviour, the SU and more specifically, the EC subgroup, reported experiencing the highest levels of suicidal ideation, number of family deaths and parents who abuse substances, participation in delinquent acts and aggressive behaviour, and having been sexually and physically abused. The LC and AD sub-groups, as well as the PSU group, reported lower levels on all the variables that were marginally different from each other and yet, significantly higher than the NSU group. These results again support the research indicating that chronic solvent abusers experience more serious

social and societal problems and have suffered from a greater degree of family dysfunction. They are more likely to come from broken homes, from families with alcohol and drug problems, and from families that are characterized by conflict, discord and aggression (Jacobs & Ghodse, 1988; Oetting et al., 1988).

Overall, the results of this study support the third and fourth hypothesis as well as the fifth hypothesis if one accepts the reasoning that the sub-scales of the FES may be too general in its focus. It may not accurately reflect or tends to overly generalize the level of family dysfunction perceived by the subjects as opposed to the more specific and individualized focus of the Family Dysfunction scale on the PIY and sociodemographic variables. More specifically, the results suggest that only a certain number of solvent users (i.e., EC sub-group) will consistently reflect the greatest degrees of maladaptive cognitive and affective difficulties, deficits in interpersonal and social skills, and levels of dysfunctional family characteristics and antisocial behaviour that are significantly greater than the PSU and NSU group. It would also appear that solvent users with a later age of onset seem to present with lessor degrees of difficulty that are more reflective of the scores reported by subjects in the PSU group.

Developmental research in the area of early childhood trauma and neglect may offer possible explanations as to why solvent users (i.e., EC sub-group) who started to abuse at a very young age present with significantly higher levels of difficulties than the poly-substance group and that as the age of onset for solvent use rises, the level of difficulty decreases and is more reflective of the poly-substance group. Researchers generally agree that maltreated children are at significant risk for the development of a



number of problems including insecure attachments, poor emotional and behavioural self-regulatory skills, and a compromised sense of self (Cicchetti, 1989; Trevarthen & Aitken, 1994; Wolfe, 1988). Results of studies in which the attachment patterns of maltreated children were examined consistently showed that physically abused and neglected children are less likely to develop secure attachments, with 70% to 100% of maltreated infants exhibiting insecure attachment organizations (Cicchetti, 1989; Crittenden, 1988). In support of these studies, it was found in this study that the three sub-groups (EC, LC, and AD) and the PSU group all reported various degrees of past histories of maltreatment and dysfunctional family influences and were classified as insecurely attached and experiencing some degree of emotional/cognitive/social difficulty. Part of the reason why the EC subgroup reported significantly higher levels of insecure attachment and emotional/cognitive/social difficulty and that the LC and AD sub-groups and PSU group reported lessor levels, respectively, may have been due in part to the greater level and degree of maltreatment they experienced during their childhood. The results of the present study revealed that the EC sub-group experienced the greatest levels of maltreatment and neglect followed by the LC sub-group and the AD sub-group and PSU group, respectively. If the nature of a child's attachment to and being cared for by their primary caregiver plays an important role in their developing capacities for empathy, emotional regulation, behavioural control and the capacity for successful relationships with peers, it would make sense that the greater the neglect and maltreatment the greater the potential for and severity of an insecure attachment and experiencing the related consequences (e.g., poor self-esteem, poor interpersonal skills, delayed emotional

maturity, increased anxiety, etc.). Researchers affirm that the earlier and the more severe, frequent and prolonged the abuse, the greater its adverse effects (Cicchetti & Troth, 1995; Lamphear, 1985). This may, in part, explain the varying degrees of insecure attachment as well as the reason why the EC sub-group was also classified with a disorganized attachment based on the criteria outlined by Sheldon-Keller et al. (1993). Some support for the EC sub-group being classified with a disorganized attachment may be found in a study that attempted to examine the links among children's representation of attachment, self-confidence, and cognitive performance in childhood and adolescence. It was reported that children with an insecure-disorganized attachment pattern were particularly disadvantaged on deductive reasoning tasks. This is supported by the results of this study where the EC sub-group reported the greatest degree of maladaptive cognitive difficulties (Jacobson, Edelstein, & Hofmann, 1994).

Another possible influencing factor can be found in the recent findings about the processes of brain development in neurobiology and other related developmental sciences. Researchers have reported that a child's early environment and the quality of care received during the first crucial years have important implications for the biological, emotional, social, and cognitive development (Perry, 1997; Schore, 1994). Levy and Orlans (1998) state "that disrupted and anxious attachment not only leads to emotional and social problems, but also results in biochemical consequences in the developing brain" (p. 4). This conclusion is supported by other researchers who report that infants who are raised without loving touch and security have abnormally high levels of stress

hormones that can impair the growth and development of their brains and bodies (Perry, 1994; Van der Kolk, 1996).

Steinhauer and Weiss (in press) point out that while learning can occur throughout life, there are certain prime periods of rapid growth, differentiation and synapse formation during which particular areas of the brain are especially sensitive to stimulation and environmental conditions. For example, it would appear that there may be a series of windows of opportunity related to language development. Children are able to distinguish minor variations in sound by the age of six months, and begin uttering their first words at the end of the first year. However, it is considered doubtful whether babies who are consistently deprived of stimulation during their first three years will ever develop the rich vocabulary, the ability to express feelings in words and the language fluency that they might have if they were nurtured during their early critical and formative period of development (Beeghly & Cicchetti, 1994). Readiness to learn is a major predictor and determinant of school success and the ability to problem-solve successfully is based on having adequate cognitive and language development (Gleason, 1996). This may be a partial reason why the EC, LC, and AD sub-groups and the PSU reflect some degree of experiencing maladaptive cognitive characteristics with the EC sub-group reporting the highest in light of possibly experiencing the severest maltreatment and neglect during the first three years (e.g., most caregivers during first 6 years, higher percentages of being raised in an institution, etc.).

Chronic exposure to conflict, violence and abuse, especially severe and repeated exposure to violence during the first three years, is reported to lead to an over-

development of the mid-brain and brain stem areas associated with primitive responses related to biological survival (fight or flight; freeze or surrender) which are often associated with poorly controlled anxiety, rage, impulsivity, hyperactivity and hypervigilance (Perry, 1997). The experience of abuse and neglect increases aggressiveness in children and creates behaviour patterns that interfere with their socialization and peer relationships. Perry (1997) also relates that if a child experiences both chronic neglect and repeated abuse, the over-development of the mid-brain and brain stem areas is likely to be accompanied by the underdevelopment of the limbic and cortical areas necessary for affective control, self-regulation, empathy and problem solving.

Gladwell (1997) points out that abuse, in and of itself, does not always result in violence, any more than neurological impairments or psychosis does. However, Lewis (1991) argued that if you mix all these conditions together they become dangerous and have a kind of pathological synergy. Raine (1995) reported that children with a history of abuse and neurological impairments, as well as past rejection by the primary caregiver presented with triple the risk of acting out violently. They accounted for 18% of all violent crimes even though they made up only 4.5% of the group. It is interesting to note that the current study indicates that the subjects in the EC sub-group are at the greatest risk of having experienced significant past abuse, potential neurological impairments resulting from maltreatment and early solvent abuse during their childhood, and rejection by their primary caregiver. Also, researchers do suggest that there is an association between disorganized attachment and violent and/or delinquent behaviour (Goldberg, 1997; Greenberg, DeKlyen, Speltz & Endriga, 1997). This may help to explain why the

EC sub-group reported the highest scores on the Delinquency scale on the PIY and in the categories of delinquent and aggressive behaviour on the Solvent Abuse/Attachment Questionnaire.

### Limitations of the Study

There are a number of limitations to this study. First, although the results of the study support a direct relationship between certain attachment patterns and different types of substance users (e.g., SU, PSU, and NSU groups and the EC, LC, and AD sub-groups) as well as their quality of attachment relationship with parents and peers and their perception of well-being and social adaptation, the fact that this was a cross-sectional study does not address the stability of these findings. Furthermore, the findings cannot be interpreted in terms of cause and effect and only support an associative relationship. A longitudinal study would be required to address the issue of stability and establish the temporality of the relationships reported. Also, although Bartko, Carpenter, & McGlashan (1988) maintain that 15 subjects per group is sufficient for statistical purposes, conclusions from a larger and more representative sample size would have been more reliable and generalizable.

Second, it would have been interesting to obtain a larger number and better balance between males and females (especially for the three sub-groups – EC, LC, AD) for the purpose of investigating potential gender differences. Although some significant observations were made when the subjects in the SU group were divided into the three sub-groups, the number of males and females in the sub-groups was too low to allow for gender comparisons. In addition, the ages of the subjects were confined to adolescence.

To better assess the relationship between attachment patterns and type of substance used, quality of attachment relationships, perception of well-being and social adaptation, as well as certain stage-salient developmental tasks, subjects could have been selected from a number of different age ranges that would have been sensitive to the cognitive and physiological stages of pre-adult development. This would have provided an opportunity to examine the stability of attachment patterns and differences in the impact that potential attachment patterns might have from early childhood to late adolescence.

Third, it is assumed that attachment patterns, once established, will endure over time and that the self-report measures (AAQ and IPPA) used in this study are able to assess the adolescent's type of attachment pattern and quality of attachment relationship. However, caution is needed when interpreting the findings since the self-report questionnaires used are experimental in nature and need further validation as to their predictive value. Also, self-report questionnaires are limited in that they can only assess an adolescent's present perception of the available responsiveness of the attachment figure, whereas a clinical interview based on the AAI protocol is designed to assess those unconscious defensive processes that self-report methodology cannot investigate.

Fourth, the results of this study need to be interpreted cautiously because of the inherent limitations of using standardized tests with individuals from a minority culture. A great deal of controversy about whether tests developed and normed in one culture can be accurately used in another culture (Kinzie & Manson, 1987; Lonner, 1985). Although attachment patterns outlined by Ainsworth et al. (1978) have been shown to exist in many different cultures (Sagi, 1990; van Ijzendoorn & Kroonenberg, 1988), all the tests in this

study were used with minority populations, and an interpreter was used to minimize misunderstanding of relevant concepts and clinical terms due to language difficulties, one must keep in mind that variations exist within different cultures of certain psychological constructs or concepts even though they are universally accepted and valid. Compounding the potential variations was the fact that subjects in this study also came from various sub-cultures within the Native culture. As a result, any research performed on a minority culture and sub-cultures should evaluate its conclusions in light of the culture in which the subjects were raised and socialized. It will also be important for future attachment research with Native populations to employ the same tests used in the present study to determine retest reliability.

Fifth, although the association between maltreatment and neglect of children and insecure attachment seems well established, it does not mean that there is no controversy or that attachment theory is free of any problems. One must keep in mind that relationships are complex and include other dimensions besides attachment qualities. Therefore, focusing exclusively upon attachment excludes many important factors that may have real significance for a clinical understanding of the etiology and cycle of solvent abuse among Native youth. For example, research has been attempting to investigate to what extent are behaviour and personality traits genetic, biological, or a function of inborn temperament (Kagan, 1994). Neubauer and Neubauer (1990) reviewed research on the genetic origins of personality traits and listed a variety of traits that appear to have an inherited basis: aggressiveness, alcoholism, depression, empathy, excitability, temper, shyness, and vulnerability to stress. Karen (1994) reviewed several studies

pointing to the conclusion that children with difficult temperament developed the most emotional and behavioural problems over time. Karen does point out that the researchers did not conclude that temperament alone produced the problems. Rather, they suggested an interaction of temperament and environmental factors. For example, children with difficult temperaments were much more likely to experience negative responses from others as they developed. It may be that Native children with difficult temperament are at greater risk for insecure attachment as well as becoming chronic solvent abusers at a very young age.

Finally, the solvent and poly-substance using subjects in this study were selected from specific treatment centres and, therefore, may not be representative of substance abusing Native adolescents in other Native communities. However, the subjects for this study were selected from a variety of treatment settings across Canada, which lends support for them being representative of solvent and poly-substance using Native adolescents.

### Implications for Practice, Theory, and Future Research

#### Practice

The results indicate that certain subjects in the solvent abuse group present with varying degrees of an insecure (ambivalent-preoccupied) attachment pattern with the EC sub-group reflecting insecure attachment more characteristic of an unresolved-disorganized pattern. If this is the case, the treatment intervention offered to solvent abusers would need to take into consideration the maladaptive coping strategies characteristic of individuals with insecure attachments and the fact that modifying the



negative working model of an adolescent with a severe insecure attachment is extremely difficult. The core beliefs resulting from an inconsistent or neglectful caregiving environment during the early formative years become well established, operate outside conscious awareness and do not often change as a result of modifying the person's environment (Alexander, 1992; Sroufe, 1988). For example, placing a child in a loving and caring environment may only serve to exacerbate the problem. The child will push the love away due to a lack of trust, expectation of maltreatment, and an unconscious attempt to recreate prior negative attachment patterns.

Traditional drug and alcohol treatment interventions may not be very successful with certain solvent abusers such as the EC sub-group who may be experiencing biological, emotional and cognitive delays resulting from exposure to toxic chemicals at an early age and present with an unresolved-disorganized attachment pattern and, therefore, tend to be anxious and lack an organized strategy to respond to their need for comfort. Most drug and alcohol treatment programs tend to assume that the client has certain basic cognitive and interpersonal skills as well as the ability to feel safe as long as their treatment environment is supportive, accepting and free of perceived threats.

A strong emphasis in treatment is often placed upon the adolescent's need to take charge of their life, to be accountable to others, and to developing more appropriate interpersonal interactions with family members, peers, and professionals (e.g., therapist and staff in the treatment program). However, these treatment strategies are contraindicated for individuals with attachment disorders (Levy & Orlans, 1998). If clients are attachment-resistant, they will tend to distance themselves from those trying to

provide treatment, making the formation of trust and a therapeutic alliance extremely difficult. Pearce and Pezzot-Pearce (1997) caution therapists working with maltreated and insecurely attached children that they tend to expect the same or similar maltreatment in new relationships, and they may adopt some of the same coping strategies they learned at an earlier age. Therefore, unless the treatment program can adapt the therapeutic process to a format compatible with the special needs of the attachment-resistant child, psychotherapy and treatment interventions are likely to intensify the insecurely attached solvent abuser's acting-out behaviour rather than to succeed in working through the solvent abuser's conflicts. As a result, traditional drug and alcohol treatment interventions may actually play a role in perpetuating and escalating the solvent abusers cycle of solvent use by increasing their level of anxiety and desire to self-medicate.

It would make sense that effective treatment and preventative interventions would also need to be sensitive to the particular type of insecure attachment pattern an individual had developed (e.g., avoidant, ambivalent or disorganized). For example, Sroufe (1983) proposed that both avoidant and ambivalent infants may develop externalizing behaviour problems, but that the meaning of their behaviour and specific manifestations may differ in predictable ways. On the one hand, an avoidant child may present with a hostile, aggressive, antisocial pattern in response to rejecting an emotionally unavailable caregiver. The underlying anger, which is not directed to its source, may be exhibited through lying, bullying others, and blaming, as well as being insensitive to others. On the other hand, the ambivalent child may be easily overstimulated, showing impulsivity, restlessness, short attention span, and low

frustration tolerance. Both children may be aggressive but for different reasons, which would be important to know in order to be effective therapeutically.

Treatment models and strategies for working with attachment-resistant individuals have been developed and could be drawn upon for working with solvent abusers who present as attachment-resistant. One example of a conceptualized framework for working with insecure and maltreated children has been proposed by Pearce and Pezzot-Pearce (1997). They outlined a three-stage approach to reformulate the meaning of maltreatment and attachment for children which includes building mastery, reconceptualizing meaning, and developing positive self-esteem. No matter what conceptualized framework is chosen, Pearce and Pezzot-Pearce (1997) point out that the treatment provision needs to be developmentally focused. They argue that the therapist must evaluate and treat, when necessary and appropriate, the developmental effects associated with early neglect and maltreatment. The therapy provided needs to be available at various points in the client's life since the perception of the neglect or maltreatment may change as a function of a child's progress through different developmental stages. Treatment strategies must also be developmentally sensitive in that they are congruent with the developmental abilities and capacities of the client. Treatment programs need to be aware of transference issues and the need to nurture a constructive internal working model before making any significant interpersonal demands. One other important point they make is that treatment must be culturally sensitive: treatment provision must be sensitive to the client's cultural tradition and context when they are considering the appropriateness of different techniques and interventions.

## Theory

Researchers have attempted to develop ways to classify or categorize different types of solvent abusers and their behaviours (McSherry, 1988; Oetting et al., 1988). However, none of the classification systems for solvent abusers in the current literature on solvent abuse takes into consideration the age at which solvent abuse starts. The results of this study suggest that there is a significant correlation between age of onset for solvent use and the type and quality of attachment pattern a solvent abuser develops, as well as to what degree they might experience emotional, cognitive, and social difficulty. On the one hand, solvent users who started using before age six consistently reflected the greatest degrees of insecure attachment (also, a specific type of insecure attachment – disorganized), maladaptive cognitive and affective difficulties, deficits in interpersonal and social skills, and levels of dysfunctional family characteristics and antisocial behaviour. On the other hand, as the age of onset increased, the solvent users presented with a different type of insecure attachment (i.e., preoccupied as opposed to disorganized) as well as lesser degrees of insecure attachment, maladaptive cognitive and affective difficulties, deficits in interpersonal and social skills, and levels of dysfunctional family characteristics and antisocial behaviour. In light of this observation, it would make sense that age of onset would be an important concept to incorporate into a classification system as a way to determine potential degree of risk and the most appropriate treatment intervention. The age of onset criteria could be conceived as a marker variable and one of many risk factors suggesting that development is proceeding along a pathway that is probably related to later problems (e.g., psychopathology, academic problems,

neuropsychological deficits, etc.). Future studies will need to validate whether or not age of onset is a valid marker variable for risk - not only for Native populations, but other marginalized groups.

The results of this study indicate that the EC sub-group were characterized by an unresolved-disorganized attachment pattern as opposed to a ambivalent-preoccupied pattern characteristic of the LC and AD sub-groups and the PSU group. One must question whether the particular type of insecure attachment pattern (i.e., disorganized) that characterize the EC sub-group should be considered a premorbid characteristic since the subjects in this sub-group presented with the highest percentage of a severe pattern of usage and reported the greatest degrees of insecure attachment, maladaptive cognitive and affective difficulties, deficits in interpersonal and social skills, and levels of dysfunctional family characteristics and antisocial behaviour. In a study of high-risk infants, the investigators reported that 71% of the sample in preschool and 83% of seven-year-olds who showed above-normal levels of hostility in the classroom had been classified as disorganized in infancy (Lyons-Ruth, 1996; Lyons-Ruth et al., 1993). Also, ratings of disorganization in the strange situation in infancy have been found to predict psychopathology in late adolescence (Carlson, 1998; Ogawa, Sroufe, Weinfield, Carlson, & Egeland, 1997). If this is the case, then preventative steps could be taken to minimize the risk of individuals classified as insecure (i.e., disorganized) with regards to engaging in solvent abuse and experiencing the inevitable negative emotional, biological and cognitive developmental consequences as well as any potential forms of psychopathology. These results also lend support to the idea that understanding the

differences between substance users (solvent versus poly-drug) showing different patterns of attachment has practical implications for both case formulation, treatment interventions, and prevention strategies.

### Future Research

In light of the fact that no research prior to this study has been carried out using attachment theory as a framework for investigating solvent abuse among Native adolescents, it is important to replicate this study using a larger number of subjects as well as incorporating a balance of gender in each of the sub-group (EC, LC, and AD) comparisons. It would also be worthwhile to carry out a longitudinal study to determine the initial attachment pattern for each of the comparative groups and sub-groups and to assess the degree they were stable and impacted on the subjects' quality of attachment to adults and peers as well as their perception of well-being and social adaptation at several time periods.

Development across a broad range of functioning and behavioural organization needs to be considered in future studies of solvent abusers in order to better understand the negative impact of solvent use and maltreatment during the early formative years on the ongoing development of the adolescent. If children and adolescent subjects were selected across the age span, data could be collected to examine the critical issues of the effects of maltreatment, insecure attachment, and solvent use as well as the degree to which these influences (individually or combined) might cause certain emotional, biological, and cognitive delays and negatively impact a person's ability to negotiate important developmental tasks in later life.

Trying to understand the etiology and negative emotional, cognitive and biological impact of solvent abuse is a complicated task. It would be simplistic to focus on one factor or variable (e.g., insecure-disorganized attachment) to explain why certain individuals choose to abuse solvents and continue to abuse them into their teenage years. Given the potential existence and influence of multiple variables (e.g., severity of solvent use, degree of parental neglect, age of onset, type of insecure attachment, family dynamics, etc), there may be multiple pathways to adaptive and maladaptive developmental outcomes. For example, the incidence of disorganized attachment classifications in infancy has ranged from 13% to 82%, depending on the presence and type of family risk factors (e.g., child maltreatment, parental major depressive disorder, parental bipolar disorder, and parental alcohol intake) (Lyons-Ruth & Jacobvitz, 1999). A better understanding of these risk factors and their influence may help interventions to be more appropriately directed at a broad spectrum of different targets. This type of research would also help treatment providers and communities better understand the factors that contribute to vulnerability and resilience with regards to dysfunctional attachment patterns and solvent abuse and, therefore, be more proactive and preventive in their interventions.

The results of this study point to a possible compounding influence between the negative effects of an early maltreatment, insecure attachment and the toxic influence of the solvents being abused. It would be important for future research to examine a number of questions:

- 1) What part does having an insecure attachment pattern play, if any, in predisposing a person towards solvent abuse?

- 2) To what degree do the negative effects of maltreatment and neglect by caregivers, insecure coping strategies, and toxins from solvent use separately and collectively impact the biological, emotional, social, and cognitive development of a child?
- 3) Is it possible that the early use of solvents and the potentially related neurological impairments could play a role in a person being categorized with an unresolved-disorganized pattern of attachment, the forced-preoccupied type?

Another area of potential research would be to investigate the impact that early childhood maltreatment, insecure attachment patterns and solvent abuse have individually or collectively, on the development of “transitional objects”. Free and Goodrich (1985) relate that “perhaps a satisfying symbiosis between the infant and mother is crucial for future development of a transitional object and good object relationships” (p. 31). Sherman and Hertzog (1983) found that developmentally and cognitively disturbed children were less likely to develop a positive transitional object attachment and that those who did formed attachments at a later than normal age with objects that were peculiar in form (e.g., a string, a hammer, etc.). They also mentioned that a child who continued to use a transitional object up until age nine and beyond used it for soothing purposes. Although individuals may start to use solvent for a number of different reasons, it would be important to examine whether or not solvents are used as a transitional object, especially by children who have experienced significant abuse and are classified as disorganized. If an individual is experiencing fear and confusion as well as a lack of an organized strategy to respond to their needs for comfort and security, they might turn to the use of solvents as a “surrogate caregiver”. The use of solvents does provide a temporary escape from reality and anxiety, is always available and provides a



consistent intoxicating effect, and does not place any stress or interpersonal demands on the user. If individuals continue to use solvents as a way to nurture themselves and to cope with life stressors into their adolescence, they may struggle with normal developmental separation processes. Blos (1975) suggested that the second individuation process of adolescence precipitates regression if separation from the nuclear family (or solvents in the case of chronic solvent abusers with disorganized attachment patterns) has been unsuccessful. Fox (1977) related that the regressive aspects of these disturbances in adolescence tend to re-mobilize earlier traumas. As a result, chronic solvent abusers may continue to use solvents into their adolescent and potentially adult years because of a fear of the anxiety and fear related to re-experiencing earlier rejection and maltreatment, not having the internal resources and ability to face reality and losing the only stable and reliable nurturer they have experienced (i.e., solvents).

Results from this study indicate that it would be important for future research to take into consideration potential cultural variations of attachment patterns. For example, research investigating attachment patterns and adolescent dysfunctional behaviours have reported a correlation between an avoidant-dismissing attachment pattern and substance abuse (Rosenstein & Horowitz, 1996). However, this study found an association between an ambivalent-preoccupied attachment pattern and substance use as well as a possible unresolved-disorganized attachment with certain solvent users, which may suggest new relationships to be investigated. One must ask if the Strange Situation criteria for determining attachment patterns, which was based on a North American population, can be used to determine similar attachment patterns and associations in other cultures.

Although it is generally accepted that there are universal attachment behaviours (Main, 1990), specific behavioural patterns may vary according to the culture. For example, Keefer et al. (1982) found that among the Gusii, an agricultural culture in Kenya, mothers turn away from their infants when the infants are most emotional, positive, and excited. Culturally, this looking-away pattern is normative, and the mothers are merely socializing the young according to cultural restrictions (i.e., younger individuals do not look directly at older individuals, especially under emotional conditions). This pattern is quite different from that of American middle-income mothers, who tend to make eye contact in response to their babies' excitement. Other researchers have pointed out that in cultures that value distal patterns of caregiving and early independence (e.g., Northern Europe), avoidant patterns are more likely to develop. In contrast, in cultures that encourage more contact and closeness with babies and avoid separation (e.g., Japanese), the infants tend to seek contact with caregivers when under stress (van Ijzendoorn & Kroonenberg, 1988). As a result, specific behavioural patterns vary according to culture and it may not be possible to observe insecure behaviour reflective of an avoidant pattern in Native culture due to culture-specific practices.

Also, does examining the competence hypothesis only on the basis of infant-parent attachment decrease its predictive power in a culture (i.e., certain Native communities) that supports an extended family pattern of raising children? Weisner and Gallimore (1977) point out that in Ainsworth's Uganda study, it was surprising to see that the presence of multiple caregivers did not interfere with the development of a secure attachment pattern. The Uganda study showed, for the first time, that the decisive factors

for attachment security were not the number of caregivers, but rather the continuity and quality of the mother-infant interaction. In a study of the attachment patterns of kibbutz infants to their parents and caregivers, the infant-mother attachment did not predict aspects of competence. Rather, it was the extended attachment network that was found to predict social competence at age five more so than any single attachment relationship (Sagi, van Ijzendoorn, Aviezer, Donnell, & Mayseless, 1994). Cross-cultural studies on attachment suggest the need to consider the importance of wider social networks in which children grow and develop (Harkness & Super, 1996). With regard to Native communities, it would also be important to examine what role has the breakdown of the traditional community caregiving practices played, if any, in the development of insecure attachment patterns in substance abusing Native children and adolescents. In general, it would be important to investigate further to what extent cultural and community differences result in different implications of an attachment pattern for different types of substance use and later development which in turn would inform preventative measures and treatment interventions.

Future research needs to examine some of the proposed therapeutic interventions for working with attachment-resistant children and consider what possible applications might be effective and appropriate for working with solvent abusers who may be attachment resistant. For example, Steinhauer et al. (in press) suggests that therapists will only be helpful with an attachment-resistant child if they support the developing relationship with the caregiver as opposed to developing an alternative to that relationship in the therapy room. They further state that a more focused and reality-based form of

psychotherapy that first helps children identify and then validates what they are feeling, along with helping them learn to express their feelings verbally, may help them avoid having to repeat the past by evoking rejection and abuse from others. Such treatment would, for example, focus on helping them to recognize what they were feeling and learn to express it in words, instead of acting their feelings out; or in the case of solvent abusers, becoming anxious and retreating to the destructive effects of toxic chemicals.

Another potential area of relevant research for understanding the etiology of solvent abuse and insecure attachment patterns is the impact that psychoactive substances used during pregnancy can have on the developing brain and, therefore, increased risk for developing an insecure attachment pattern and being potentially predisposed to solvent abuse. Research points out that learning and behavioural disorders that result from fetal alcohol syndrome (FAS) or fetal alcohol effects (FAE) include poor impulse control; attention deficit disorder (with or without hyperactivity); speech and language disorders, poor short-term memory; lack of cause and effect thinking; poor personal boundaries; anger management difficulty; poor judgment; and no connection to societal rules (McCreight, 1997). These deficits resulting from FAS/E have been reported to affect emotional, biological, and cognitive development and attachment interactions. For example, children exposed to drugs during their mother's pregnancy were found to have depressed developmental scores at six months, which continued through 24 months of age. One hundred percent of children living with drug-using mothers showed attachment disorders, including avoidance, fear, and anger towards their mothers (Howard, 1994). Some researchers suspect that there may be teratogenic effects on children born to heavy

solvent abusing mothers (Hunter, Thompson, & Evans, 1979; Streicher, Gabow, Moss, Kono, & Kaehug, 1981). Future research is needed to investigate the degree to which FAS/E effects or possibly, fetal solvent syndrome, may place children at risk for insecure attachments and solvent abuse.

Finally, in addition to considering potential treatment interventions, researchers need to consider taking a multidimensional approach to investigating the possible motivation and causation of the deliberate abuse of solvents. Segal (1997) points out that researchers studying substance abusing behaviour largely conduct independent studies in which different disciplines pursue an explanation of the problem autonomously. As a result, there is often little interaction between different areas of research, resulting in an absence of a comprehensive theory or explanation of substance abusing behaviour. A possible guide for future research investigating solvent abuse for the purpose of developing a holistic treatment model may be found in the transactional model espoused by Cicchetti and Rizley (1981). The focus of this model is to integrate knowledge from different disciplines since attempting to understand human development from the perspective of just one discipline is extremely limiting. Among these disciplines are clinical and experimental psychology and psychiatry, sociology, and the biological sciences, including genetics and neurosciences. According to Cicchetti and Rogosch (1994), developmental psychopathology “adopts an organizational view, conceptualizing development as a series of qualitative reorganizations among and within biologic and behavioral systems as growth of the individual proceeds” (p. 760). These various systems and processes include the biological, behavioural, psychological, as well as the broader

ones such as environmental, society, and culture. They are considered to be in “dynamic” interaction with one another throughout an individual’s lifespan. Researchers must remain cognizant of the complexity of the association between maltreatment, insecure attachment patterns and solvent/substance abuse. A history of maltreatment, although a significant risk factor for many serious emotional, behavioural, and interpersonal problems, does not necessarily condemn a person to a fate of insecure attachment or chronic solvent abuse. Therefore, any theoretical model or treatment intervention will need to be inclusive and take into consideration the influence of multiple variables that may place a person at risk for abusing solvents. In support of this view, Segal related that a comprehensive model for solvent abusing behaviour needs to incorporate the following domains: 1) biological – developmental factors, genetic factors, and neurochemical factors; 2) sociocultural – family, cultural influences and drinking/drug influences; and 3) psychological – drinking/drug expectations, interpersonal factors, and intrapersonal factors. He related that the three domains exert an influence on each other is an inherent assumption of the model. The nature of the specific or causal relationships that exist among the variables needs to be validated by empirical research.

Another potentially useful model for investigating solvent abuse is Bronfenbrenner’s (1979) ecological model that provides a very comprehensive way to examine and explain the ways in which interactions among social structures affect the content and course of human development. Bronfenbrenner perceives the ecological environment is an interrelated series of environmental structures. He proposes that the basic unit is the dyad, the parent-child relationship. The dyad itself is closely related to

the larger interpersonal structures, especially the nuclear family as well as the other prominent social structures of everyday life (e.g., extended family , neighbors, friends, and others with whom the dyad interacts with on a face-to-face basis). These complex interrelationships form a mircosystem, a pattern of activities, roles, and interpersonal relations which are experienced by the developing person in a particular setting with particular physical and material characteristics. Bronfenbrenner (1979) further suggests that the microsystems exist within meosystems that consist of the interactions among two or more settings in which the developing person participates, such as home, school, and neighborhood. These in turn exist in an exosystem (e.g. mass media, community services, educational system, etc.) that consists of social settings which do not themselves directly involve the developing person as an active participant, but do provide contexts which affect the meosystems and microsystems. Finally, the external shell of the system is the macrosystem, the belief systems and ideologies of the culture, which constitutes a pervasive set of values around which societal life is organized.

Bronfenbrenner's (1979) ecological model offers the opportunity to examine the influence that the different systems of social organization can have on the development of solvent abuse among Native communities. It challenges researchers not to assume the universality of one's own macrosystem nor the developmental contexts and experiences it affords. It also challenges the concept of linear effects assumed in much of behavioural science (i.e., the idea of direct cause-effect relations among social variables) and embraces the broader conception of the interrelations among systems.

### Summary and Conclusions

The purpose of this study was to examine in an empirically sound manner the pattern of attachment of each of the subjects in three naturally occurring groups (solvent users; poly-substance users; and substance non-users) of Native adolescents and their attachment relationships to their parents and peers as well as to explore their perceptions of well-being and social adaptation based on early experiences with attachment figures.

Results indicated that the solvent abusers reported a greater degree of insecure attachment than the poly-substance users, with subjects in the solvent users group who started to abuse solvents before the age of six reporting the greatest degree of as well as an unique type of insecure attachment – disorganized pattern. The solvent users and, more specifically, the solvent users with an age of onset under age six reported insecure attachments towards both parents and peers as well as greater difficulty in the areas of well-being and social adaptation. However, it was noted that as the age of onset for solvent use increased, the type of insecure attachment changed (preoccupied as opposed to disorganized) and the degree of insecure attachment as well as difficulties with well-being and social adaptation decreased to the point where the solvent users who started after age 10 reported similar scores to those in the poly-substance group. Should future research confirm these results, this would have important implications for the categorization, diagnosis and treatment provision of solvent abusers. It may be shown in future studies that not all solvent abusers should be treated the same way and that more attention needs to be given to certain factors characteristic of the particular solvent abuser (e.g., age of onset, degree of usage, degree of maltreatment and neglect during early



formative years, type of insecure attachment pattern, degree of neuropsychological and developmental impairments, etc.) which in turn would determine the appropriate type of therapeutic intervention and prevention strategies. It may also be shown in future studies that the culturally and developmentally sensitive therapeutic strategies and models used to treat the maladaptive coping strategies characteristic of insecure and maltreated children such as the three-stage approach proposed by Pearce and Pezzot-Pearce, 1997, might be beneficial in treating insecure solvent abusers.

This study has lent support to considering the age an individual starts to use solvents and the type of insecure attachment pattern they have as potential marker variables in a classification system for solvent abusers in order to help determine potential degree of risk and appropriate prevention and treatment interventions. The results from this study also point to the need for researchers and treatment providers to adopt a multidimensional approach to investigating the causation and consequences of solvent abuse. Since trying to understand the etiology and the negative emotional, cognitive and biological impact of solvent abuse and related risk factors (e.g., degree and type of insecure attachment) is a complicated task, any theoretical model or treatment intervention will need to be inclusive and take into consideration the influence of multiple variables and cultural factors that may place a person at risk for abusing solvents. If this approach is taken, future research may be able to help treatment providers and communities to better understand the risk factors that contribute to vulnerability and resilience with regards to insecure attachment patterns and solvent abuse and, therefore be more proactive and effective in their therapeutic interventions.

Finally, the present study has lent support to the claim that attachment theory, as proposed by Bowlby (1969), offers a rich theoretical understanding of the solvent abuse phenomenon which can make an important contribution to the emerging understanding of the etiology, psychological, biological, and emotional consequences of solvent abuse, and effective treatment and prevention strategies. Because of its inclusiveness and focus on internal and developmental processes, attachment theory offers a unique way to examine why solvent abusers may develop biased and deficient patterns of processing social information, an inability to attend to relevant cues, a bias towards distrusting and attributing hostile intentions towards others, and turning to the continued abuse of solvents owing to a lack of competent behavioral strategies for solving interpersonal problems (Dodge, Bates, & Pettit, 1990).

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## APPENDIX A

## Chemicals Commonly Found in Inhalants

Product	Chemicals
Adhesives	
Airplane glue	Toluene, ethyl acetate
Rubber cement	Hexane, toluene, methyl chloride, Acetone, methyl ethyl ketone, methyl butyl ketone
PVC cement	Trichloroethylene
Aerosols	
Paint Sprays	Butane, propane, fluorocarbons
Hair Sprays	Toluene, hydrocarbons
Deodorants, air fresheners	Butane, propane, fluorocarbons
Analgesic spray	Butane, propane, fluorocarbons
Asthma spray	Fluorocarbons
Anesthetics	
Gases	Nitrous oxide
Liquids	Halothane, enflurane
Locals	Ethyl chloride
Cleaning Agents	
Dry cleaning fluid	Tetrachloroethylene, trichloroethane
Spot removers	Tetrachloroethylene, trichloroethane, trichloroethylene
Degreasers	Tetrachloroethylene, trichloroethane, trichloroethylene
Solvents	
Polish remover	Acetone
Paint remover	Toluene, methylene chloride, methanol
Paint thinners	Toluene, methylene chloride, methanol
Correction fluid thinners	Trichloroethane, trichloroethylene
Fuel gas	Butane
Lighter fluid	Butane, isopropane
Fire extinguisher propellant	Bromochlorodifluoromethane
Food Products	
Whipped cream	Nitrous oxide
Whippets	Nitrous oxide



**APPENDIX B****THE SOLVENT ABUSE/ATTACHMENT QUESTIONNAIRE****DEMOGRAPHIC INFORMATION**

Identification Number: \_\_\_\_\_

Age: \_\_\_\_\_

Gender: \_\_\_\_\_

**HISTORICAL INFORMATION**

Status of parents:      Married \_\_\_\_\_      Cohabiting \_\_\_\_\_      Divorced \_\_\_\_\_  
                                  Separated \_\_\_\_\_

If divorced or separated      - how old were you \_\_\_\_\_  
    - has your mother remarried      Yes \_\_\_\_\_      No \_\_\_\_\_  
    - has your father remarried      Yes \_\_\_\_\_      No \_\_\_\_\_

Who was your primary care-giver?      Mother \_\_\_\_\_      Father \_\_\_\_\_      Grandmother \_\_\_\_\_  
    Step-parent \_\_\_\_\_      Adoptive parent \_\_\_\_\_      Other \_\_\_\_\_

Have you lived with other caregivers than your parents?      Yes \_\_\_\_\_      No \_\_\_\_\_

If Yes:

Grand-parents \_\_\_\_\_      Extended Family \_\_\_\_\_      An Agency \_\_\_\_\_      Other \_\_\_\_\_

How many care-givers have looked after you during the first 5 years? \_\_\_\_\_

How old were you when you first moved? \_\_\_\_\_

How many times have you lived with different caregivers? \_\_\_\_\_

How many times have you moved geographically since you were born? \_\_\_\_\_

How many brothers and sisters do you have? \_\_\_\_\_

How many step/half - siblings do you have? \_\_\_\_\_

Where do you fit in the age hierarchy (e.g., 4th oldest) \_\_\_\_\_

How many friends do you have? \_\_\_\_\_

The number of significant people in your life. \_\_\_\_\_

Has a family member died? Yes \_\_\_\_ No \_\_\_\_

If Yes:

<u>Family Member</u>	<u>Your Age</u>	<u>Manner of Death</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Have you used any substances? Yes \_\_\_\_ No \_\_\_\_

If yes - which ones:

<u>Substance</u>	<u>Age First Used</u>	<u>Date Last Used</u>	<u>Use/Week</u>
Alcohol			
Marijuana			
Hash			
Hash Oil			
Marijuana			
Cocaine			
Crack			
LSD (Acid)			
Mushrooms			
O.T.C. Drugs			
Prescription Drugs			
Stimulants (Speed)			
Heroin			
Inhalants			

What are your drugs of choice:

1) \_\_\_\_\_

2) \_\_\_\_\_

3) \_\_\_\_\_

Who introduced you to abusing substances?

Parents \_\_\_\_\_ Friends \_\_\_\_\_ Relative \_\_\_\_\_ Other \_\_\_\_\_

Do you usually use alone or with others?

\_\_\_\_\_ usually alone

\_\_\_\_\_ sometimes alone and sometimes with others

\_\_\_\_\_ usually with others

How many of your friends use substances?

\_\_\_\_\_ None \_\_\_\_\_ A few \_\_\_\_\_ Some \_\_\_\_\_ Most \_\_\_\_\_ All

### History of Delinquent Activity

Age	Activity	Charges
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Health History

<u>Age</u>	<u>Medical problem</u>	<u>Result</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____

Academic History

Do you like school? Yes \_\_\_\_ No \_\_\_\_

Grade last completed \_\_\_\_\_

Have you ever been held back a grade Yes \_\_\_\_ No \_\_\_\_

If Yes - which grades \_\_\_\_\_

How many schools have you attended? \_\_\_\_\_

Have you experienced any traumatic (e.g., injury, death of a family member, etc.) events?  
Yes \_\_\_\_ No \_\_\_\_

If Yes:

<u>Age</u>	<u>Event</u>
_____	_____
_____	_____
_____	_____
_____	_____

**APPENDIX C****CONSENT FORM**

Research Project - An Investigation of the Risk-Factors for Solvent Abuse Among Native Adolescents.

Investigator: 1) Wayne Hammond, M.Sc.

The consent form, a copy of which has been given to you, is only part of the process of informed consent. It should give you a basic understanding of what the research project is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

The purpose of this research is to investigate the potentially unique differences (e.g., level of emotional distress, negative self-perception, dysfunctional social skills, antisocial behaviors, ability to relate to others, etc.) of solvent users as opposed to those Native adolescents who use drugs and alcohol or do not use substances at all. Understanding these potential differences could help to identify potential solvent users and to develop appropriate treatment programs more suited to engaging and addressing the unique social, psychological and biological issues facing solvent abusers.

Each participant will be asked to complete several questionnaires with the results being used to investigate potential differences in a person's level of social and psychological functioning. The investigation involves three groups of adolescents (solvent-users, poly-drug users, and non-users). It is an investigation type of study and is not meant in any way to be a form of treatment. Therefore, one should not experience any discomforts and it is to be understood that you are free to withdraw your consent and terminate your participation at any time. In an indirect way, one might benefit from the results of the study as it may help one to become more informed about some of the major characteristics of substance abusing Native adolescents. The actual interview with each participant will take about one and a half-hours and will be a one-time event only. Also, parental consent for your participation in this study will be required.

The following steps will be taken to safeguard the confidentiality of the information you will provide. Your name will not be recorded on any of the questionnaires. Rather, the forms you provide the information on will be identified with a number to ensure responses remain unidentifiable for the purpose of data analysis. For the duration of the study, all data will be kept in a locked filing cabinet in the investigator's office.

At the end of the research project, a summary explanation of the results will be available to those participants who request it.

Your signature on this form indicates that you have understood to your satisfaction the information regarding your participation in the research project and agree to participate as a subject. In no way does this waive your legal rights nor release the investigator or involved institutions from their legal and professional responsibilities. You are free to withdraw from the study at any time without jeopardizing your health care. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation. If you have any further questions concerning matters related to this research, please contact:

Wayne Hammond, M.Sc.      Telephone No. (403) 274-3742

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(Name)

---

(Signature of Subject)

---

(Signature of Legal Guardian)

---

(Name of Witness)

---

(Signature of Witness)

---

(Date)

**APPENDIX D****Perception of Attachment Patterns for Subjects With Age of Onset Between Ages Six to Eight**

The Adolescent Attachment Questionnaire (AAQ), which consists of four scales (Angry Distress, Unavailability, Lack of a Secure Base, and Role Reversal), was used to assess the subject's current perception of attachment. For the Angry Distress, Unavailability, Lack of a Secure Base, and Role Reversal scales, the overall mean scores for the 23 subjects were, respectively, 15.91, 12.43, 16.52, and 15.34. The mean score for each group for the Angry Distress, Unavailability, Lack of a Secure Base, and Role Reversal scales are listed in Table 1. Analysis of variance (see Table 1) revealed that there were some significant differences among the two groups (SU and PSU) with respect to the four scales (Angry Distress, Unavailability, Lack of a Secure Base, and Role Reversal). On the Angry Distress and Unavailability scales, the numbers reported by the SU group and PSU group were not significantly different from each other. On the Lack of Secure Base scale, the SU group reported significantly higher numbers than the PSU group. For the Role Reversal scale, the PSU group reported significantly higher numbers than the SU group.

Table 1. Ages Six to Eight - Means and Standard Deviations of Two Naturally Occurring Groups (SU, and PSU) With Respect to the Adolescent Attachment Questionnaire (AAQ).

Category	GROUPS					
	SU		PSU		F	p
	n = 10		n = 13			
	M	SD	M	SD		
AAQ						
Angry Distress	15.40	5.62	16.65	4.11	.20	<.661
Unavailability	14.50	6.79	10.85	4.00	2.63	<.120
Lack of Secure Base	18.30	2.91	15.15	4.06	4.29	<.051
Role Reversal	12.60	4.03	17.46	4.28	10.40	<.004



**Current Perception of the Available Responsiveness of Attachment Relationships for Subjects With Age of Onset Between Ages Six to Eight**

The Inventory of Parent and Peer Attachment (IPPA) which consists of three scales (Relationship With Mother, Relationship With Father, and Relationship With Peer) with each scale being broken down further into three sub-scales (Mother - Trust, Father - Trust, and Peer - Trust; Mother – Communication, Father – Communication, and Peer – Communication; and Mother – Alienation, Father – Alienation, and Peer – Alienation) was used to assess the subject's current perception of attachment with parents and close friends as well as how well these figures serve as sources of psychological security. For the three major scales (Relationship With Mother, Relationship With Father, and Relationship with Peer) and the nine sub-scales (Mother - Trust, Father - Trust, Peer - Trust, Mother – Communication, Father – Communication, Peer – Communication, Mother – Alienation, Father – Alienation, and Peer – Alienation), the overall mean scores for the 23 subjects were as follows: Relationship With Mother = 70.61; Relationship With Father = 63.39; Relationship With Peer = 85.65 and Mother - Trust = 29.57; Father - Trust = 25.70; Peer - Trust = 35.52; Mother – Communication = 24.61; Father – Communication = 21.96; Peer – Communication = 27.78; Mother – Alienation = 16.52; Father – Alienation = 15.96; Peer – Alienation = 22.30. The mean score for each group for the three major scales (Relationship With Mother, Relationship With Father, and Relationship With Peer) and the nine sub-scales (Mother - Trust, Father - Trust, Peer - Trust, Mother – Communication, Father – Communication, Peer – Communication, Mother – Alienation, Father – Alienation, and Peer – Alienation) are listed in Table 2.

**Table 2. Ages Six to Eight - Means and Standard Deviations of Two Naturally Occurring groups (SU, and PSU) With Respect to the Inventory of Parent and Peer Attachment (IPPA).**

Scales	GROUPS					
	SU		PSU		F	p
	M	SD	M	SD		
Relat. With Mother	58.40	22.34	80.00	14.53	7.87	<.011
Relat. With Father	60.10	22.30	65.92	19.75	.44	<.515
Relat. With Peer	67.30	18.78	99.77	14.44	22.05	<.001
Mother - Trust	23.80	10.99	34.00	6.85	7.48	<.012
Father - Trust	24.40	10.58	26.70	9.53	.30	<.591
Peer - Trust	27.40	9.80	41.76	6.68	17.50	<.001
Mother – Com.	20.40	6.74	27.85	6.39	7.33	<.013
Father – Com.	21.80	9.37	22.08	8.28	.006	<.941
Peer – Com.	22.20	7.30	32.08	5.58	13.58	<.001
Mother – Alienation	13.30	4.62	19.00	4.67	8.49	<.008
Father - Alienation	14.40	4.88	17.15	5.80	1.46	<.241
Peer - Alienation	17.60	5.79	25.92	5.33	12.94	<.002

Analysis of variance (see Table 2) revealed that there were some significant differences among the two groups (SU and PSU) with respect to the following scales (Mother - Trust, Father - Trust, Peer - Trust, Mother – Communication, Father – Communication, Peer – Communication, Mother – Alienation, Father – Alienation, and Peer – Alienation) of the IPPA. On the Relationship With Mother, Relationship With Peer and Relationship With Father scales, the PSU group reported significantly higher numbers than the SU group. On the following scales (Mother - Trust, Peer - Trust, Mother – Communication, Peer – Communication, Mother – Alienation, and Peer – Alienation), the PSU group reported significantly higher numbers than the SU group. On the Father - Trust, Father – Communication, and Father – Alienation scales, the PSU group and SU group reported similar numbers.