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The family environment alexithymia and adolescent substance abuse

Donna J. Ryngala

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THE FAMILY ENVIRONMENT, ALEXITHYMIA, AND ADOLESCENT SUBSTANCE ABUSE

By

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Adolescence can be a difficult time for parents and their children. When the adolescent engages in risky behaviors, such as substance use and abuse, it can be a trying time as well. There are multiple factors that influence the development of substance abuse problems. However, family environment is perhaps the one that has the largest impact on a child's decision to abuse substances. The purpose of this study was to investigate how family dynamics such as excessive parental conflict, affective responsiveness, and a lack of communication negatively impacts the offspring's choice to abuse substance. It was hypothesized that risky families produce children who have low levels of emotional awareness. Alexithymia, a lack of awareness of one's emotions, was proposed to act as a mediator in the relationship between family environment and teenage substance abuse. Participants included 81 adolescents between the ages of 14 and 19 years old (mean = 18.18, s.d. = 1.31). All were college students or were high school students enrolled in a residential treatment program. Each participant completed a battery of self-report questionnaires including the Family Assessment Device (FAD; Epstein, Baldwin, & Bishop, 1983), the Child's Perception of Interparental Conflict (CPIC; Grych, Seid, & Fincham, 1992), the Toronto Alexithymia Scale-20 (TAS-20, Bagby, Parker, & Taylor, 1994), and the Personal Experience Screening Questionnaire, (PESQ, Winters, 1992). In order to gain an understanding of background information and diagnoses, each participant completed a demographic sheet and the Alcohol Use Disorder Identification Test (AUDIT, Babor, Higgin-Biddle, Saunders, & Monterio, 2001). The AUDIT revealed that 65% of the participants reported drinking at hazardous levels. Regression analyses were conducted to investigate the relationship between family environment variables, alexithymia and substance abuse. Results revealed that observation of models' drinking behavior in the home predicted subsequent substance use. There was no relationship between any of the proposed family environment variables and alexithymia or between alexithymia and substance use. Results of the analyses also revealed that that alexithymia does not act as a mediator between family pathology and adolescent substance abuse in this sample. Implications and limitations are discussed.
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The financial and social costs of substance abuse on society are high as they are correlated with violent crime, domestic violence, risky sexual behavior, suicide, and accidental injuries and death (Kantor & Straus, 1990). Because many problems in functioning begin (and theoretically can be prevented) in adolescence and because they affect families and communities across all social, economic, and cultural spheres, the abuse of alcohol and other drugs (AOD) by teenagers has been the focus of public health and government officials, parents, and schools as well as researchers.

This concern has led to numerous studies being conducted, which have investigated the impact of early substance abuse on later outcome. The National Institute on Alcohol Abuse and Alcoholism (NIAAA, 2002) conducted a longitudinal study following 700 individuals and discovered that the earlier marijuana use was predictive of later mental health problems including Major Depressive Disorder, Alcohol Dependence, and other Substance Use Disorders. In another study conducted by the NIAAA (1998), researchers found that 40 percent of adolescents who started drinking before the age of 15 were later diagnosed with alcohol abuse or dependence at some point in their lives.

Despite the statistics of early adolescent AOD use, many adolescents try substances, particularly alcohol, at some point before graduating from high school and do not experience negative consequences. In fact, Hops, Andrews, Duncan, Duncan, and Tilesley (2000) postulated, “normative drinking behavior, although illegal during adolescence, may not be problematic” (p. 599). Instead, researchers believe that only certain types of substance use result in negative outcomes. Furthermore, while some may refer to any use of substances by adolescents and underage young adults as abuse, most
researchers view adolescent substance use along a continuum (Winters, Latimer, & Stinchfield, 2001). The Center for Substance Abuse Treatment defined this along a dimension of severity and Winters, et al. (2001) report that this includes:

1) Abstinence, 2) Experimental Use: Minimal use, typically associated with recreational activities; often limited to alcohol use; 3) Early Abuse: More established use, often involving more than one drug; greater frequency; adverse consequences begin to emerge; 4) Abuse: Regular and frequent use over an extended period; several adverse consequences emerge; 5) Dependence: Continued regular use despite repeated severe consequences; signs of tolerance; adjustment of activities to accommodate drug seeking and drug use (p. 2).

This definition of substance use in adolescence and young adulthood is helpful because it can account for variations in use and in consequences. This conceptualization does not assume that there is a distinct, qualitative difference between one type of use and the next; instead, there is a continuum, allowing for interpretation of earlier stages of use before abuse and dependence. While many would consider lower levels of use as normative, “high levels of use, as well as an increased rate, relative to others, is particularly symptomatic of later problems and also indicates more movement along a deviance dimension” (Hops, et al., 2000, p. 599).

There has been some research which suggests that children who experience behavior problems often grow up to become adolescents who engage in risk taking behaviors such as early substance use (Repetti, Taylor, & Seeman, 2002). Some may even argue that AOD use is just another expression of problems in the home or in development. If substance abuse is part of a larger class of outcomes associated with the
family environment, then we would expect it to be related to other behavior problems (Hops, et al., 2000). This has been found to be the case in a number of studies. For example, Chasin, Pitts, and Prost (2002) reported that boys who used substances early experienced more externalizing problems and that both boys and girls who used substances early and heavily had more antisocial characteristics. In fact, most of the family characteristics associated with substance abuse are also associated with other problems in living, leading researchers to believe that adolescent substance abuse is just one of many different behaviors that are likely a result of difficult family situations.

The following review considers the roles played by family socialization on adolescent adjustment and substance abuse as well as on emotional development. The development of alexithymia, a lack of emotional awareness, is then considered. It is proposed that alexithymia may function as a vulnerability and mediate the effects of family environment on adolescent AOD use.

Socializing Theory: The Family Influence and Emotional Development

Parental Influences on Adolescent Behavior

Adolescence is a tumultuous period in which children move from depending on their parents for all their needs to a more autonomous and independent position in the family and in the community. According to Piagetian stage theory, adolescence is a time when children begin the process of disengaging from their families and forming stronger bonds with their peers (Piaget, 1965). Furthermore, as the parents’ influence decline, "young adults’ problem-solving abilities, personal experiences, and decision-making skills begin to take precedence in directing their choices of activities" (Klein, Forehand, Armistead, & Brody, 1994, p. 218). Although this is often a trying time for both parents...
and the adolescents themselves, most come through this period with a stronger, stable sense of self and the necessary skills to cope with their new roles in society. However, this is not always the case and children who experienced behavior problems often become adolescents who engage in risky behaviors.

The etiology of problematic behaviors in children and adolescents is multidimensional; however, the family environment is a dynamic that has been consistently linked to a variety of adaptive and maladaptive outcomes. Many researchers have documented the strong relationship between the family context and the development of mental health problems. In fact, some theorists would argue that adolescent problematic behavior is a direct result of dysfunctional family dynamics. In 2002, Alan Sroufe concluded after 27 years of studying individual development, “nothing is more important for the child’s development than the quality of care received” (p. 187). Likewise, Palmo and Palmo (1996) stated, “family dynamics and patterns of interaction are a key reason for the development of at-risk status” (p. 37).

Family characteristics seem to have a strong effect on adjustment, however, the relationships amongst variables is not always linear; they can also be indirect and reciprocal. Individual characteristics such as genetic make-up and temperament can affect parenting behaviors as well as an individual’s choice to use substances. For example, Labouvie, Pandina, and Johnson (1991) reported that adolescents who are more socially oriented use substances earlier than less socially oriented individuals and that this early use predicts a decrease in the perception of parental warmth. It has also been asserted that personality and genetic predispositions may serve to increase an individual’s vulnerability to maladaptive parenting. For example, a longitudinal adoption study
(O'Connor, Deater-Deckard, Fulker, Rutter, & Pomin, 1998) revealed that children who were determined to be at genetic risk for problematic behaviors were more likely to receive maladaptive parenting by their adopted parents than those who were not at genetic risk. Hence, although there are several protective and risk processes related to child and adolescent adjustment, it is asserted here that the area of greatest concern and possibly the one that underlies many other factors is the family environment.

The family environment is one of a multitude of variables that predict child and adolescent adjustment just as substance abuse is one of many ways to measure outcome. This suggests that the results of family pathology can be measured in a variety of ways and that substance abuse is just one way to assess the results of a difficult family environment. Theoretically this means that the results of a problematic family environment could potentially be anticipated by their relationships with other concerns. In fact, in one study, researchers investigated precursors to later adolescent substance abuse in at-risk families and discovered that they could predict abusers by academic and social behavior at ages 7 through 9 years (Hops, Davis, & Lewin, 1999). These results suggest that there are potentially underlying precursors to substance abuse that occur before the individual even tries substances.

*The Family and Adolescent Development*

Adolescence is a unique developmental period in which individuals consolidate the lessons learned from their experiences as children, begin to make their own decisions, and transition into adulthood. This developmental period is critical as it has important implications for both behavioral outcomes and emotional development. Adjustment, in general, is comprised of multiple characteristics including social, academic, and
emotional factors and there are multiple family characteristics that can influence this process. A question that needs answering then is: What are the pathways by which family variables predict adolescent adjustment?

Socialization theory is one explanation that could account for the complex and interconnecting relationship amongst these processes and it is often the underlying orientation for many proposed hypotheses in the literature. In particular, this theory points to the family as the primary influence on an individual’s development and it has been used by a number of researchers to explain physical and mental health problems (e.g., Repetti, et al., 2002).

The process of socialization is the basis for both psychodynamic and learning theories. Specifically, it is the process by which societal mores, values, attitudes, and behaviors are internalized by an individual. Psychodynamic theory postulates that this is the process by which a child develops a superego whereas learning theory stipulates that this occurs through modeling and reinforcement. Although these theories specify very different mechanisms by which this occurs, they both indicate that parents are the primary socializing agent.

Adolescent Adjustment and Substance Abuse.

Barnes’ (1977) socialization model has made important contributions to our understanding of how adolescents develop substance abuse problems and has influenced many other theories. This model indicates that adolescent alcohol abuse is a result of many psychological, sociological, and biological variables that are all interconnected. Barnes postulated that socialization, the act of evolving into a social being with culturally appropriate roles, is a result of all these variables acting upon an individual’s
development and she contended that the family is the primary vehicle for socialization. This assertion has been supported in the literature with large-scale studies with representative samples indicating that the family environment contributes about a third of the variance in substance abuse (Kendler, Karkowski, Neale, & Prescott, 2000). However, there are many ways that a family could socialize an adolescent to abuse substances including distal processes such as parental psychopathology and substance abuse and proximal factors such as parenting behaviors, which have more of a direct influence on adolescent behavior (Chasin, et al., 2002).

Socialization theorists such as Barnes (1977) acknowledge that one way adolescents are socialized to drink is through parental modeling because children often observe their parents’ drinking behavior. Learning theorists postulate that the link between difficult family environments, such as excessive domestic partner conflict, and deviant behavior may be established in the adolescent through social modeling. Specifically, the social modeling theory postulates that children develop ways to cope by observing parental figures and learn techniques for handling life stressors through their assessment of the rewards and punishments associated with the behavior. Theoretically, the adolescent who acquires negative or avoidant coping strategies through modeling, therefore, is more likely to abuse substances (Bandura, 1977).

However, Barnes (1977) and others (Repetti, et al., 2002) contend that modeling alone is not sufficient to account for adolescent substance abuse problems. There are many other factors that contribute to adolescents’ acquisition of new behaviors including their association with individuals outside of the family network. Peers do have a strong influence on adolescent drinking behavior; however, individuals choose friends who hold
similar values and attitudes to their own. Barnes argued that problematic drinking, like delinquency, is likely a result of inadequate social role development, which stems from the family. This inadequacy is likely a consequence of parenting behaviors and it results in the adolescent lacking a stable, clear, sense of self thereby leading to drinking at problematic levels.

Problematic family environments consist of parents who engage in maladaptive levels of conflict and aggression and who relate to their children in cold, unsupportive, neglectful, and rejecting ways. Repetti, et al. (2002) theorize that when families are unresponsive and lack warmth or cohesion, the offspring are more likely to have maladjusted outcomes. The idea that troubled families have an effect on an individual’s physical and mental health is not a new one. However, there has been much conjecture about the mechanism by which this relationship occurs and researchers have discovered that there are direct and indirect influences and different trajectories for subgroups of substance abusers (Chasin, et al., 2002). In the case of a direct relationship, we are likely to find that family characteristics directly predict an individual’s outcome whereas an indirect relationship would account for additional variables that are related to the family and to substance abuse.

*Emotional Development.*

There are several theories that attempt to account for how individuals become emotionally competent. One such model is the cognitive-developmental theory of emotion put forth by Lane and Schwartz (1987). Drawing from Lazarus’ (1984) idea that in order to experience an emotion, one must make a cognitive interpretation of that emotion, Lane and Schwartz contend that emotional awareness develops along the same
lines as cognition. Their “central thesis is that what is experienced as emotion is the consequence of a subsequent cognitive processing of emotional arousal and that the cognitive process itself undergoes a sequence of structural transformations during development which, in turn, determines the structure of subsequent emotional experience” (p. 134). These levels include: 1) the sensorimotor where there is no differentiation of stimuli and no ability to describe emotion; 2) the sensorimotor enactive level where emotion is experienced as bodily sensations; 3) the preoperational level in which emotions are experienced in extremes and descriptions are unidimensional; 4) the concrete operational where the individual can differentiate blends of emotions and can describe different emotions in the self; 5) the formal operational level where the individual can differentiate many levels of emotions and blends of emotions and can describe complex combinations of emotion. This model indicates that children go through five levels of emotional awareness in a hierarchical fashion increasing in levels of differentiation and degree of organization. This theory is derived from Piaget’s stages of cognitive development and makes use of the idea of assimilation and accommodation to the individual’s schemata. Although comprehensive, the cognitive development theory is not without problems.

The cognitive development theory can account for the different levels of development of emotion but the relationship between cognition and emotions may be too close to adequately account for a true distinction. In fact, Lane and Schwartz (1987) developed a measure of emotional awareness based on this theory; however, research has demonstrated that there was a high correlation between age and this measure of emotional awareness indicating that it is likely a slight variation of a measure of cognitive
development. Therefore, although helpful in terms of understanding the progression, this theory may not be the best way to account for how individuals develop emotionally.

The socialization model proposed by Saarni (1999) is another such theory that attempts to explain emotional development. This theory postulates that children develop an awareness of their emotions through socialization and it identifies the family as the primary socialization agent. Saarni postulates that children acquire several different skills as they move through their childhood including: Emotional awareness of the self; understanding of others' emotions; the use of vocabulary and the ability to express emotion; the capacity for empathy; differentiation of internal and external emotional experiences; capacity to cope emotionally; emotional communication with others; and the capacity of emotional self-efficacy. This model is also progressive and indicates that the individual acquires these skills at different periods in their development through explicit and implicit education in the family. Studies conducted by Denham and colleagues (2001) illustrate this development. In one study, they found that parents who talked more about emotions, expressed positive emotions, and who used reassuring and emotionally-laden explanations in reaction to their children's emotional expressions had children who displayed better regulation of their emotions with their peers.

Denham (1998) posited that emotional competence is comprised of: 1) emotional expression, the nonverbal and verbal display of emotions including empathy and the ability to know that emotions may be different on the inside than on the outside; 2) understanding of emotion, awareness of one's own and other's emotion and the vocabulary to describe them; 3) and emotion regulation, the ability to cope with positive and negative emotional states and the ability to be unregulated in certain situations.
Denham cautions that these three aspects of emotional competence are not distinct and they influence and interact with one another regularly and that if one is deficient in one area, that individual is likely struggling in others as well. Although these theories do not account for stage development as do Lane and Schwartz (1987), they do incorporate the different components of emotional competence and perhaps provide a more thorough picture of how emotional awareness develops.

As stated previously, the parents socialize these components of emotional competence. Talking about emotions, encouraging affective expression, and reacting to an emotional situation in a calm way provide the vehicles by which children learn about emotions. Furthermore, adaptive parenting consists of “emotional coaching” which includes mirroring, modeling, and providing rewards and punishments for the child’s expressions of emotions; all of which are scaffolding for the development of emotional awareness (Gottman, Katz, & Hooven, 1997). However, if parenting abilities are deficient, the offspring will struggle in their emotional development. In fact, problematic caregiving is hypothesized to be a contributing factor for many emotional disorders. For example, Linehan (1993) postulates that invalidating responses by parents to their child’s emotional reactions results in difficulty identifying, describing, and regulating his or her emotions as he or she develops into an adult, which has been linked to psychopathology.

What are the ramifications of not coping with one’s emotions? Lack of emotional stability and the ability to control one’s emotions have been shown to predict substance abuse in the literature. Additionally, several researchers have linked the inability to modulate emotions with both overcontrolled and undercontrolled symptoms in children and adolescents (e.g., Eisenberg, Fabes, & Murphy, 1996; Southham-Gerow & Kendall,
2002). For example, researchers have found that adolescents who had difficulty with anger management, had temper tantrums, and inappropriate negative emotions at earlier ages were more likely to use marijuana in adolescence (Block, Block, & Keyes, 1988). Likewise, Katz and Gottman (1995) found that emotion regulation acted as a mediator between family conflict and child acting out behavior.

Socialization theory may explain the developmental process and the influence that the family environment has with regard to general functioning and emotional competence. It can also explain how these processes interact (i.e., a troubled family will often produce children who struggle with their emotional awareness and regulation and who engage in risky behaviors). Hence, although these characteristics often co-occur and do not exist in isolation, it has become important to researchers to determine the specific aspects of the family environment that have the most influence on adolescent adjustment and AOD use.

Family Processes

Research has demonstrated that the family environment, in general, predicts substance use. In fact, in a population based male twin study, researchers found that the family environment predicted a 33-35% of the variance in cannabis, hallucinogen, or any substance use by an individual (Kendler, et al., 2000). This study was consistent with another population-based study, which found that the (shared) family environment predicted 28 percent of the variance in substance use, abuse, and dependence (Tsuang, et al., 1996). However, some familial factors are better predictors than others.

Dysfunctional families often deal with multiple problems at once, making it difficult to parcel out which variables are most important. Furthermore, family processes
are often interconnected and a family that struggles with one type of problem will often wrestles with others. The factors of interest in this study include ones that have received corroboration from empirical research and other variables for which there are mixed results in the literature. Researchers have found that factors such as divorce (Hetherington & Stanley-Hagan, 1999), domestic partner conflict (Davies & Cummings, 1994), parental support and control (Barnes, Farrell, & Cairns, 1986), emotional expressiveness, and communication (Amerikaner, Monks, Wolfe, & Thomas, 1994) are related to child and adolescent adjustment including adolescent AOD use.

**Domestic Partner Conflict**

Early on, divorce was identified as a core problem for child and adolescent adjustment (Wallerstein & Kelly, 1980). However, as research designs became more complex, the field began to look at other processes that might contribute to the adjustment of children from divorced families. Researchers discovered that it was not divorce alone that predicted adjustment but rather other processes that often co-occur with divorce. Marital conflict, or domestic partner conflict (DPC) as it will be referred to here, is one such process that has received considerable attention over the last 25 years.

Davies and Cummings have researched the relationship between DPC, emotional development, and adjustment extensively. These researchers, along with others, have proposed that DPC affects emotional awareness and regulation, which, in turn, affects child and adolescent behavior. Perry and Pollard (1998) hypothesize that the link between DPC and emotions occurs through the effects of heightened arousal on biological systems. Repetti and colleagues (2002) suggest, “chronic or repeated stressors in the environment, such as high levels of violence and family conflict, may not allow for
sufficient recovery from heightened emotional arousal” which leads to a disruption in emotional development (p. 340). This contention is based on a number of studies which suggest that when there are high levels of negative affect expressed in the family, children have more difficulty identifying emotions in facial expressions (Dunn & Brown, 1994) and use less “approach coping” (i.e., appraisal of the situation and positive attempts to problem solve) (Valentiner, Holahan, & Moos, 1994).

In addition to emotional development, DPC has been linked to a variety of behavioral outcomes. A relatively consistent finding in the relationship between DPC and child and adolescent adjustment is that individuals who come from homes with high levels of DPC are more likely to display externalizing behavior problems (for a review see Buhler, Anthony, Krishnakumar, Stone, Gerard, & Pemberton, 1997). In fact, DPC has been related to severe acting out behavior in children of divorce (Long, Slater, Forehand, & Fauber, 1988), conduct-disordered girls (Johnston, Gonzalez, & Campbell, 1987), and behavior problems in nonclinical samples (Wierson, Forehand, & McCombs, 1988).

Overcontrolled, or internalizing symptoms have also been linked to DPC. Researchers have demonstrated the children from homes with high DPC display more anxious and withdrawn symptoms, (Long, et al., 1988; Wierson, et al., 1988) are less communicative, (Johnston, et al., 1987) and are more likely to experience depressive symptoms (Johnston, et al., 1987; Sternberg, Lamb, & Greenbaum, 1993).

Recently, there have been a number of studies that have investigated the relationship between family conflict (conflict among all members of the family as opposed to just the parents) and adolescent substance abuse with positive findings;
indicating that higher levels of family conflict predict adolescent substance use (Godley, Kahn, Dennis, Godley, & Funk, 2005; Mallett, Rosenthal, & Keys, 2005; Secades-Villa, Fernandez-Hermida, & Villejo-Seco, 2005). However, there has been less research done in the area of DPC and adolescent substance abuse. Despite Davies’ assertion that the link between DPC and child adjustment has been such a consistent finding that it “has reached the point of diminishing returns” (Davies, et al., 2002, p. 1), there has been little research done with regard to adolescent adjustment and substance abuse.

Although the literature in this area is not as robust as it is in the family conflict area, there has been some empirical support for the relationship between DPC and adolescent substance abuse. For example, one study investigated the role of economic hardship on rural families and discovered that economic hardship predicted parental hostility toward their partners and toward their children, which in turn predicted adolescent alcohol use (Conger, Lorenz, Elder, Melby, Simons, & Conger, 1991). Likewise, other research has demonstrated that DPC has a complex and interconnecting relationship with other family variables. In fact, these researchers found that DPC had both direct and indirect effects on adolescent alcohol use (Klein, et al., 1994; Vicary & Lerner, 1986). Thus, although the link between DPC and adolescent AOD use has not been investigated as extensively as general family conflict, high levels of DPC often co-occur with other family variables, which are related to substance abuse. Therefore, given the empirical support highlighted above as well as the conceptual link between DPC and other problematic family characteristics, it seems plausible that DPC would also affect adolescent AOD use.
Parental Behaviors: Responsiveness and Control

The relationship between certain parenting variables and child and adolescent outcome has been explored by many researchers and although most contend that some parenting processes do contribute to outcome, the results have not always been unequivocal. However, parenting style has been consistently linked to adolescent outcome. For example, Baumrind (1991) classified parents into six categories including authoritative, democratic, directive, good-enough, nondirective, and unengaged and indicated that each type is likely to create certain outcomes in the offspring. In general, she reported that authoritative and democratic parents had adolescents who more competent and better adjusted; directive families were more restrictive and monitored their adolescents more; good-enough families did not have many behavior problems and generally fell in the middle concerning support and control; nondirective families were avoidant of conflict, disorganized, and were more positive about drug use; and unengaged families did not provide structure or monitoring, were disorganized and the adolescents from these homes used the most illicit drugs. Despite these findings, this relationship has not always been consistent when considering particular parenting behaviors. In fact, while some researchers have found a relationship between permissive parents and adolescent marijuana use (Kandel, Simcha-Fagan, & Davies, 1986; Vicary & Lerner, 1986), others have failed to find such a relationship (Jessor & Jessor, 1974). One possible way to address the inconsistent findings is to separate out the particular behaviors of parenting.

Parenting includes a variety of different interactions and behaviors that are directed toward one’s offspring. Generally, processes such as support and control are part
of effective parenting. However, variations in these processes with either too little support and too much control or too much support and too little control can create difficulties for the developing child.

What is parental support? This definition may vary depending on who the researcher is. Barnes, et al. (1986) operationally defined parental support as "parental praise, reliance on parent for advise and guidance, physical affection (hug, kiss), doing things together, decision making, discussion of future plans, discussion of personal problems, and knowledge of parental expectations" (p. 30). Likewise, Wills, Blechman, and McNamara (1996) assume that support includes clear communication, protection from age inappropriate challenges, teaching effective coping strategies, and teaching how to effectively communicate with others.

Parental support acting as a predictor of adolescent competence and substance abuse has been consistently demonstrated. In their longitudinal study, Wills and colleagues (1996) reported parental support contributed to good outcomes by promoting positive coping skills and competence in children, with correlations ranging between .20 and .53. However, the prediction of substance abuse was less consistent in their study. They found that support had different effects with different populations (i.e., it was more effective for girls than boys and more important for Hispanic and White children than Black children). In general, family support was negatively correlated (-.33) with substance use. Barnes, et al. (1986) found that parental support was a strong predictor of adolescent alcohol abuse, such that the less supportive parents had children who experienced 2 or more alcohol related problems in at least 3 areas of their life within the last year. Furthermore, these researchers categorized adolescents into low support and
high support groups and found that 28% of the adolescents in the low maternal support group had problem related drinking habits compared to only 11% in the high support group (p < .05). These results were similar with regard to paternal support, with 26% of the low support group and 9% of the high support group demonstrating problem drinking (p < .05). In this study, the authors concluded that parental support is a “key factor” in the prevention of alcohol abuse.

Adolescent perception of parental figures is important as well. In their meta-analysis of predictors of adolescent substance use, Petraitis, Flay, Miller, Torpy, and Greiner (1998) reported that when adolescents perceived their parents to be unresponsive, unnurturing, and discouraging of their interests, they were more likely to use marijuana than adolescents who perceived their parents to be supportive. Furthermore, Johnson and Pandina (1991) reported that hostile and cold parenting (especially by the father) was a significant predictor of adolescent substance use.

Control in parenting can be seen when parents “instruct, correct, teach, or discipline their children” (Russell, Mize, & Bissaker, 2002, p. 209) and a certain level of it in the parent-child relationship is expected and needed for children to have good outcomes. Block, et al. (1988) reported that when fathers displayed some controlling behaviors (e.g., having strict rules) their daughters were less likely to use marijuana (correlations ranged between -.33 and -.45). Similarly, low parental control had a strong relationship with adolescent exposure to illicit drugs (Hammersley, Ditton, & Main, 1997). However, control may have differing effects at different levels. In fact, Barnes, et al. (1986) discovered that the relationship between parental control and adolescent
substance abuse was curvilinear, such that low and high levels of control exerted by the parents predicted adolescent substance abuse.

Parental Involvement/Communication

Involvement and communication between parents and adolescents are essential components of adolescent adjustment. These two processes are closely tied because if adolescents perceive that there is open communication, they are more likely to report their whereabouts. Lamb (1987) reports that parental involvement can mean several different things including a) engagement, which constitutes face-to-face interaction, b) accessibility, defined as being available to the child, and c) responsibility, including making appointments and arranging childcare. Additionally, monitoring an adolescent’s whereabouts is a way in which parents remain involved in their child’s life. In their conceptualization of affective involvement, Repetti, et al. (2002) indicate that it “is concerned with the extent to which family members are interested in and place value on each other’s activities and concerns” (p. 173).

Communication and parental monitoring are interconnecting concepts. In fact, most measures of parental monitoring often include some measurement of communication because adolescent disclosure may be as important as the parent’s attempts to monitor (Stattin & Kerr, 2000) and this has important implications for adolescent adjustment. In fact, research has consistently shown that parents who do not monitor their child’s whereabouts are more likely to have children engage in risky behaviors including abusing substances (e.g., Vazsonyi & Flannery, 1997).

When there is open communication in the family, adolescents fair better. For example, Amerikaner, et al. (1994) found that adolescent psychological health was
related to communication with both mothers and fathers. Communication has also been linked to treatment outcomes. In their analysis of family characteristics that predict treatment outcome for adolescents with substance abuse problems, Friedman, Tomko, and Utada (1991) reported that parent-child communication (both mother and father) prior to treatment, predicted better outcome following treatment.

As would be expected, when parents are engaged with their children in positive, warm, and nurturing relationships, their children are less likely to exhibit behavior problems and will use substances less frequently than others. Furthermore, engagement can be defined in many ways, including positive communication, affective involvement and responsiveness, and parental monitoring. Additionally, it is asserted that these family characteristics are not concepts that occur in isolation but are, in fact, factors which influence one another and often co-occur.

Other Family Predictors of Substance Abuse

Researchers have identified many additional variables that contribute to substance abuse. The list of psychosocial correlates of teenage substance abuse includes other co-occurring psychopathology, psychopathology in the family, and substance abuse by family members (Kasarabada, Anglin, Stark, & Paredes, 2000). Socialization and social modeling theories would predict that when members of the family model or subtly or overtly condone behaviors, the offspring will likely engage in that behavior thus partially explaining some of these links. Socialization can take the form of explicitly stated rules or learning through observation, as in the case where an adolescent observes members of his or her family using substances. Research has demonstrated both of these influences. In fact, a study of 2,849 New Jersey middle school children revealed that when families
had clear expectations about substance use, adolescents were less likely to use (Abdelrahman, Rodriguez, Ryan, French, & Weinbaum, 1998). Likewise, when adolescents simply observe parental drinking patterns, they are more likely to drink as well.

Psychosocial correlates of adolescent substance abuse include variables such as witnessing parental drunkenness and adolescents' perception that their parents allowed them to drink (Henry, Robinson, & Wilson, 2003). These hypotheses are consistent with social modeling theory, which indicates that observation of parents' use and the perception that use is permitted are likely to lead to substance use. Abdelrahman, et al. (1998) found this to be true; family substance abuse was a "strong and consistent" predictor of adolescent substance use. This relationship has been consistently demonstrated in the literature (e.g., Barnes, et al., 1986; Chasin, et al., 2002).

Additionally, some research has shown that when an adolescent has an older sibling who drinks or uses drugs, he or she is more likely to abuse substances as well (Denton & Kampfe, 1994). For example, Jenson and Howard (1999) investigated predictors of hallucinogen use and discovered that having a sibling who used substances predicted early use by adolescents. Likewise, a 1-year prospective study on alcohol use revealed that adolescent use was related to sibling use concurrently but not prospectively and that parent use was related prospectively but not concurrently to adolescent use (Ary, Tildesley, Hops, & Andrews, 1993). These results reveal that there is likely not a direct effect between sibling use and adolescent use but it is more likely a result of the socializing process within the family as a whole. In fact, Duncan, Duncan, and Hops (1996) tested the indirect relationship and found that sibling use was actually a mediator.
of the relationship between parenting behavior and adolescent substance abuse. Results such as these lead researchers to believe that “quite often it is the sibling and the parent who contribute together to the shaping (or training) of the problem child” (Duncan, et al., 1996, p. 160).

Emotional Awareness and Alexithymia

Alexithymia, an emotional and cognitive construct, is defined as a lack of emotional self awareness and it is characterized by difficulty identifying and describing feelings, a proclivity for externally oriented thinking, and a lack of fantasy life. Sifneos (1973) coined the term from its Greek root: α (without), lexí (speech), thymía (emotions or moods) after identifying the trait in patients presenting with psychosomatic complaints. Since this time, there has been a plethora of research on alexithymia and it is now recognized to occur within the general population and to have implications for numerous disorders and problems in living. In fact, in addition to somatic concerns, it is has been linked to eating, anxiety, mood, and addictive disorders (Salminen, Saarijarvi, & Aarel, 1995).

There has been much conjecture in the literature about the role of emotional awareness in human functioning. One hypothesis offered to explain this process is related to the physiological arousal of biological systems associated with emotions. This hypothesis indicates that even though alexithymic individuals are unable to identify that process, they do experience bodily sensations associated with emotions. When there is a lack of awareness of this, it leads to heightened physiological arousal which can stay with an individual over a prolonged period of time leading to stress on the immune, pituitary-adrenal, and autonomic systems (Infrasca, 1997; Martin & Pihl, 1986; Papciak,
Feuerstein, & Spiegel, 1985). The protracted stimulation of these systems, in turn, causes physical and psychological discomfort and through attempts to explain these sensations, alexithymic individuals likely misread their bodily cues and interpret them physically. This may explain why these individuals are diagnosed with medical disorders more often and quicker than other individuals (Lumley & Norman, 1996) and why it is associated with rheumatoid arthritis, hypertension, and cardiovascular disease (Fernandez, Sriram, & Rajkumar, 1989; Gage & Egan, 1984; Kauhanen, Kaplan, & Cohen, 1994).

Alexithymic individuals are also likely to experience psychological discomfort in social relations because of three important roles that emotions play in interpersonal interactions. The first is related to emotional expression. If alexithymia limits one’s ability to process emotions, one will have difficulty when attempting to communicate them (Taylor, 1984) thus potentially stunting the intimacy possible within a relationship. Cecero and Holmstrom (1997) speculate that individuals who are alexithymic are likely to report feelings of distress and vulnerability but are often unable to expand upon this subjective experience that leads others to experience them as emotionally avoidant and incompetent.

The second way that emotional awareness is related interpersonal relations is through its connection to emotion regulation. If alexithymic individuals are unable to understand their emotional reactions, they will have difficulty mitigating this arousal (Taylor, Bagby, & Parker, 1991) leading to a proclivity to have emotions that are out of control or superficial which causes discomfort in others.

The third explanation about why alexithymia leads to problems in relationships is because of the tendency for alexithymics to have difficulty understanding other’s
emotional reactions (Krystal, 1988). This follows with the progressive theories of emotional development, namely that individuals must first understand their own emotional reactions before they are capable of reading and empathizing with others (Denham, 1998; Saarni, 1999). Theoretically, individuals who lack emotional awareness will be confused and potentially indifferent when other express emotions and are therefore likely to alienate themselves when others express emotions.

There is some empirical support for these explanations. Yelsma (1995) investigated alexithymia in nonclinical samples and demonstrated that individuals who score higher on measures of alexithymia “lack awareness of affect cues to guide communication; lack implementation of emotion in personal relationships; and lack intensity of emotional arousal” (Yelsma, Hovestadt, Anderson, & Nilsson, 2000, p. 356). Thus, alexithymia seems to not only affect an individual’s physical health but also has implications for psychological adjustment and interpersonal relationships as well.

As a result, when alexithymic people interact with others, they will not only have trouble identifying and communicating their emotions, but also regulating their affect (Yelsma, et al., 2000) and empathizing with others. The link between alexithymia and problematic relationships, therefore, is likely a result of numerous processes and may explain some of how psychological dysfunction develops as well.

The etiology of alexithymia

The etiology of alexithymia has received considerable attention. There is speculation that there are two pathways by which an individual develops alexithymia. These include primary and secondary, with the former being identified early in an individual’s life and the latter being a reaction to a traumatic event (Krystal, 1988). It has
been hypothesized that primary alexithymia is a product of deficient socializing by the family. In fact, Yelsma, Hovestadt, Nilsson, and Paul (1998) indicate that excessive negative self-expressiveness in the family is the primary pathway by which an individual develops alexithymia.

Researchers have theorized that affect and affect regulation are learned through mirroring by caregivers and by providing the “emotional scaffolding” necessary to develop an awareness of emotional states and that if this is lacking, individuals will develop primary alexithymia (Fukunishi & Paris, 2001). Furthermore, it has also been hypothesized that with primary alexithymia, individuals “never learned to express emotions verbally, because of a severe disturbance in their early psychosocial development” (Salminen, et al., 1995, p. 804). Despite its prevalence in severe situations, it should be noted that alexithymia is not only found when there are extreme problems, but also within the larger population. In fact, alexithymia has become such a ubiquitous concept that it is now conceptualized as a personality trait that varies along a continuum and is linked to many other aspects of human functioning (Grabe, Rainermann, Spitzer, Gansicke, Gansicke, & Freyberger, 2000).

Because the family environment is often the vehicle by which children are socialized about emotions, it follows that family characteristics are linked to the development of alexithymia in clinical and nonclinical samples. Berenbaum and James (1994) hypothesized that when children grow up in homes where they feel secure and are supported in their expression of emotion they learn how to experience and identify their emotions, whereas children who grow up in homes in which expressed emotion is not encouraged would “consequently be uncomfortable experiencing emotions” (p. 354).
These researchers found support for their hypotheses ($R^2$ ranged from .23 to .33). This finding has also been supported across populations. In college samples, emotional awareness was positively correlated with mother's care and overprotection and negatively correlated with increased levels of family pathology (Fukunishi & Paris, 2001; Lumley, Mader, Gramzow, & Papineau, 1996). Likewise, in a treatment-seeking sample, Yelsma, et al. (1998) discovered that alexithymia was significantly associated with positive and negative expressiveness in the family (range $R^2 = .12-.27$). King (2000) combined clinical and nonclinical samples and concluded “Alexithymia was positively associated with retrospective reports of family dysfunction, including parent-child role reversal, fear of separation, and parental enmeshment. More than simply the absence of dysfunction, memories of affirmatively healthy family environments, including cohesion, emotional expression, and encouragement of independence were negatively correlated with alexithymia” (p. 78).

**Measuring alexithymia and the family**

There are several self-report measures of alexithymia including the Toronto Alexithymia Scale (TAS), the MMPI Alexithymia Scale (MMPI-A), and the Schalling-Sifneos Personality Scale (SPSS). However in a study comparing of these scales, Bagby, Taylor, & Atkinson (1988) reported that the TAS demonstrated the most stable factor structure and “the SPPS and the MMPI-A were found to have response and/or gender biases, poor internal reliabilities, and no systematic relationship with somatic symptoms” (p. 107). The TAS-20 was developed in 1994 in order to improve the psychometric properties of the original TAS. Although the original measure (TAS-26) was designed to assess four proposed aspects of alexithymia, research revealed that there were three
factors that demonstrated better factor structures and greater score reliability (Bagby, Parker, & Taylor, 1994). With its improved factor structure and reliability scores, the TAS-20 is now the most widely used measure of alexithymia (Crouse et al., in press).

Despite its factor stability in English speaking samples, several cross cultural studies have found that the translated TAS-20 is best conceptualized as having two factors, an emotional one which incorporates that Difficulty Identifying Feelings scale and the Difficulty Describing Feelings scale and the cognitive component, the Externally Oriented Thinking scale (e.g., Speranza, et al., 2004). Still other translations revealed four factors in the German version with low importance of emotion emerging as the fourth factor (Muller, Buhner, & Ellgring, 2003). By using these different scales, research has demonstrated that different facets of alexithymia are associated with different aspects of a population. Thus, the current practice in research is to not only examine alexithymia as a single construct but also to investigate the differences for the emotional and cognitive components of alexithymia (Salminen, et al., 1995).

*Emotional Component of Alexithymia.*

Sifneos (1973) indicated that alexithymia means “no word for feelings” and it is often considered an emotional concept. In fact, the two main components of alexithymia include difficulty distinguishing between emotions and difficulty communicating these emotions to others. These aspects of alexithymia have received the most support in terms of their relationship with the family environment and substance abuse.

The difficulty identifying feelings (DIF) scale of the TAS-20 has been used in a number of studies to demonstrate a relationship between family functioning and alexithymia. In particular, one aspect of family functioning, family expressiveness, has
been consistently linked to DIF. In fact, researchers have found the relationship between these factors in college samples (Berenbaum & James, 1994; Fukunishi & Paris, 2001; Yelsma, et al., 2000), in individuals seeking counseling (Yelsma, et al., 1998) and in college students’ mothers (Fukunishi & Paris, 2001). The strength of the correlation is generally strong between the expressive family atmosphere and difficulty identifying feelings. In addition to family expressiveness, difficulty identifying feelings has also been demonstrated to have relationships with enmeshment, permissive family styles, cohesion, family sociability, and idealization (Fukunishi & Paris, 2001; Kench & Irwin, 2000). The relationship between family conflict and DIF has received inconsistent support with Kench and Irwin (2000) reporting a moderate correlation (.37, p < .001) and Fukunishi and Paris (2001) failing to find a relationship in any of their three samples.

The difficulty describing feelings (DDF) is also a component of alexithymia and it assesses emotional vocabulary and the ability of an individual to communicate his or her emotions to others. As socialization theorists and alexithymia researchers have hypothesized, the ability to communicate emotions is correlated with a number of family environment variables. Similar to DIF, several researchers have demonstrated an inverse relationship between expressive family atmosphere and DDF (Berenbaum & James, 1994; Fukunishi & Paris, 2001; Kench & Irwin, 2000; Yelsma, et al., 2000, Yelsma, et al., 1998) with significant correlations between -.28 and -.40. Likewise, Kench and Irwin (2000) reported that DDF was positively correlated with enmeshment (.22, p < .05), and permissive family styles (.21, p < .01) and Fukunishi and Paris (2001) found it to be related to cohesion and organization.
The Cognitive Component of Alexithymia.

When Sifneos (1973) first described his observation of alexithymic individuals, he reported that in addition to the emotional difficulties, there was also a cognitive component to the construct such that these individuals were not psychologically minded or introspective about their personal experiences and had a tendency to look toward others to understand their emotions. Lane and Schwartz (1987) theorize that alexithymic individuals have difficulties forming mental representations and cognitively processing emotions. In addition to a tendency for externally oriented thinking, they also tend to have poor fantasy lives such that their thinking was more concrete and less imaginative.

The cognitive aspect of alexithymia, however, has had more difficulties associated with it than others. In fact, the original TAS did have a scale for poor fantasy life (the reduced day dreaming scale) but because of its lower reliability, the authors added some of the items to the Externally Oriented Thinking scale (EOT) and dropped the remaining items when the TAS-20 was developed (Bagby, et al., 1994).

Although the EOT was kept with the development of the TAS-20, the relationship between it and hypothesized family constructs has been less consistent than the DIF and the DDF. In fact, although Yelsma and colleagues (1998, 2000) reported that expressive family atmosphere was negatively correlated with EOT -.21 (p < .05) other researchers have failed to find a relationship between EOT and cohesion, conflict, enmeshment, expressiveness, family socialibility, or idealization (Kench & Irwin, 2000). In fact, Fukunishi and Paris (2001) failed to find a relationship between EOT and any of the 15 family variables tested.
Alexithymia and Psychiatric Disorders

There is speculation that alexithymia is not a categorical construct that only exists within a subset of the population but it is, in fact, a stable personality trait that is associated with impoverished affect expression (Adami, Campostano, Ravera, Leggieri, & Scopinaro, 2001) and it is a predisposition to several psychiatric disorders (Taylor, et al., 1997). In fact, researchers have found that it is a continuous construct that covaries with neuroticism, introversion, and (low) openness to experience (Costa & McCrae, 1992).

If it is a personality trait, it would make sense that it was found not only in clinical samples but also within the general population as well. There have been several studies conducted in Finland that have demonstrated just this. In one study, researchers investigated alexithymia in a random sample of 2000 people between the ages of 18 and 64 years, and discovered that men, individuals with lower education, and blue-collar workers were more alexithymic than women, individuals with secondary education, and white-collar workers (Salminen, Saarijarvi, Aarela, Toikka, & Kauhanen, 1999).

The link between alexithymia and several psychiatric disorders has been investigated with mixed results. Several researchers have discovered alexithymia to be associated with psychological turmoil in general, and anxiety and depression in particular (Saarijarvi, Salminen, Tamminen, & Aarela, 1993; Taylor, et al., 1992). Furthermore, in studies of depressed patients, alexithymia was associated with more severe depression and individuals with higher levels of alexithymia were less likely to recover from a depressive episode in a one year follow up (Honkalampi, Hintikka, Tanskanen, Lehtonen, & Viinamaki, 2000; Saarijarvi, Salminen, & Toikka, 2001). However, while Wise, Mann,
and Hill (1990) found alexithymia to be associated with obsessive thinking styles, they did not find it to have a relationship with depression.

*Alexithymia and Substance Abuse*

Alexithymia has been found to be prevalent in substance abuse populations in a number of studies and while it has been linked with several different addictive disorders, the support is strongest for individuals struggling with alcohol dependence. Researchers have found the trait to be prevalent in a large minority of the addicted participants. In several studies, prevalence rates indicated that between 40 and 50 percent of alcohol dependent individuals met criteria for alexithymia and their scores on the TAS-20 are often significantly greater than college students or individuals from the community (Loas, Otmani, Lecercle, & Jouvent, 2000; Handelsman, Stein, Bernstein, Openheim, Rosenblum, & Magura, 2000; Haviland, Hendryx, Shaw, & Henry, 1994; Ziolkowski, Gruss, & Rybakowski, 1995).

In one study, researchers compared alcohol dependent individuals, college students, and a community group and found that 48.33%, 12.28%, and 15.58% of the groups respectively were considered alexithymic with alcohol addicted individuals having significantly higher scores than the other two groups (Loas, et al., 2000). These researchers found this relationship to be significant even when accounting for gender. This relationship between alcohol dependence and alexithymia has also been demonstrated cross culturally in a Turkish alcohol dependent sample (Uzun, 2003) and a French speaking sample (Guilbaud, et al., 2002). In fact, Guilbaud and colleagues (2002) also reported that a higher percentage of alcohol dependent individuals demonstrated higher levels of alexithymia when compared to controls and drug addicted participants.
However, other researchers failed to find a difference in levels of alexithymia between alcohol addicted individuals and healthy controls (Cleland, Magura, Foote, Rosenblum, & Kosanke, 2005).

Research has been mixed with the relationship between severity of substance abuse and levels of alexithymia. In an investigation among substance dependent men in Egypt, El Rashed (2001) found levels of alexithymia to be higher in polysubstance dependent individuals as opposed to individuals addicted to only one substance. Likewise, Uzun (2003) found that both severity and duration of alcohol use to be linked to levels of alexithymia. Cleland and colleagues (2005) found alexithymia related to severity of alcohol related problems however, this relationship was strongest for individuals who were using only alcohol at baseline and not individuals using drugs and alcohol.

Although research has found that many individuals who have substance use disorders are more often alexithymic than other groups, more complex studies have demonstrated that alexithymia is not always a function of the substance use itself but that interacts with gender and other psychological difficulties including anxious and depressive symptoms. In a comparison study of young adults ages 14 to 25 years, researchers compared drug addicted individuals to those from the community and discovered that drug addicted individuals scored significantly higher on the total score for alexithymia (Chinet, Bolognini, Plancherel, Stephan, & Halfon, 1998). However, when depression was accounted for, the difference disappeared for females but not males, demonstrating a more complex relationship with other psychiatric disorders and gender. Similarly, other researchers have found the emotional component of alexithymia to be
associated with drug addiction but that the variance explained by alexithymia was related to depression. In fact, once these researchers controlled for depression, it was impossible to discriminate among drug addicted and healthy controls (Farges, et al., 2004).

There has been a great deal of supposition about why alexithymia and substance abuse are related. One explanation is that because of their cognitive inability to identify their emotions, alexithymic individuals may use AOD to regulate their emotions and to alleviate stress (Rybowski, Zigolkowski, Zasadzka, & Brzezinski, 1988), or they may use it as a defense against unwanted painful emotions (Haviland, MacMuray, & Cummings, 1988). The self medicating hypothesis proposes that individuals use substances in order to cope with negative affect (Wills, et al., 1992) and its proponents indicate that individuals with different pathologies are predisposed to use substances (Khantzian, 1985). Specifically, this hypothesis indicates that individuals use substances to regulate distress and that the drug they choose to use often has a psychopharmacologic effect (Khantzian, 2003). This contention is supported, in part, by the proclivity of individuals with certain disorders to use particular drugs. For example, researchers have demonstrated that individuals diagnosed with Attention Deficit Disorder are more likely to use cocaine as opposed to other illicit substances (Milin, Halikas, & Meller, 1991). It is possible that alexithymic individuals would similarly use substances to mitigate unpleasant feelings. However, despite the face validity of this hypothesis, there has been little research done that supports these contentions (Chasin, et al., 2002) and, in fact, at least one study examined the association between the self medicating hypothesis and alexithymia and detected no relationship (Hall, 2005).
Despite the lack of empirical support for the self-medicating hypothesis, the notion that individuals who abuse substances do so in order to cope with negative affectivity has received some support. Coping-motivated drinking is related to internal negative reinforcement (in order to avoid negative affect) and has been related to elevated levels of neuroticism (Stewart & Devine, 2000). Furthermore, Stewart, Zvolensky, & Eifert (2002) found that “alexithymic coping” was significantly correlated with anxiety sensitivity (r = .49, p < .001) and experiential avoidance (r = .59, p < .001) demonstrating that alexithymia is associated with attempts to avoid negative affective states. These researchers also found the TAS total score to be a partial mediator between anxiety sensitivity and coping-drinking motives. However, they found experiential avoidance to be a more robust mediator and suggested that it may be a broader concept that incorporates alexithymic tendencies.

The self medicating hypothesis and the coping-motivated model both hypothesize similar processes and they both may be good explanations for why negative and constricted affect are related to substance abuse. Furthermore, they may explain why some individuals move from the experimental stage of substance use to more severe forms of substance abuse. Speranza and colleagues (2004) speculate that once individuals use substances in order to cope, they are likely to “become addicted to these activities because they lack insight and self-knowledge” and that “addiction itself would later reduce their ability to decode emotions, locking the subject into his or her rigid functioning” (p. 553).

Several studies (e.g. Chinet, et al., 1998; Stewart, et al., 2002; Uzun, 2003) examined the relationship between overall levels of alexithymia (TAS-total score) and its
relationship to substance abuse. Stewart, et al. (2002) justified this by citing the high correlation between these factors. However, other researchers have examined the effects of the emotional and the cognitive components of alexithymia on substance abuse and have revealed that these processes are often different. In fact, Loas, et al. (2000) examined the specific effects and found that the emotional components (difficulty identifying and communicating emotions) distinguished between alcoholic samples and healthy controls and students. Speranza, et al. (2004) compared alcohol dependent men and women and drug dependent men and women to eating disordered individuals and discovered that the emotional components of alexithymia were significantly different in these groups. However, they did not find this for the cognitive component of alexithymia. In an examination of health behaviors, Helmers and Mente (1999) found drug use to be related to difficulty identifying feelings but not difficulty describing feelings or to externally oriented thinking. Likewise, Cleland, et al. (2005) found a small but significant correlation ($r = .20, p < .01$) between the emotional component of alexithymia and alcohol use severity but not for the cognitive component of alexithymia.

Examination of these results reveals that alexithymia has a complex relationship with both the family environment and substance use. Furthermore, there are many variables that could contribute to the development of substance use. However, given the strength of some of these finding, there does appear to be a connection between family pathology and alexithymia and a proclivity of alexithymic individuals to abuse substances.
Alexithymia as a Mediator of the Family Environment and Adolescent AOD Use

Adolescent adjustment has multiple determinants. However, research has shown that the family environment is one of the strongest predictors and can often account for a large proportion of the variance in outcome (Kendler, et al., 2000). It was proposed here that socialization, the process by which an individual internalizes societal and familial norms, is the explanation for why some adolescents abuse substances and others do not.

Socialization theory accounts for how individuals develop emotionally as well. ‘Emotional coaching’ occurs naturally through modeling, education, and reinforcement and it assists the child in learning affective expression and awareness. Based on theoretical insight and previous literature, this study asserts that the family is the primary socializing agent by which individuals learn about their emotions and how to cope with stressors.

This study further proposes that alexithymia, a lack of emotional awareness, is the result of inadequate socialization of emotions by the family and that this deficiency contributes to adolescent substance abuse. Although the research has been mixed regarding the relationship between alexithymia and substance abuse, there has been enough research to suggest that there is potentially a link among these processes. It also is proposed here that alexithymic individuals are less equipped to deal with their experiences and thus are more likely to use substances in order to cope. In this instance, the inability to understand and communicate one’s emotions makes an individual vulnerable to developing a substance abuse problem because she or he lacks an outlet for the expression of negative affect.
In this study, it was predicted that an individual from a multiproblem family who demonstrates higher levels of alexithymia will have a vulnerability to develop a substance abuse problem. While certainly not an exhaustive investigation of the multiple and multifaceted factors contributing to the complex problem of adolescent AOD use, the present study focused on creating a meaningful model of prominent factors to explain contributions to adolescent substance abuse.

Based on the literature outlined above, it was hypothesized that there would be both direct and indirect relationships between family functioning and substance abuse. The specific models that were tested can be seen in Figures 1 and 2. Each of the specific hypotheses is outlined below.

Figure 1.
Hypothesis 1: Family environment variables would predict teenage substance abuse.

1a: Based on the literature (Wallerstein & Kelly, 1980), it was hypothesized that family structure (divorce versus intact families) predict severity of substance use (Problem Severity Scale of the PESQ).

1b: Based on social learning theory, it was hypothesized that witnessing their parents’ abusing alcohol, would predict severity of adolescent substance use (Problem Severity Scale of the PESQ).

1c. Based on previous research (Abdelrahman, et al., 1998; Denton & Kampfe, 1994; Jenson & Howard, 1999) it was hypothesized that having a sibling who used drugs and/or alcohol would predict severity of substance use (PSS).

1d: It was predicted that general family functioning (GFF), as measured by the subscale of the Family Assessment Device (FAD), would predict degree of teenage substance abuse, as measured by the Problem Severity Scale (PSS).

1e: Previous research has demonstrated that family involvement predicts adolescent substance abuse (Vazsonyi & Flannery, 1997). Based on these studies,
it was predicted that Affective Involvement (Al), Affective Responsiveness (AR), and Communication (Comm) would predict the PSS.

1f: Previous research has indicated that clear rules in the home about substance abuse has an inverse relationship with adolescent substance abuse (Abdelrahman, et al., 1998). Therefore, it was hypothesized that Behavior Control (BC) would predict the PSS.

1g: Theory has postulated and some research has demonstrated that DPC and the way in which the offspring copes with that conflict would predict adolescent substance abuse (Conger, et al., 1991; Davies & Cummings, 1994). It was therefore hypothesized that Conflict Properties (CP) and Coping Efficacy (CE) from the Children's Perception of Interparental Conflict Scale (CPIC) would predict the PSS.

**Hypothesis 2:** Family environment variables predict alexithymia.

2a: Lumley, et al. (1996) demonstrated that general family pathology predicted all three scales of the TAS-20. Based on this finding, it was predicted that general family functioning (GFF) would predict the total score of alexithymia (TAS-TOT), difficulty identifying emotions (DIF), difficulty describing emotions (DDF) and external oriented thinking (EOT). Theory predicts that interparental conflict should have an effect on emotional awareness (Davies & Cummings, 1994). It was therefore predicted that Conflict Properties (CP) and how the adolescent has coped with the conflict (CE) would have an effect on emotional awareness (TAS-TOT, TAS-DIF, TAS-DDF, and TAS-EOT).
2b: Previous research has demonstrated that family expressiveness and emotional involvement predicted emotional components of alexithymia (Berenbaum & James, 1994; Lumley, et al., 1996). Based on this literature, it was predicted that Affective Involvement (Al), Affective Responsiveness (AR), and Communication (Comm) would predict the TAS-TOT, TAS-DIF, and TAS-DDF.

2c: Lumley, et al. (1996) reported moderate correlations between family control and alexithymia externally oriented thinking. Based on this research, it was hypothesized that Behavioral Control would predict the TAS-TOT and TAS-EOT.

2d: Davies and Cummings (1994) theorize that interparental conflict influences emotional security. Based on this theory, it was hypothesized that the Conflict Properties (CP) and the Coping Efficacy (CE) scales of the CPIC would predict the TAS-TOT, TAS-DIF, and TAS-DDF.

Hypothesis 3: It was hypothesized that alexithymia predicts adolescent substance use.

3a: Several studies have found that alexithymia is related to substance use. Therefore, it was predicted that the TAS-TOT, TAS-DIF, TAS-DIF, TAS-DDF, and TAS-EOT would predict scores on the PSS.

3b. Research has found that substance abusers and in particular, alcohol abusers demonstrated higher levels of alexithymia than nonsubstance abusers. It was therefore predicted that individuals who reported using more drugs and alcohol (PSS greater than 40) and individuals drinking at hazardous levels (AUDIT score greater than or equal to 10) would have significantly higher levels of alexithymia than those who were not heavy users.
Hypothesis 4: It was hypothesized that emotional awareness (TAS-20) acts as either a vulnerability or protective factor in the relationship between general family pathology and severity of adolescent substance use. Specifically, alexithymia would act as a mediator between family environment and adolescent substance use. Teenagers who are aware of their emotions and can accurately identify them (low TAS-20) but who grow up in families with dysfunctional dynamics (high GFF) would be protected from developing severe substance abuse problems (low PSS). Likewise, adolescents who are alexithymic (high TAS-20) and who grow up in risky families (high GFF) will have more substance abuse problems (high PSS).

Method

Participants

Participants were 81 adolescents between 14 and 19 years of age (mean = 18.18, s.d. = 1.31). Half of the participants (n= 40) were residents at a therapeutic boarding school (TBS) in Kalispell, Montana and 41 of the participants were college students who received class credit for participating in the study.

The participants from the boarding school were in treatment for a variety of psychological disorders. Fifty-five percent of the participants from the TBS reported that they had been diagnosed with a substance abuse problems, 54 percent reported that they were diagnosed with depression, 48 percent with Attention Deficit Disorder, 10 percent with an anxiety disorder, and 40 percent with another disorder. These self report diagnoses were consistent with the clinician’s report of psychological disorders for each adolescent. These clinicians reported that 45 percent of the adolescents had substance abuse diagnoses, 54 percent mood disorders (including Major Depressive Disorder and
Bipolar Disorder) 42 percent had Attention Deficit Disorder, 40 percent with anxiety disorders, and less than 1 percent with Somatization Disorder. Unfortunately, because of confidentiality concerns regarding data storing, the diagnoses could not be matched to determine reliability of diagnosis. All of the parents of the TBS participants were asked to complete the CBCL (Achenbach, 1991) to assess for behavior problems and present a diagnostic picture for their child. Only half (20 out of 40) returned these measures. For the CBCL, T-scores above a 65 are considered clinically significant. Ninety-five percent reported clinically significant affective disturbances, 75 percent reported conduct problems, 50 percent reported ADHD symptoms, 70 percent reported oppositional behavior, 40 percent reported anxiety, and 10 percent reported somatic symptoms. The participants did not receive compensation for participation. However, they were given the option to not participate in the study and assured that their nonparticipation would not affect their treatment at the school.

The college participants were drawn from an introduction to psychology course at The University of Montana. The majority of these participants did not report clinical diagnoses. However, 15% (n=6) reported that they had been diagnosed with some psychological disorder at some point in their lifetime. Most of these (n=4) reported that they were diagnosed with some type of depressive disorder. The remaining two reported anxiety disorder diagnoses.

Adolescents below the age of 18 years old gave their assent and their parents gave consent for participation (APPENDICES A and B). Participants who were 18 years or older signed a consent form (APPENDIX C) and all of the participants were debriefed following collection of the questionnaires.
Materials

Demographics.

Each of the participants completed a demographics questionnaire (APPENDIX D) which asked about specific family characteristics. The demographic questionnaire was made up specifically for this study and asked participants questions about their family make-up, organization and family substance use. The participants were asked which family they lived with the longest (question 14) and were instructed to think of this family while answering the family questionnaires. The demographic questionnaire also asked about psychiatric and substance use diagnoses and treatment.

Alcohol Use Disorders Identification Test.

The Alcohol Use Disorders Identification Test (APPENDIX E; Babor, Higgins-Biddle, Saunders, & Monterio, 2001) was developed by the World Health Organization as a brief screening measure for alcohol use severity. A 10-item self report questionnaire, the AUDIT is designed to assess drinking behaviors, to screen for dependency issues, and problems associated with drinking. Cross-validation in six countries has demonstrated that the AUDIT is a good tool to be used in primary care, with college students, and with clinical populations. Babor, et al. (2001) reported that although a cut off score of 8 is typically used to determine hazardous drinking behaviors “the total score on the AUDIT reflects the extent of alcohol involvement along a broad continuum of severity” (p. 12). They also indicate that a cut off score of 10 could be used and that it would “provide greater specificity at the expense of sensitivity” (p. 19). The AUDIT has produced reliable scores across samples and across cultures. In fact, internal consistency estimates for samples of alcoholics, non-hazardous drinkers, and cocaine abusers are around .86.
Children’s Perception of Interparental Conflict Scale.

The Children’s Perception of Interparental Conflict Scale (CPIC; APPENDIX F; Grych, et al., 1992) is a 51-item measure which assesses children’s perception of conflict between his or her parents. The CPIC consists of nine subscales which can be combined into three superordinate scales. The measure includes the Conflict Properties Scale assessing frequency, intensity, and resolution; the Threat Scale consists of perceived threat and coping efficacy; the Self-Blame consists of the self-blame and content subscales; the Triangulation Scale; and the Stability Scale. For their 2 samples, Grych, et al. (1992) reported alpha coefficients ranging from .62 to .83. To prevent from running too many analyses, only the Conflict Properties Scale and the Coping Efficacy Scale were assessed in this study. The subscales making up the conflict superordinate scale demonstrated good reliability with their sample with alpha coefficients between .68 and .82 and researchers have found the Coping Efficacy Scale to produce generally reliable scores between .65 and .69. The Conflict Properties Scale is positively correlated with parents’ report of conflict on the O’Leary-Porter Scale (.30) and on the Conflict Tactics Scale (.39).

The measure was originally validated on children between the ages of 9 and 12 years. However, Bickham and Fiese (1997) used the measure with individuals between the ages of 17 and 21 and reported similar alpha coefficients with their sample (.95 for the Conflict Properties Scale). Test re-test reliability coefficients over a 2-week period were good also at .95 for the Conflict Properties Scale. This indicates that the concept being assessed is a stable construct thus demonstrating some validity. The measure is scored on a 3-point scale with anchor points of “true”, “sort of true”, and “false” (with 13
of the items needing to be reverse scored). Some examples of items are: “I often see my parents argue,” and “My parents have broken or thrown things during an argument.”

**Family Assessment Device.**

The Family Assessment Device (FAD; APPENDIX G; Epstein, Baldwin, & Bishop, 1983) was designed as a screening device specifically to assess the McMaster Model of Family Functioning which describes the organization and structures of families. The measure assesses six dimensions of family functioning including: 1) Problem-solving; 2) Communication, which describes interactions among members of the family; 3) Roles, which includes the provision of support and nurturance as well as maintenance of the roles in the family; 4) Affective Responsiveness; 5) Affective Involvement; and 6) Behavior Control. Additionally, there is a subscale that measures overall level of family functioning. This scale is composed of one item from Problem Solving, four from Communication, two from Roles, one from Affective Responses, three from Affective Involvement, and one from Behavior Control. The FAD is a 53-item measure, which can be filled out by any member of a family who is over the age of 12. The assessment device is formatted so that the individual can indicate *strongly agree, agree, disagree,* and *strongly disagree.* The FAD is reverse scored so that higher numbers reflect family dysfunction. The authors reported that internal consistency for each of the individual scales was between .74 and .83 and for the general family functioning scale the alpha coefficient was .92. Epstein and colleagues (1983) also investigated the validity of the measure by comparing 218 families presenting in a clinic and 98 families not presenting in a clinic and determined that the measure was adequate in classifying healthy and unhealthy families.
The Personal Experience Screening Questionnaire (PESQ; APPENDIX H; Winters, 1992) is a 40-item self-report questionnaire designed to assess alcohol and drug problem severity with adolescents. This measure was based on the longer Personal Experience Inventory, which assessed a variety of problem behaviors in adolescents including drug and alcohol problems (Winters, 1992). The device was validated and then replicated with two samples of adolescents in drug treatment in Minnesota. The validation sample was between the ages of 12 and 18. Winters’ (1992) statistical analyses revealed that there were no differences between genders and age groups. Results revealed that there were no significant differences based on gender but that older subjects (between the ages of 16 and 18) scored significantly higher on the PESQ. This age difference is not surprising given the measure assesses consequences due to drug and alcohol use. Some examples of items are: “How often have you used alcohol or drugs?” and “How often have you used alcohol or drugs secretly so nobody would know you were using?” The response options include: Never, Once or Twice, Sometimes, and Often.

Winters determined that a cutoff T score of 40 correctly classified 87% of the sample. However, the author cautioned that it had a false positive rate of 5.9% and a false negative rate of 7.9%. Based on this, it was concluded that this measure be used in conjunction with other measures when determining if treatment is needed. For the purposes of this study, a diagnosis or determination of the need for treatment is not being sought but rather a score along a continuum of severity. This measure is psychometrically sound, brief, and is helpful in screening adolescents with potential AOD use problems. Furthermore, Campfield, Miller, Gottlieb, Wallace, McCall, and Shields (2004)
conducted a reliability generalization with the PESQ and determined that it demonstrated good reliability across a variety of sample characteristics. In their meta-analysis, they determined that the average alpha coefficient was .92 across eight samples.

The PESQ produces scores for a defensiveness scale and a problem severity scale (PSS). The PSS includes items that address the severity of all substance abuse, including problems associated with use and frequency and intensity of use. In addition to these scales, it has additional items that address the use of specific substances. For example: “During the past 12 months, how many times have you used drugs other than alcohol or marijuana”. It also has addresses first time use and age when an individual regularly uses. The PSS scale was used in the analyses. However, the remaining items were also used for descriptive purposes.

The Toronto Alexithymia Scale.

The TAS-20 (APPENDIX I; Bagby, et al., 1994) is a self-report measure designed to assess an individual’s awareness of his or her emotion states for both clinical and nonclinical samples. Individual subscales include: Difficulty Identifying Feelings (DIF), Difficulty Describing Feelings (DDF), and Externally Oriented Thinking (EOT). The measure also yields a full scale score. TAS-20 is a 20-item questionnaire that is a revision of an original 26-item scale. Some examples of items are “I am often confused about what emotion I am feeling” and “It is difficult for me to find the right words for my feelings.”

The authors reported Cronbach’s alphas between .74 and .81 in their English speaking normative sample (Bagby, et al., 1994). In their reliability generalization, Crouse, Frey, and Caruso (in press) discovered that across several samples, this measure
produced moderately reliable scores. Specifically, they reported that in the samples that reported reliability coefficients, the Full scale TAS-20 had an alpha coefficient of .80. However, they reported that scores on the EOT scale are less reliable. In their comparisons of reliabilities with different samples, Crouse et al. (in press) did not find that gender produced different reliability scores but they did find that age did have a significant relationship with reliability such that older participants had more reliable scores. The measure is scored so that higher scores reflect higher levels of alexithymia. Although in this study alexithymia is conceptualized along a continuum, Taylor, Bagby, and Parker (1997) suggest that individuals who score above a 61 are most likely alexithymic and individuals who score below a 50 are considered non-alexithymic.

**Procedure**

Upon agreeing to participate in this study, the adolescents were asked to complete the questionnaires outlined above. These questionnaires are relatively short and took between 45 minutes and an hour and a half to complete. The participants from the TBS were instructed to answer the questions for the year before they entered the school. The participants were asked a series of question on the demographics questionnaire about their families and they were instructed think of the family that they lived with the longest (question 14) when answering the questions related to family functioning. The data were collected in groups of no more than 20 participants at a time to allow participants to as questions of the principal investigator. The staff at the school was not present during the collection to protect the participants’ confidentiality. The students’ names were not attached to their materials but they were assigned a number in order to accurately identify the measures. Per The University of Montana Internal Review Board’s request, there was
no master sheet which had the participants' names and numbers. This prevented tracing information to the individual.

Analysis

Given the relationship between the family environment and alexithymia and alexithymia and substance abuse, it was proposed that alexithymia would act as a vulnerability factor or as a buffer in the relationship between the family environment and teenage substance abuse. Statistically, this process is called mediation. Baron and Kenny (1986) indicate that mediating relationships approximate causal models. However, when utilizing regressions one cannot say that one variable causes another. "Mediators function as a third variable that may explain the relation between the independent and the dependent variables" (Earleywine, 1993, p. 291). Baron and Kenny (1986) indicate that there are several conditions that must be met in order for a variable to be considered a mediator. These are 1) the independent variable predicts a significant amount of variance in the dependent variable; 2) the independent variable predicts a significant amount of variance in the mediator; 3) the mediator predicts a significant amount of variance in the dependent variable and 4) when the above conditions are met, the direct relationship between the independent variable and the dependent variable is no longer significant or its significance is reduced. A full mediating relationship would be reflected if the correlation between the independent and the dependent variable disappears and a partial mediation relationship would be reflected if the relationship is reduced significantly. The mediating relationship proposed here was that there is a direct relationship between the vulnerable family and the teenager's substance abuse and that there is also an indirect relationship such that risky families impact the adolescent's emotional awareness which
in turn affects teenager’s substance abuse. In this model emotional awareness (alexithymia) is considered a partial mediator because the relationship between family functioning and substance abuse should still exist even when emotional awareness is considered.

These analyses were run using Statistical Package for Social Sciences (SPSS). In order to demonstrate relations between variables, correlations and regression analyses were run. Additionally, when comparing two groups, (i.e., gender, TBS and university participants, etc.) t-tests were run. All of the analyses were tested with a two tailed test alpha level of .05 unless otherwise specified.

Results

Power Analysis

A power analysis was conducted to determine the number of participants necessary to find an effect, should there be one. This was accomplished by determining the proposed effect size between the predictor variables and the outcome variable. The proposed effect size of the family environment, DPC, and alexithymia was determined by previous research results. Specifically, previous research has indicated that these variables have demonstrated a small to medium effect size according to Cohen (1977) in the prediction of adolescent substance abuse (r ranged from .35 to .47).

As indicated, the sample was drawn from two different populations, a therapeutic boarding school (TBS) and an introduction to psychology course at a university. The location of the participants, either the TBS or the university, was coded as a separate variable called “placement”. Because of the hypothesized differences between these groups, placement was tested to determine if it had a relationship with the PSS.
Placement was correlated with the PSS at .42 ($p < .0005$). Thus, for the power analysis, 20% of the variance in adolescent substance abuse was predicted by “placement”. This variable was entered in the power analysis and it was determined that with a sample of 80 participants the estimated power was .78.

**Descriptive Statistics**

Descriptive statistics are reported in Table 1. Eighty-seven percent of the sample identified themselves as Caucasian and less than one percent identified themselves as African American, Native American, or Other. The remaining 12 percent did not report their race. As noted earlier, the sample was drawn from two populations, 40 of the adolescents were students at a therapeutic boarding school (TBS) and 41 were a college sample. The average age of the combined sample was 18.18, (s.d. 1.31) and there were 27 males and 53 females. Fifty-nine percent of the participants’ biological parents were still married and thirty-five percent of the participants reported that their parents were divorced. The remaining six percent did not answer this question. None of the participants lived with their parents and the average length of time since they lived at home was 74 weeks for the entire sample (43 weeks or approximately 11 months for the TBS group and 74 weeks or approximately 18 months for the university group).

The participants from the TBS were asked to complete the measures for the 12 preceding months when they were not in a controlled environment. The participants from the university were not given such instructions. The participants were administered the AUDIT in order to assess drinking behavior. As a sample, the average score on the AUDIT was 13.82 (s.d. 8.39). Sixty-five percent of the sample (62% of the TBS sample, mean = 15.53; 68% of the college sample, mean = 12.24) reported drinking at hazardous
levels (score of 10 and above). On the PESQ, seven (9%; 4 participants from the TBS and 3 participants from the university) reported never drinking alcohol. Twenty-two percent (10% of the TBS and 34% of the university) reported that they never used marijuana in the past 12 months. Forty-six percent (23% of the TBS and 68% of the university) reported never using other illicit substances besides cannabis. The two groups were not significantly different in the amount of alcohol used. However, the groups did differ with regard to cannabis use (t = 3.321, df (79), p < .001) and other illicit substance use (t = 5.401, df (78), p < .0005) such that adolescents from the TBS were using more substances than the university group. One hundred percent of the participants from the TBS and 32 percent of the university participants (13 out of 40) reported being in psychotherapy at some point in their lives.

Although the construct of alexithymia was conceptualized along a continuum in this study, Taylor and Doody (1985) provide cutoffs for probable alexithymic and probable non-alexithymic individuals. Using these cutoffs 36 percent (33 percent of TBS and 39 percent of university) participants were classified as alexithymic (TAS-20 equal to or greater than 61) whereas 32 percent (38 percent of TBS and 27 percent of university) of the participants were classified to not have alexithymia (TAS-20 equal to or less than 51).

Table 1: Demographics

<table>
<thead>
<tr>
<th></th>
<th>Parents Still Married</th>
<th>Witnessed Parents Drunk*</th>
<th>Allowed to Drink</th>
<th>Sibling Who Drank*</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBS Participants</td>
<td>53%</td>
<td>60%</td>
<td>40%</td>
<td>42%</td>
</tr>
<tr>
<td>University Participants</td>
<td>72%</td>
<td>68%</td>
<td>50%</td>
<td>86%</td>
</tr>
</tbody>
</table>
The samples were from two separate locations and they were combined to make up one larger sample. Although they were combined in the final analyses, the descriptive data is reported separately. Means, medians, standard deviations, ranges, and reliabilities for each of the groups of participants are presented in Tables 2 and 3.

**Table 2: Descriptive Statistics for Participants from the University**

<table>
<thead>
<tr>
<th>Measure or Scale</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Range</th>
<th>Reliability α</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPIC Conflict Properties Scale</td>
<td>33.60</td>
<td>9.86</td>
<td>21 - 56</td>
<td>.77</td>
</tr>
<tr>
<td>FAD General Family Functioning</td>
<td>25.80</td>
<td>6.07</td>
<td>15 - 47</td>
<td>.89</td>
</tr>
<tr>
<td>TAS Full Scale</td>
<td>57.23</td>
<td>9.58</td>
<td>27 - 72</td>
<td>.78</td>
</tr>
<tr>
<td>PESQ Problem Severity Scale</td>
<td>35.90</td>
<td>11.87</td>
<td>17 - 66</td>
<td>.91</td>
</tr>
</tbody>
</table>

**Table 3: Descriptive Statistics for Participants from the Therapeutic Boarding School**

<table>
<thead>
<tr>
<th>Measure or Scale</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Range</th>
<th>Reliability α</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPIC Conflict Properties Scale</td>
<td>36.74</td>
<td>11.15</td>
<td>21 - 56</td>
<td>.92</td>
</tr>
<tr>
<td>FAD General Family Functioning</td>
<td>30.24</td>
<td>6.71</td>
<td>19 - 46</td>
<td>.91</td>
</tr>
<tr>
<td>TAS Full Scale</td>
<td>54.60</td>
<td>7.88</td>
<td>27 - 72</td>
<td>.59</td>
</tr>
<tr>
<td>PESQ Problem Severity Scale</td>
<td>48.83</td>
<td>15.15</td>
<td>18 - 74</td>
<td>.92</td>
</tr>
</tbody>
</table>

T-tests were run to determine whether the participants from the therapeutic boarding school were significantly different from the college students. The groups were compared on gender, age, and each of the scales used in this study. The groups were not different in terms of gender but were different in terms of age: the participants from the TBS were significantly younger (age range 14-19) than the college sample (age range 18-19). Although scores on some of the scales appear to be different for each of the groups, the only measure that approached significance was the PESQ such that the participants...
from the TBS reported more severe problems with drugs and alcohol than the college sample \((p = .06)\).

Another interesting finding of note is the internal consistency analyses run on the variables of interest. There were some interesting differences; however, most of the scales were generally reliable for these samples with the exception of the TAS-20 Full Scale for the participants from the TBS. The college sample's reliability estimate was .78 for the TAS-20, demonstrating that it was adequate in measuring alexithymia. However, the alpha coefficient for the TAS in the TBS sample was low, .59, a generally unacceptable measure of internal reliability.

**Correlations and Regressions**

Because of the potential for confounding variables, correlations among some of the demographic variables and the outcome measures were explored. Analyses revealed that gender and the length of time since the participant last lived with his or her parents were not significantly related to the participants' reports of substance abuse. Therefore, they were not controlled statistically in the following analyses. "Placement" did account for 20 percent of the variance and because this was not a focus of this study, this variable was controlled for statistically in the remainder of the analyses. This was done by entering the placement variable in the first block of the regression analyses with the independent variables of interest entered in the second block.

Hypothesis 1 specified a number of predictions to account for the potential family influence on adolescent substance use. Results are presented in Table 4. The correlations presented are without 'placement' entered into the equation. The only variables correlated \((p < .05)\) with the Problem Severity Scale are parental drunkenness and having a sibling.
who drinks alcohol. However, the relationship between sibling drinking behavior and adolescent substance use may be a function of “placement” because when this variable is accounted for, the beta is not significant. There may be a small relationship between parent drinking behavior and adolescent substance use supporting, in part, the social modeling hypothesis. Regression analyses reveal that the proposed family environment variables do not predict adolescent substance use as measured by the Problem Severity Scale.

Table 4: Correlations & Regressions: Family Variables & Adolescent Substance Use as Measured by the Problem Severity Scale from the PESQ

<table>
<thead>
<tr>
<th>Family Variables</th>
<th>R</th>
<th>R²</th>
<th>Change R²</th>
<th>B</th>
<th>Beta</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>(&quot;placement&quot;)</td>
<td>0.424*</td>
<td>0.180</td>
<td>-</td>
<td>-12.23</td>
<td>-0.42</td>
<td>0.000</td>
</tr>
<tr>
<td>Divorce</td>
<td>0.113</td>
<td>0.187</td>
<td>0.007</td>
<td>-6.59</td>
<td>-0.09</td>
<td>0.402</td>
</tr>
<tr>
<td>Parental Drunkenness</td>
<td>-0.228*</td>
<td>0.257</td>
<td>0.077</td>
<td>-8.488</td>
<td>-0.28</td>
<td>0.010*</td>
</tr>
<tr>
<td>Allowed to Drink</td>
<td>-0.143</td>
<td>0.207</td>
<td>0.035</td>
<td>-5.403</td>
<td>-0.19</td>
<td>0.070</td>
</tr>
<tr>
<td>Siblings Drink</td>
<td>0.240*</td>
<td>0.200</td>
<td>0.007</td>
<td>1.938</td>
<td>0.092</td>
<td>0.400</td>
</tr>
<tr>
<td>General Family Functioning</td>
<td>0.159</td>
<td>0.000</td>
<td>0.000</td>
<td>0.038</td>
<td>0.018</td>
<td>0.872</td>
</tr>
<tr>
<td>Affective Involvement</td>
<td>0.200</td>
<td>0.194</td>
<td>0.150</td>
<td>0.618</td>
<td>0.123</td>
<td>0.239</td>
</tr>
<tr>
<td>Affective Responsiveness</td>
<td>0.041</td>
<td>0.000</td>
<td>0.000</td>
<td>0.025</td>
<td>0.006</td>
<td>0.955</td>
</tr>
<tr>
<td>Communication</td>
<td>0.005</td>
<td>0.181</td>
<td>0.001</td>
<td>-0.177</td>
<td>-0.03</td>
<td>0.745</td>
</tr>
<tr>
<td>Behavioral Control</td>
<td>-0.120</td>
<td>0.196</td>
<td>0.016</td>
<td>-0.634</td>
<td>-0.13</td>
<td>0.217</td>
</tr>
<tr>
<td>Conflict Properties</td>
<td>0.174</td>
<td>0.184</td>
<td>0.014</td>
<td>0.16</td>
<td>0.118</td>
<td>0.261</td>
</tr>
<tr>
<td>Coping Efficacy</td>
<td>0.171</td>
<td>0.182</td>
<td>0.012</td>
<td>0.595</td>
<td>0.109</td>
<td>0.298</td>
</tr>
</tbody>
</table>

* p < .05

The second set of hypotheses specified that certain family environment variables would predict alexithymia. It was predicted that general family functioning (GFF) would predict the total score of alexithymia (TAS-TOT), difficulty identifying emotions (DIF), difficulty describing emotions (DDF) and external oriented thinking (EOT). It was also predicted that Conflict Properties (CP) and how the adolescent has coped with the conflict (CE) would have an effect emotional awareness (TAS-TOT, TAS-DIF and TAS-
It was predicted that Affective Involvement (AI), Affective Responsiveness (AR), and Communication (Comm) would predict the TAS-TOT, TAS-DIF, and TAS-DDF. It was hypothesized that Behavioral Control would predict the TAS-TOT and TAS-EOT and that the Conflict Properties (CP) and the Coping Efficacy (CE) scales of the CPIC would predict the TAS-TOT, TAS-DIF, and TAS-DDF.

In this set of hypotheses, the different facets of alexithymia were the outcome variables and because “placement” was not significantly correlated with the TAS-TOT, TAS-DIF or the TAS-DDF, it was not entered into these equations. Furthermore, because a regression equation with only two variables is a correlation, the results of the analyses run for these hypotheses are presented as correlations in Table 5. “Placement” was significantly correlated with the TAS-EOT and it was therefore controlled in the analyses when TAS-EOT was the outcome variable. These results are presented in Table 6. None of these correlations were significant.

Table 5: Correlations between Family Environment Variables & Total Score of Alexithymia and Emotional Facets of Alexithymia

<table>
<thead>
<tr>
<th>Family Variables</th>
<th>Toronto Alexithymia Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TAS-TOT</td>
</tr>
<tr>
<td>General Family Functioning</td>
<td>0.035</td>
</tr>
<tr>
<td>Affective Involvement</td>
<td>0.039</td>
</tr>
<tr>
<td>Affective Responsiveness</td>
<td>0.194</td>
</tr>
<tr>
<td>Communication</td>
<td>-0.144</td>
</tr>
<tr>
<td>Behavioral Control</td>
<td>0.157</td>
</tr>
<tr>
<td>Conflict Properties</td>
<td>0.157</td>
</tr>
<tr>
<td>Coping Efficacy</td>
<td>0.196</td>
</tr>
</tbody>
</table>

TAS-TOT: Toronto Alexithymia Scale, Total Score; TAS-DIF: Toronto Alexithymia Scale, Difficulty Identifying Feelings; TAS-DDF: Toronto Alexithymia Scale, Difficulty Describing Feelings
It was predicted that adolescents who were most likely substance abusers (PSS greater than 40) and adolescents who were most likely alcohol abusers (AUDIT greater than 10) would have significantly higher levels of alexithymia than the non-heavy users. This hypothesis was tested using an independent samples t-test. The groups were broken up into categories, likely substance abusers and likely not substance abusers and were compared on the measure of alexithymia. These results revealed that these participants were not significantly different from one another. Results of these t-tests are provided in Table 7.

**Table 7: Comparisons between Likely Substance Abusers and Likely not Substance Abusers**

<table>
<thead>
<tr>
<th></th>
<th>PSS</th>
<th>AUDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Likely Abuse</td>
<td>Not Likely Abuse</td>
</tr>
<tr>
<td><strong>TAS-Total</strong></td>
<td>56.00 (8.05)</td>
<td>55.86 (8.74)</td>
</tr>
<tr>
<td><strong>DIF</strong></td>
<td>16.80 (5.06)</td>
<td>16.14 (5.47)</td>
</tr>
<tr>
<td><strong>DDF</strong></td>
<td>13.89 (3.04)</td>
<td>14.12 (3.73)</td>
</tr>
<tr>
<td><strong>EOT</strong></td>
<td>25.31 (3.92)</td>
<td>25.59 (3.06)</td>
</tr>
</tbody>
</table>

PSS: Likely Abuse: T greater than or equal to 40; Not Likely Abuse: T less than 40; AUDIT: Likely Abuse: greater than or equal to 10; Not Likely Abuse: less than 10
According to Baron and Kenny (1986), in order to demonstrate a mediating relationship, several steps should be conducted. These include: 1) the predictor variable should predict a significant amount of variance in the outcome variable. The General Family Functioning Scale (GFF, measured by the FAD) should have predicted a significant amount of variance in scores on the PSS. This relationship was not demonstrated. Also, the Conflict Properties (CP) scale of the CPIC should have predicted a significant amount of variance in scores on the PSS. This relationship was also not demonstrated. 2) The predictor variables should predict a significant amount of variance in the mediating variable. The GFF scale and the CP scale should have each predicted a significant amount of variance in the TAS-TOT. There was no significant relationship between the GFF and the TAS-TOT and the CP and the TAS-TOT. 3) The third criterion necessary to demonstrate a mediating relationship indicates that the mediator (TAS-TOT) should predict a significant amount of variance in the outcome variable, the PSS. In this equation, the TAS-TOT was the predictor variable and the PSS was the dependent variable. This relationship was not significant. Because all of the conditions necessary to demonstrate a mediating relationship were not met, a hierarchical regression analysis with all of the predictors was not conducted.

Discussion

It was expected that problematic family characteristics, including dysfunctional ways of dealing with conflict, would be linked to teenage substance abuse by affecting the individual’s emotional awareness. Analysis of the results indicates that for this sample, for the most part, there was no relationship between the family environment variables, alexithymia, and adolescent substance use.
Adolescent substance abuse was not related to the marital status of parents or to adolescents' perception that they were allowed to drink alcohol by their parents. The finding of divorce not having an effect on adolescent substance use was consistent with research that has demonstrated that it is not divorce, per se, that predicts adjustment but often more complex factors that interact with divorce. Adolescent substance use was related to sibling and parent drinking variables. However, the relationship between sibling and participant drinking was not significant once “placement” was considered in the equation. These results were consistent with social modeling theory which indicates that adolescents learn about drinking from individuals in their environment (Bandura, 1977). In particular, these adolescents have likely observed the drinking behavior of models in their environment and were more likely to use substances as a result. These results are interesting because they demonstrate that it is not necessarily the explicit condoning of behavior that has an influence, but that it is more the implicit, subtle message that drinking is acceptable that results in a choice to use AOD.

The proposed link between the family environment variables including conflict and coping with conflict, affective involvement and responsiveness, communication, and behavioral control and the measure of drug and alcohol abuse was not demonstrated. The failure to find the relationship between problematic family dynamics and teenage substance abuse was interesting, although not entirely inconsistent with findings of previous researchers. In fact, a meta-analysis, which addressed family environment and its relationship with substance abuse, revealed that four out of nine studies failed to find this relationship (Petraitis, et al., 1998).
It is possible that this association is found only with individuals who report more severe problems in family functioning. For example, Widom and White (1997) found that women who grew up in neglectful homes and women who have been physically abused as children were more likely to be diagnosed with a substance use problem. Although the sample in the current study displayed high levels of harmful effects of drinking alcohol, it is possible that there are other variables that contribute to drinking behavior in higher functioning families.

The results of this study did not establish a link between the family environment and alexithymia. This result was surprising because theoretically, primary alexithymia is a result of difficult family environments and because previous researchers have demonstrated a link between scales on the FES (Moos & Moos, 1994) and the TAS-20. Although the FES was not used in this study, the relationship between the FAD and the TAS-20 has been found in at least one other study (Lumley, et al., 1996). In fact, Lumley, et al. (1996) found relationships between general family pathology, affective involvement, and behavioral control and most of the scales on the TAS-20. In addition, DPC has been linked to emotional difficulties and adjustment problems in the past (Davies, et al., 2002). In this study, frequency, intensity, and resolution (as measured by the Conflict Properties Scale) and Coping Efficacy were not related to alexithymia. However, it is important to note that individuals who are alexithymic are likely to have a harder time reporting about family interaction patterns because they lack the emotional insight necessary to reflect on the expression of emotions in others.

Finally, there was no support for the relationship between alexithymia and adolescent substance abuse in this sample. The relationship between alexithymia and
substance abuse has been demonstrated numerous times (Loas, et al., 2000; Handelsman, et al., 2000; Haviland, et al., 1991; Ziolkowski, et al., 1995). However, some researchers have not found substance abusers to be significantly different from nonsubstance abusers on the TAS-20 (Cleland, et al., 2005). Furthermore, Cleland and colleagues (2005) did find that severity of alcohol use, but not drug use, was associated with alexithymia. Again, this relationship was not established in this study.

Many of the previous studies were conducted with older substance dependent individuals. Although age was not a significant predictor of alexithymia or substance use, these factors may become more pronounced as individuals age. Furthermore, it is possible that this link was not demonstrated with this sample because although these participants were using substances, they were likely not alcohol dependent. In fact, in the examination of trajectories for different types of substance abuser, Chinet and colleagues (2002) found that normative drinking and substance abuse behavior was different from more severe forms of use. It is possible that the participants in this study were representative of groups who use substances on an experimental basis and who do not develop more severe forms of substance abuse.

The lack of significant findings in this study was surprising given that the literature in the field has found these relationships in the past. However, this “negative” finding or lack of significant finding could be more common than previously thought if the file drawer problem was considered. Specifically, when researchers do not find relationships between the predictor and outcome variables, they are less likely to submit the study for publication and journals are less likely to publish the findings if there was no support for the hypotheses. Also called the “publication bias”, this phenomenon leads
researchers to believe that a finding is likely, based on previous published literature. However, “publication bias arise whenever the probability that a study is published depends on the statistical significance of its results” (Scargle, 2000, p. 91). This practice likely leads researchers to believe that there is a relationship between variables when, in fact, this relationship may be a result of a Type I error. Specifically, Type I errors occur when a number of analyses are run and a relationship is found, not because it actually exists but because of chance. It is possible that the studies that found support for these hypotheses because of chance, not because one actually exists.

Limitations

There are several limitations to this study. Measurement difficulties were evident. The FAD is one of the only measures that produces an overall level of family functioning, a concept of particular interest in this study. The proposal of this study was that family pathology, in general, would affect adolescent substance abuse because research has shown that families do not just deal with one type of problem but they are faced with multiple problems at once. However, although the FAD is widely used, it is possible that failure to find a relationship between family functioning and adolescent substance abuse was a result of inadequate measurement. There have been several studies which have found a relationship between other measures of family environment (specifically the Family Environment Scale; Moos & Moos, 1994) and teenage substance use (e.g., Berenbaum & James, 1994). It is possible that the FAD does not adequately assess the variables of interest. Furthermore, this measure was developed in 1983 and it is possible that an updated version using items that reflect more current ways of thinking about family functioning would detect a relationship if there were one. However, it is also
possible that there is something unique about the FES that capitalizes on finding relationships no matter how small. Additionally, the FES has scales, which assess different areas of the family environment than were of interest in this study.

There was some difficulty with the measure of alexithymia in the TBS group as well. The TAS-20 demonstrated lower internal reliability with this sample, which is consistent with Crouse, et al.'s (in press) report that this measure is not as internally consistent with younger age groups. This reveals that the TAS-20 is likely not an adequate measure of younger teens' reports of emotional awareness and alexithymia. Reliability of scores produced by a measure is an important assumption one makes in regression analyses. In fact, Osborne and Waters (2002) argue that the unreliability of a measure increases the possibility of making a Type II error (not finding a relationship when one actually exists). However, it should be noted that the alpha coefficient for the entire sample was .67 and although not excellent, it could be considered acceptable (Haviland, et al., 1988). Furthermore, the TAS-20 is the most widely used measure of alexithymia because it has demonstrated stable factors and it generally produces reliable scores with most samples (Taylor, et al., 1994). It is possible, however, that these measurement problems contributed to the lack of significant findings.

Other potential limitations include the fact that this was a one-time data collection and therefore it is not sensitive to the changing processes over time. As Rutter (1987) has argued, family characteristics are not static variables but are, in fact, processes that evolve and change over time. One-time data collection does not allow researchers to investigate how these processes may be related at different time periods. For example, the level of parental monitoring changes as adolescents age and this factor may contribute to
substance abuse at different developmental periods. Additionally, the possibility that the participants had retrospective reporting bias should also be considered. Individuals from the TBS were asked to remember and report about their substance abuse from up to several months before and the entire sample was asked to report about their family environment despite the fact that they were not living with their parents. This request was made verbally and not in writing which could skew the results. Specifically, it is possible that the participants from the TBS answered the questions for the immediate previous 12 months as was indicated on the measure. However, this seems unlikely because most of these participants reported using substances heavily and it is assumed that they were not using substances while they were in a controlled environment. Nevertheless, this is a potential confound and should be considered when interpreting these results.

Moreover, the measures were all self-report and were all completed by the adolescent. Some may argue that an adolescent’s self-report may not be an accurate representation of family functioning or actual substance abuse and that it may reflect biases because it is only one person’s perspective. Additionally, it may be difficult for individuals who are more alexithymic to be observant of and capable of reporting about their families’ emotional communication and involvement. However, self-report measures are widely used as they are often the quickest and most cost effective way of obtaining information. Furthermore, it could be argued that it is the adolescent’s perception that is most important and when reporting on internal states such as emotional processes, the adolescent is the best informant.

Finally, the Internal Review Board (IRB) at The University of Montana expressed concern about confidentiality and placed restrictions on the study, which precluded the
examination of the relationship between particular disorders (as reported by clinicians), alexithymia, and substance use. Specifically, the IRB asked that the participants' names not be attached in any way to their data. Thus, examination of the clinicians' diagnoses in comparison to the measures was impossible. Furthermore, while self-reported diagnoses were available, only 57 percent of the sample reported having a psychiatric diagnosis (all of the TBS participants and six of the participants from the university). This restriction thus limited the already small sample size making it difficult to draw any meaningful conclusions by examining the effect of diagnosis on the measures.

*Implications and Future Directions*

Identifying the specific mechanisms by which the family environment affects individuals' substance abuse is important for understanding the etiology of adolescent AOD use. However, this relationship was not established in this study. The failure to find this relationship is interesting in that it contradicts the findings of other studies (e.g., Fukunishi & Paris, 2001; Lumley, et al., 1996). As noted above, this failure to find a relationship may be due to the measurement devices selected or unexamined unique characteristics of the sample.

Furthermore, although most studies do not draw a distinction between different types of substance users and abusers, Chasin and colleagues (2002) found that adolescent substance use is not one-dimensional and that frequency, intensity, age of first drink, and specific reasons for drinking interact to create several different types of substance users. These researchers found that when adolescents are distinguished on these characteristics, they are better able to predict outcome. It is possible that the adolescents in this sample were either representative of the less severe group or were heterogeneous with regard to
Chasin and colleagues' groupings. Future researchers may want to examine whether these relationships exist based on the different types of substance users and abusers.

The lack of any relationship between alexithymia and substance abuse was particularly surprising given that it has been found with numerous other samples (e.g., Haviland, et al., 1994; Ziolkowski, et al., 1995). However, a careful review of these other studies reveals that the samples in these studies were often more severe substance abusers and were often substance dependent. It is possible that alexithymia is in fact related to more severe forms of substance dependence and that it develops only after years of use. In this case, substance abuse or dependence may be an antecedent to and not a result of alexithymia. Furthermore, other researchers (e.g., Cleland, et al., 2005) did not find that alexithymia was related to substance abuse in general but they did report that it was related to alcohol use severity.

More research should be done which addresses these disparate findings, possibly by using different measures, with different types of substance abusers, and with a more homogenous sample. It is possible that a relationship between the family environment, alexithymia, and substance use does not exist, at least with this sample and that there are other, more important predictors of substance use such as peer influences, academic functioning, or psychiatric diagnoses.

Specific aspects of parental conflict have been shown to adversely affect child and adolescent functioning. For example, feeling self blame about the conflict, observing the resolution of the conflict, and frequency and intensity of the conflict have been investigated in the past with mixed results (Davies & Cummings, 1994) and while frequency, intensity and resolution were all components of the Conflict Properties Scale,
these other facets of interparental conflict were not a focus of this study. Furthermore, there have been several studies, which have demonstrated a relationship between general family conflict (conflict between siblings and conflict between children and parents) and alexithymia (Fukunishi & Paris, 2001; Kench & Irwin, 2000). Likewise, previous research has demonstrated that general family conflict is linked to adolescent substance use (Godley, et al., 2005; Mallett, et al., 2005; Secades-Villa, et al., 2005). The relationship between this aspect of the family environment and adolescent outcome fits with the spill-over hypothesis. Specifically, excessive conflict between the parents, leads to conflict between the parents and children, which then leads to maladaptive outcomes (Erel & Burman, 1995). Although not assessed in this study, this family variable may be another area of worthy of exploration as it likely has a relationship with parental conflict, emotional awareness, and adolescent substance use.

Future researchers may want to investigate whether including emotion regulation in this model will elucidate the relationship between family functioning and substance use. Likewise, exploration of other problems in emotional functioning may yield different results. Experiential avoidance, the tendency to avoid unpleasant or negative internal states and external stressors, may better account for the relationship between the family environment and substance use. In fact, Stewart, et al. (2002) demonstrated that the emotional constriction is associated with substance abuse but that experiential avoidance was a better predictor than alexithymia. In their study, these researchers found alexithymia to be strongly correlated with experiential avoidance ($r = .69$) and related to coping-motives but they found experiential avoidance to be a better predictor of coping-motive drinking habits. Furthermore, they hypothesized that alexithymia can be
subsumed under the umbrella of experiential avoidance. It is possible that this broader measure of emotional constriction (experiential avoidance) would yield different results.

Finally, the Personal Experience Screening Questionnaire (Winters, 1992) has produced reliable scores across a variety of different samples (Campfield, et al., 2004). However, by combining the problems associated with substance abuse in general, this study was unable to determine whether the abuse of specific substances was related to specific areas of family pathology or alexithymia. Furthermore, recent research has demonstrated that alexithymia was related to alcohol use but not drug use variables (Cleland, et al., 2005). Future researchers should examine these differential findings and separate the participants into groups based on their preferred substance or “drug of choice”.

Summary

When children develop behavior problems, it usually takes the form of internalizing problems such as depression and anxiety or externalizing difficulties including defiance and delinquency. As these children become adolescents and begin to spend more time away from home, these problems are often compounded by the development of substance abuse problems. Given the huge financial impact of treating multiproblem individuals in the United States, it is important that researchers are able to clearly delineate the characteristics of at-risk adolescents. Presently, most interventions designed to address multiproblem adolescents have focused on treatment after a problem has already developed. Clarification of the factors that predict problematic adolescent behavior could aid clinicians in designing interventions that help to identify and prevent the development of problematic use of substances.
Factors such as the family environment and alexithymia have been found to predict substance abuse in previous literature. Contrary to the hypotheses, there was no support for the proposed mediating models. However, there appears to be some relationship between the observation family drinking behaviors and substance use. The failure to find the proposed relationships may be due to several causes, including problems with the measurement devices and unique characteristics of the sample.

It is possible that there is not a link between family environment, alexithymia, and adolescent substance abuse. These relationships have received mixed support in the past (Petraitis, et al., 1998, Yelsma, et al., 1998; Yelsma, et al., 2000). Despite this, these relationships do warrant further investigation potentially with more sensitive assessment tools and with different samples including more severe substance abusers. Adolescence is a tenuous period in an individual’s life and how adolescents cope with their family situations and emotions can often set the stage for adult coping. Therefore, it is imperative that the precursors to adolescent substance abuse continue to be a focus of study for researchers and for clinicians alike with the hope that identification of family processes will help with early detection and prevention.
References


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physiological and subjective stress responses in normal individuals.

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National Institute on Alcohol Abuse and Alcoholism (NIAAA, 2002). *A Call to Action: Changing the Culture of Drinking at US Colleges*. Washington, D. C.


APPENDIX A
Consent for Participation

Title of Study: Families, Emotions, and Substance Abuse

Study Directors: Donna Ryngala, M.A. and Paul Silverman, Ph.D.

Address: The University of Montana
          Dept. of Psychology, Skaggs Building
          Missoula, MT 59812

Telephone: 406 243 4521

Purpose: The purpose of this project is to investigate what characteristics of teenagers help them to be resilient and have good outcomes. Specifically, we are interested in learning about some of your child's past experiences and behaviors to help us determine what areas we should focus on when working with teenagers such as your son or daughter.

Procedures: Your child will be asked to respond to a series of questionnaires which should only take approximately one hour. These questionnaires are relatively short and will focus on experiences before attending SPS including how their families communicate, how they process their emotions and their previous drug and alcohol history. Completion of these questionnaires will not interfere with his or her treatment or schooling.

Risks/Discomforts: It is not anticipated that participation in this study will result in any risks or discomforts; however, it is possible that a court could order the release of materials or questionnaires.

Benefits: This project aims to understand the struggles of students and what professionals can do to help teenagers such as your son or daughter. You or your child may not directly benefit from participation, but your involvement may help in the development of specific interventions to work with behaviorally, emotionally or academically challenged adolescents.

Confidentiality: All information gathered for research purposes will be kept private and stored in locked file cabinets. Only the researcher and her faculty supervisors will have access to the files. Confidentiality will be maintained throughout this process by assigning a code number to your records. Your son or daughter's treatment team will not have access to the questionnaires that are collected specifically for this study. However, if your child discloses information about harm to self, others, child abuse, or elder abuse, a report to the Department of Public Health and Human Services (DPHHS) will have to be made.

Compensation for injury: Although we do not foresee any risk in taking part in this study, the University of Montana extends to each research participant the following liability information: "In the event that a participant is physically injured during the course of this research, he or she should individually seek appropriate medical treatment. If the injury is
caused by the negligence of the University or any of its employees, the participant may be entitled to reimbursement or compensation pursuant to the Comprehensive State Insurance Plan established by the Department of the Administration under the authority of the M.C.A., Title 2, Chapter 9. In the event of a claim for such personal injury, further documentation may be obtained from University Legal Counsel.”

Voluntary Participation/Withdrawal: Your involvement in this project is entirely voluntary. You may withdraw at any time without any prejudice or effect on your child’s schooling or treatment at SPS.

Questions: If you have any questions about the research now or during the study, please feel free to ask the person who gave you this form or contact Donna Ryngala or Paul Silverman at (406) 243-2367. If you wish, you may receive the results of the overall project upon its completion by calling the Psychology Department at the University of Montana at (406) 243-4521.

Participant’s Statement of Consent: I have read the above description of this research study. I have been informed of the risks and benefits involved, and all my questions have been answered to my satisfaction. Furthermore, I have been assured that any future questions I may have will also be answered by a member of the research team. I voluntarily agree to take part and to have my child take part in this study. I understand that I will receive a copy of this consent form.

_________________________________________  ________________________________
Printed name of parent                         Printed name of child participant

_________________________________________  ________________________________
Signature of parent                             Date
Study Directors: Donna Ryngala, M.A. and Paul Silverman, Ph.D.
Address: The University of Montana, Missoula, MT 59812
Telephone: 406 243 4521

Special Instructions: This consent form may contain words that are new to you. If you read any words that are not clear to you, please ask the person who gave you this form to explain them to you.

Purpose: The purpose of this project is to look at the strengths of the students here at Summit Preparatory School (SPS). We want to hear and learn from some of your past experiences and concerns so that we can help other kids in similar situations.

Procedures: You are being asked to fill out some of questionnaires. These questionnaires are short and will ask you about your experiences before coming to SPS as well as your thoughts and feelings about your family. Filling out these questionnaires will not interfere with your treatment or schooling.

Benefits: The goals of this project are to understand the struggles that teenagers face and what professionals can do to help. You may not directly benefit from participation, but your involvement may help other kids who have struggled with similar issues.

Confidentiality: All information gathered for research purposes will be kept private and stored in locked file cabinets. Your therapist or senior house parent will not be able to look at your answers. Your name will not be kept with your answers and you will be given a code number to your records so no one will know what you answered.

Voluntary Participation/Withdrawal: Your involvement in this project is entirely voluntary. You may withdraw at any time without any questions and it will not affect your schooling or treatment at SPS.

Questions: If you have any questions about the research now or during the study, please feel free to ask the person who gave you this form or Donna Ryngala.

Participant's Statement of Consent: I have read the above description of this research study. I have been told about the risks and benefits and all my questions have been answered. I have been assured that any future questions I may have will also be answered by Donna Ryngala. I voluntarily agree to take part in this study. I understand that I will receive a copy of this consent form.

Print your name _____________________________ Date _____________________________

____________________________________________________________________

Signature
Title of Study: Families, Emotions, and Substance Use

Study Directors: Donna Ryngala, M.A. and Paul Silverman, Ph.D.
Address: The University of Montana
Dept. of Psychology, Skaggs Building
Missoula, MT 59812
Telephone: 406 243 4521

Purpose: There are many reasons for why teenagers experiment with alcohol and drugs. However, psychologists are still trying to understand how and why some teenagers use substances and why some do not. The purpose of this project is to investigate what factors contribute to teenage substance use. Specifically, we are interested in learning about the characteristics of teenagers who use alcohol and/or drugs and teenagers who have never used. It is our hope that by learning about these differences, we will be able to intervene with other teenagers before they develop a problem.

Procedures: You will be asked to respond to a series of questionnaires which should take approximately one hour. These questionnaires are relatively short and will focus on experiences when you were living with your parents including how families communicate, how you process emotions, and your drug and alcohol history. The questionnaires also ask about family substance use and physical abuse.

Risks/Discomforts: It is anticipated that participation in this study may result in minimal risks or discomforts. It is possible that a court could order the release of materials or questionnaires. The questionnaires do ask about things that might make you sad or unhappy by reminding you of unpleasant circumstances. If any of these questions are upsetting to you, you can speak with the principal investigator, Donna Ryngala. Additionally, if you feel like you want to talk with someone about this, the Counseling and Psychological Center at Curry Health Center offers free sessions for students and they can be reached at 243-4711.

Benefits: This project is worth 2 research credits. Your psychology instructor will be informed that you participated in this study. This project aims to understand how individuals and families function. You may not directly benefit from participation, but your involvement may help in the understanding family interactions and teenage substance use and how to help when there are difficulties.

Confidentiality: All information gathered for research purposes will be kept private and stored in locked file cabinets. Only the researcher, a trained research assistant, and her faculty supervisors will have access to the files. Confidentiality will be maintained throughout this process by assigning a code number to your records. If you disclose information about child abuse or elder abuse, a report to the Department of Public Health and Human Services (DPHHS) may have to be made. Likewise, if you disclose suicidal intent, steps may be made to ensure your safety. These steps may include contacting a
mental health provider or the police. It is possible that a court could order the release of materials or questionnaires.

**Compensation for injury:** There is minimal risk to participating in this study. The University of Montana extends to each research participant the following liability information: “In the event that a participant is physically injured during the course of this research, he or she should individually seek appropriate medical treatment. If the injury is caused by the negligence of the University or any of its employees, the participant and the participant’s parent may be entitled to reimbursement or compensation pursuant to the Comprehensive State Insurance Plan established by the Department of the Administration under the authority of the M.C.A., Title 2, Chapter 9. In the event of a claim for such personal injury, further documentation may be obtained from University Legal Counsel.”

**Voluntary Participation/Withdrawal:** Your involvement in this project is entirely voluntary. You may choose to withdraw at any time without any prejudice. If you do choose to withdraw, you will still receive 3 research credits.

**Questions:** If you have any questions about the research now or during the study, please feel free to ask the person who gave you this form or contact Donna Ryngala or Paul Silverman at (406) 243-2367. If you wish, you may receive the results of the overall project upon its completion by calling the Psychology Department at The University of Montana at (406) 243-4521.

**Participant’s Statement of Consent:** I have read the above description of this research study. I have been informed of the risks and benefits involved, and all my questions have been answered to my satisfaction. Furthermore, I have been assured that any future questions I may have will also be answered by a member of the research team. I voluntarily agree to take part in this study. I understand that I will receive a copy of this consent form.

__________________________
Print your name

__________________________  ______________
Signature Date
APPENDIX D

Demographic Questionnaire

Please do not put your name on this.

We would like to get some background information about you and your family.

1. How old are you? ______ years ______ months

2. What is your gender? (Please circle) male female

3. What is your ethnicity? (Optional, please check all that apply)
   ___ White    ___ African-American
   ___ Hispanic ___ Asian
   ___ American Indian ___ Other

Family Composition

4. How long has it been since you have seen your parents? 
   _____ days ___ months ___ years

5. How long has it been since you lived with your parents? 
   _____ days ___ months ___ years

6. Are you adopted? _______ How old were you when you were adopted? _______

7. Were your parents ever married? yes no
   If no, did they ever live together? yes no
   Please describe

   If no, skip to question 10.

8. Are your biological/adoptive parents still married? (Please circle) yes no
   If yes, skip to question 15.

9. How old were you when they divorced? _______

10. Did either of them get re-married or live with another partner? yes no
    Which one? (Please circle) Mother Father Both
    Please describe
11. How old were you when they got re-married or moved in with another partner?
   ______ mother
   ______ father

12. Who did you live with immediately after the divorce?

   ____________________________________________

   For how long?

   ____________________________________________

13. Who do you live with now?

   ____________________________________________

   How long have you lived with him/her?

   ____________________________________________

14. Which parent did you live with the longest? _________

   For how long?

   ____________________________________________

15. Do you have any siblings? (Please circle) yes no

16. How old are your siblings?

   ____________________________________________

Drugs and Alcohol

17. To your knowledge, have you ever been diagnosed with a drug or alcohol problem?
   yes no

   Which drug?

   ____________________________________________

18. Are you currently taking/drinking any non-prescription drugs? yes no

   What?

   ____________________________________________

19. Do your parents drink alcohol? yes no

20. Did either of them drink when you were growing up? Which one? (Describe)

   ____________________________________________

21. Have you ever seen either of your parents drunk? Which one?

   ____________________________________________
22. Do either of your parents take non-prescription drugs? Which one?

What drug(s)?

23. To your knowledge, has either of your parents been diagnosed with a drug or alcohol problem? If so, which parent and what was he or she diagnosed with? (Describe)

24. If you have siblings, do they drink alcohol? (If you don’t have siblings please circle N/A)

   yes       no       N/A

25. Have you ever seen a sibling drunk? (Describe)

26. Do any of your siblings take non-prescription drugs? yes no

   What drug(s)?

27. To your knowledge, have any of your siblings been diagnosed with a drug or alcohol problem?

   yes       no

   If yes, please describe.

28. Have you ever drank alcohol or taken drugs with any of your siblings? yes no

   If yes, please describe.

29. Did you parents talk to you about drugs or alcohol? yes no

30. Were you allowed to drink alcohol? yes no

   If yes, please describe.

   You

31. Are you currently in psychotherapy? yes no
<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>32. Have you ever been in psychotherapy?</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>If yes, please describe.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>33. Have you ever been diagnosed with a psychological disorder(s)?</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>If yes, what disorder(s)?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX E
The Alcohol Use Disorders Identification Test

1. How often do you have a drink containing alcohol?
   Never   Less than Monthly   Monthly   Weekly   Daily or almost Daily

2. How many drinks containing alcohol do you have on a typical day when you are drinking?
   1-2   3-4   5-6   7-9   10+

3. How often do you have six or more drinks on one occasion?
   Never   Less than Monthly   Monthly   Weekly   Daily or almost Daily

4. How often during the last year have you found that you were not able to stop drinking once you had started?
   Never   Less than Monthly   Monthly   Weekly   Daily or almost Daily

5. How often during the last year have you failed to do what was normally expected from you because of drinking?
   Never   Less than Monthly   Monthly   Weekly   Daily or almost Daily

6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?
   Never   Less than Monthly   Monthly   Weekly   Daily or almost Daily

7. How often during the last year have you had a feeling of guilt or remorse after drinking?
   Never   Less than Monthly   Monthly   Weekly   Daily or almost Daily
8. How often during the last year have you been unable to remember what happened the night before because you have been drinking?

Never  Less than Monthly  Monthly  Weekly  Daily or almost Daily

9. Have you or someone else been injured as a result of your drinking?

No  Yes, but not in the last year  Yes, during the last year

10. Has a relative, friend, a doctor, or other health care worker been concerned about your drinking or suggested you cut down?

No  Yes, but not in the last year  Yes, during the last year
APPENDIX F

Children's Perception of Inteparental Conflict Scale (CPIC)

I live with ________ both my mom and my dad
__________ only one of my parents
__________ another relative (e.g., grandmother, aunt)

Instructions: In every family, there are times when the parents don't get along. Below are some things that kids sometimes think of feel when their parents have arguments or disagreements. We would like you to tell us what you think of feel when your parents argue or disagree by answering each of the sentences below. Circle one of the following answers that tell how you think or feel:

T = TRUE
ST = SORT OF TRUE
F = FALSE

If your parents don't live together in the same house with you, think about times that they are together when they don't agree or about times when both of your parents lived in the same house, when you answer these questions.

1. T ST F - I never see my parents arguing or disagreeing.
2. T ST F - When my parents have an argument, they usually work it out.
3. T ST F - My parents often get into arguments about things I do at school.
4. T ST F - When my parents argue, it's because one of them just had a bad day.
5. T ST F - My parents get really mad when they argue.
6. T ST F - When my parents argue, I can do something to make myself feel better.
7. T ST F - I get scared when my parents argue.
8. T ST F - I feel caught in the middle when my parents argue.
9. T ST F - I'm not to blame when my parents have arguments.
10. T ST F - They may not think I know, but my parents argue or disagree a lot.
11. T ST F - Even after my parents stop arguing, they stay mad at each other.
12. T ST F - When my parents argue, usually it has to do with their own problems.
13. T ST F - My parents have arguments because they are not happy together.
14. T  ST  F - When my parents have a disagreement, they discuss it quietly.
15. T  ST  F - I don’t know what to do when my parents have arguments.
16. T  ST  F - My parents are often mean to each other even when I’m around.
17. T  ST  F - When my parents argue, I worry about what will happen to me.
18. T  ST  F - I don’t feel like I have to take sides when my parents have a disagreement.
19. T  ST  F - It’s usually my fault when my parents argue.
20. T  ST  F - I often see or hear my parents arguing.
21. T  ST  F - When my parents disagree about something, they usually come up with a solution.
22. T  ST  F - My parents’ arguments are usually about me.
23. T  ST  F - The reasons argue never change.
24. T  ST  F - When my parents have an argument, they say mean things to each other.
25. T  ST  F - When my parents argue or disagree, I can usually help to make things better.
26. T  ST  F - When my parents argue, I’m afraid something bad will happen.
27. T  ST  F - My mom wants me to be on her side when she and my dad argue.
28. T  ST  F - Even if they don’t say it, I know I’m to blame when my parents argue.
29. T  ST  F - My parents hardly ever argue.
30. T  ST  F - When my parents argue, they usually make up right away.
31. T  ST  F - My parents usually argue or disagree because of things that I do.
32. T  ST  F - My parents argue because they don’t really love each other.
33. T  ST  F - When my parents have an argument, they yell at each other.
34. T  ST  F - When my parents argue, there’s nothing I can do to stop them.
35. T  ST  F - When my parents argue, I worry that one of them will get hurt.
36. T  F  - I feel I have to take sides when my parents have a disagreement.
37. T  F  - My parents often nag and complain about each other around the house.
38. T  F  - My parents hardly ever yell when they have a disagreement.
39. T  F  - My parents often get into arguments when I do something wrong.
40. T  F  - My parents have broken or thrown things during an argument.
41. T  F  - After my parents stop arguing, they are friendly toward each other.
42. T  F  - When my parents argue, I’m afraid they will yell at me too.
43. T  F  - My parents blame me when they have an argument.
44. T  F  - My dad wants me to be on his side when he and my mom argue.
45. T  F  - My parents have pushed and shoved each other during an argument.
46. T  F  - When my parents argue or disagree, there’s nothing I can do to make myself feel better.
47. T  F  - When my parents argue, I worry that they might get divorced.
48. T  F  - My parents still act mean after they have had an argument.
49. T  F  - My parents have arguments because they don’t know how to get along.
50. T  F  - Usually it’s not my fault when my parents have arguments.
51. T  F  - When my parents argue, they don’t listen to anything I say.
APPENDIX G
The Family Assessment Device

SA = Strongly Agree   A = Agree   D = Disagree   SD = Strongly Disagree

1. We usually act on our decisions regarding problems.
   SA   A   D   SD

2. When someone is upset the others know why.
   SA   A   D   SD

3. When you ask someone to do something, you have to check that they did it.
   SA   A   D   SD

4. If someone is in trouble, the others become too involved.
   SA   A   D   SD

5. We don’t know what to do when an emergency comes up.
   SA   A   D   SD

6. You can’t tell how a person is feeling from what they are saying.
   SA   A   D   SD

7. There are rules about dangerous situations.
   SA   A   D   SD

8. We make sure members meet their family responsibilities.
   SA   A   D   SD

9. After our family tries to solve a problem, we usually discuss whether it worked or not.
   SA   A   D   SD
10. We are generally dissatisfied with the family duties assigned to us.
   SA A D SD

11. We are reluctant to show our affection for each other.
   SA A D SD

12. We know what to do in an emergency.
   SA A D SD

13. We resolve most emotional upsets that come up.
   SA A D SD

14. We are frank with each other.
   SA A D SD

15. You only get the interest of others when something is important to them.
   SA A D SD

16. We confront problems involving feelings.
   SA A D SD

17. You can easily get away with breaking the rules.
   SA A D SD

18. We try to think of different ways to solve problems.
   SA A D SD

19. People come right out and say things instead of hinting at them.
   SA A D SD

20. We are self-centered.
   SA A D SD
21. We get involved with each other only when something interests us.
   SA   A   D   SD

22. Even though we mean well, we intrude too much into each other’s lives.
   SA   A   D   SD

23. We have no clear expectations about toilet habits.
   SA   A   D   SD

24. We don’t talk to each other when we are angry.
   SA   A   D   SD

25. Some of us just don’t respond emotionally.
   SA   A   D   SD

26. When we don’t like what someone has done, we tell them.
   SA   A   D   SD

27. In times of crisis we can turn to each other for support.
   SA   A   D   SD

28. Family tasks don’t get spread around enough.
   SA   A   D   SD

29. We show interest in each other when we can get something out if it personally.
   SA   A   D   SD

30. We have trouble meeting our bills.
   SA   A   D   SD

31. There’s little time to explore personal interests.
   SA   A   D   SD
32. We have rules about hitting people.
   SA A D SD

33. We cry openly.
   SA A D SD

34. We don’t hold to any rules or standards.
   SA A D SD

35. We express tenderness.
   SA A D SD

36. Our family shows interest in each other only when they can get something out of it.
   SA A D SD

37. We do not show our love for each other.
   SA A D SD

38. We discuss who is to do household jobs.
   SA A D SD

39. If people are asked to do something, they need reminding.
   SA A D SD

40. Tenderness takes second place to other things in our family.
   SA A D SD

41. If the rules are broken, we don’t know what to expect.
   SA A D SD

42. Anything goes in our family.
   SA A D SD
43. Planning family activities is difficult because we misunderstand each other.
   SA  A  D  SD

44. We cannot talk to each other about sadness we feel.
   SA  A  D  SD

45. Individuals are accepted for what they are.
   SA  A  D  SD

46. We avoid discussing our fears and concerns.
   SA  A  D  SD

47. We can express feelings to each other.
   SA  A  D  SD

48. There are lots of bad feelings in the family.
   SA  A  D  SD

49. We feel accepted for what we are.
   SA  A  D  SD

50. Making decisions is a problem for our family.
   SA  A  D  SD

51. We are able to make decisions about how to solve problems.
   SA  A  D  SD

52. We don’t get along well together.
   SA  A  D  SD

53. We confide in each other.
   SA  A  D  SD
APPENDIX H

Personal Experiences Screening Questionnaire (PESQ)
Sample Items

Instructions: This booklet asks about you and your experiences, including those with alcohol and other drugs. Some questions ask how often certain things have happened. Others ask if you agree with a statement. Please read each question carefully. Circle the * for the answer that is right for you. Circle only one response options for each question. Please answer every question.

Part I

<table>
<thead>
<tr>
<th>How often have you used alcohol or other drugs</th>
<th>Never</th>
<th>Once or Sometimes</th>
<th>Often</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. at home?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. at places on the street where adults hang around?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. with older friends?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. at the home of friends or relatives?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. at school activities, such as dances or football?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. at work?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. when skipping school?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. to enjoy music or colors, or feel more creative?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. while driving a racing boat?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

How often have you

10. made excuses to your parents about your alcohol or drug use?

11. gotten drugs from a dealer?

12. used alcohol or drugs secretly, so nobody would know you were using?

13. made excuses to teachers about your alcohol or drug use?

14. been upset about other people talking about your alcohol or drug use?

15. lost your sense of taste for several days after using drugs?

When using alcohol or other drugs, how often have you

16. spilled things, bumped into things, fallen down, or had trouble walking around?

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<table>
<thead>
<tr>
<th>Question</th>
<th>Never</th>
<th>Once or Twice</th>
<th>Sometimes</th>
<th>Often</th>
</tr>
</thead>
<tbody>
<tr>
<td>17. seen, felt, or heard things that were not really there?</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>18. spent money on things you wouldn’t normally buy?</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>19. found out things you said or did while using or drinking that you did not remember?</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>In order to get or pay for alcohol or other drugs, how often have you</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. sold drugs?</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>21. bought drugs from a security guard?</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

Part II
Please indicate whether the following statements are true about you:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>22. I am always nice, even to people who are not nice.</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>23. I worry a lot about little things or for no reason.</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>24. There have been times when I took advantage of someone.</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>25. I am bothered by unusual thoughts.</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>26. There have been times when I was made at an adult even though I knew they were right.</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>27. I feel sad, blue, or depressed much of the time.</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>28. I often suffer from headaches or a nervous stomach.</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>29. I am always willing to admit it when I make a mistake.</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>30. I think about killing myself.</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>31. There have been times when I felt like swearing or smashing things.</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>32. There is something wrong with the way my mind works.</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>33. Someone in my family hits me when they are angry.</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>34. I am afraid of someone because they have been sexual with me.</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>
Part III

During the past 12 months, how many times:

35. have you had alcohol beverages (including beer, wine, and liquor) to drink?
36. have you used marijuana (grass, pot) or hashish (hash, hash oil)?
37. have you used drugs other than alcohol or marijuana?

38. If you have used other drugs, circle the * following each drug that you have used at least once during the past 12 months:
   - psychedelics (such as LSD, mescaline, peyote, psilocybin, PCP, mushrooms)
   - cocaine (coke, crack, rock)
   - amphetamines (such as uppers, speed, methamphetamine or meth, crank, not diet pills)
   - barbiturates (such as downers, goofballs, yellows, blues)
   - tranquilizers (such as Librium, Valium)
   - heroin (smack, horse, skag)
   - other narcotics (such as methadone, opium, morphine, codeine, Demerol)
   - club drugs (Ecstasy, GHB, Rohypnol, ketamine or Special K)
   - inhalants (such as glue, aerosol cans, gases, correction fluid)

39. When did you first get high or drunk?
40. When did you first use regularly?
41. How many cigarettes do you smoke in a day?

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Grade 6 or before</th>
<th>Grade 7-8</th>
<th>Grade 9-10</th>
<th>Grade 11 or after</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>39. When did you first get high or drunk?</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>40. When did you first use regularly?</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>41. How many cigarettes do you smoke in a day?</td>
<td>* None</td>
<td>* Less than</td>
<td>* About half a half a pack</td>
<td>* pack or more</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX I
Toronto Alexithymia Scale – 20

Using the scale provided as a guide, indicate how much you agree or disagree with each of the following statements by circling the corresponding number below the statement. Give only one answer for each statement.

1) STRONGLY DISAGREE
2) MODERATELY DISAGREE
3) NEITHER DISAGREE NOR AGREE
4) MODERATELY AGREE
5) STRONGLY AGREE

1. I am often confused about what emotion I am feeling.
   1 2 3 4 5
   Strongly Disagree  Strongly Agree

2. It is difficult for me to find the right words for my feelings.
   1 2 3 4 5
   Strongly Disagree  Strongly Agree

3. I have physical sensations that even doctors don't understand.
   1 2 3 4 5
   Strongly Disagree  Strongly Agree

4. I am able to describe my feelings easily.
   1 2 3 4 5
   Strongly Disagree  Strongly Agree

5. I prefer to analyze problems rather than just describe them.
   1 2 3 4 5
   Strongly Disagree  Strongly Agree

6. When I am upset, I don't know if I am sad, frightened, or angry.
   1 2 3 4 5
   Strongly Disagree  Strongly Agree

7. I am often puzzled by sensations in my body.
   1 2 3 4 5
   Strongly Disagree  Strongly Agree
8. I prefer to just let things happen rather than to understand why they turned out that way.
   | 1 | 2 | 3 | 4 | 5 |
   | Strongly Disagree | Strongly Agree

9. I have feelings that I can’t quite identify.
   | 1 | 2 | 3 | 4 | 5 |
   | Strongly Disagree | Strongly Agree

10. Being in touch with emotions is essential.
    | 1 | 2 | 3 | 4 | 5 |
    | Strongly Disagree | Strongly Agree

11. I find it hard to describe how I feel about people.
    | 1 | 2 | 3 | 4 | 5 |
    | Strongly Disagree | Strongly Agree

12. People tell me to describe my feelings more.
    | 1 | 2 | 3 | 4 | 5 |
    | Strongly Disagree | Strongly Agree

13. I don’t know what’s going on inside me.
    | 1 | 2 | 3 | 4 | 5 |
    | Strongly Disagree | Strongly Agree

14. I often don’t know why I am angry.
    | 1 | 2 | 3 | 4 | 5 |
    | Strongly Disagree | Strongly Agree

15. I prefer talking to people about their daily activities rather than their feelings.
    | 1 | 2 | 3 | 4 | 5 |
    | Strongly Disagree | Strongly Agree

16. I prefer to watch “light” entertainment shows rather than psychological dramas.
    | 1 | 2 | 3 | 4 | 5 |
    | Strongly Disagree | Strongly Agree
17. It is difficult for me to reveal my innermost feelings, even to close friends.

1  2  3  4  5
Strongly Disagree Strongly Agree

18. I can feel close to someone, even in moments of silence.

1  2  3  4  5
Strongly Disagree Strongly Agree

19. I find examination of my feelings useful in solving personal problems.

1  2  3  4  5
Strongly Disagree Strongly Agree

20. Looking for hidden meanings in movies or plays distracts from their enjoyment.

1  2  3  4  5
Strongly Disagree Strongly Agree