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TYPOLOGICAL DIFFERENCES IN PATTERNS OF RISK AMONG YOUNG CHILDREN OF ALCOHOLICS

By

Deborah Ann Ellis

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ABSTRACT

TYPOLOGICAL DIFFERENCES IN PATTERNS OF RISK AMONG YOUNG CHILDREN OF ALCOHOLICS

By

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There is a wealth of data suggesting that children of alcoholics are at increased risk for alcoholism in adulthood. Developmental antecedents to later alcohol problems have their roots in childhood and include childhood antisocial behavior, aggression and possibly hyperactivity. The current investigation, using a population-based sample of children of alcoholics and matched controls, examined the relationships between various inherited and environmental risk factors and their differential ability to predict a proxy for later alcohol problems: namely, childhood externalizing behavior problems. However, one of the major premises of this study was that risk for externalizing behavior problems among children of alcoholics would be a function of the alcoholic subtype of their parent. Alcoholic parents were classified as either antisocial or non-antisocial alcoholic; it was predicted that children of antisocial alcoholics would show the highest levels of behavioral difficulties.

The present study demonstrated that beginning in the preschool years, children of antisocial alcoholics were exposed to substantially higher levels of various factors which placed them at risk for child behavior problems than were children of non-antisocial alcoholics or children of non-alcoholic controls. These included family aggression, low socioeconomic status, exposure to alcoholism in the rearing environment and familial loading for alcoholism. As expected, children of antisocial alcoholics also experienced the highest levels of child behavior problems. In addition, results confirmed that different factors played a role in the development of child externalizing behavior problems among the groups. For children of antisocial alcoholics, heritable factors at least in part

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attributable to genetic variation predicted the development of externalizing behavior problems, this was not true for children of non-antisocial alcoholics or controls. Moreover, while the impact of being raised by an alcoholic parent was predictive of the early emergence of psychopathology among children of antisocial alcoholics, this was not true for children of non-antisocial alcoholics. Rather, exposure to marital conflict best predicted behavioral difficulties among this group. Only temperamental mismatch with parents predicted externalizing behavior problems among children of controls. It remains for future longitudinal research to confirm that these early developmental problems are in fact pathways into alcoholism.

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I am indebted to Robert Zucker for his guidance and support throughout the development of this work. His prior work on alcoholism typologies, both theoretical and empirical, has guided my conceptualization of the phenomenon known as alcoholism. Moreover, his broad knowledge of the psychopathology literature was invaluable in expanding my approach to this research.

I would also like to thank the other members of my committee for their time and support. Hiram Fitzgerald and Jacqueline Lerner both contributed much to this work by way of their understanding of both the developmental psychology literature in general and the temperament literature in particular. Frank Floyd continued to be supportive and available to me during the development of this research, as he has been throughout my graduate career.

Finally, thanks go out to all the staff members of the M.S.U. Family Project who dedicated their time and energy to collect the data I used. A special thank you is necessary to project coordinator Susan Refior, without whose efforts none of this work would have been possible. I would also like to acknowledge the project families themselves, who allow us to enter their homes and provide us with such valuable information about their lives.

This work was supported in part by grants to R.A. Zucker and H.E. Fitzgerald from the National Institute on Alcohol Abuse and Alcoholism (AA 07065) and from the Michigan Department of Public Health, Prevention Services Unit.

TABLE OF CONTENTS

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CHAPTER

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CHAPTER III: METHOD (continued)

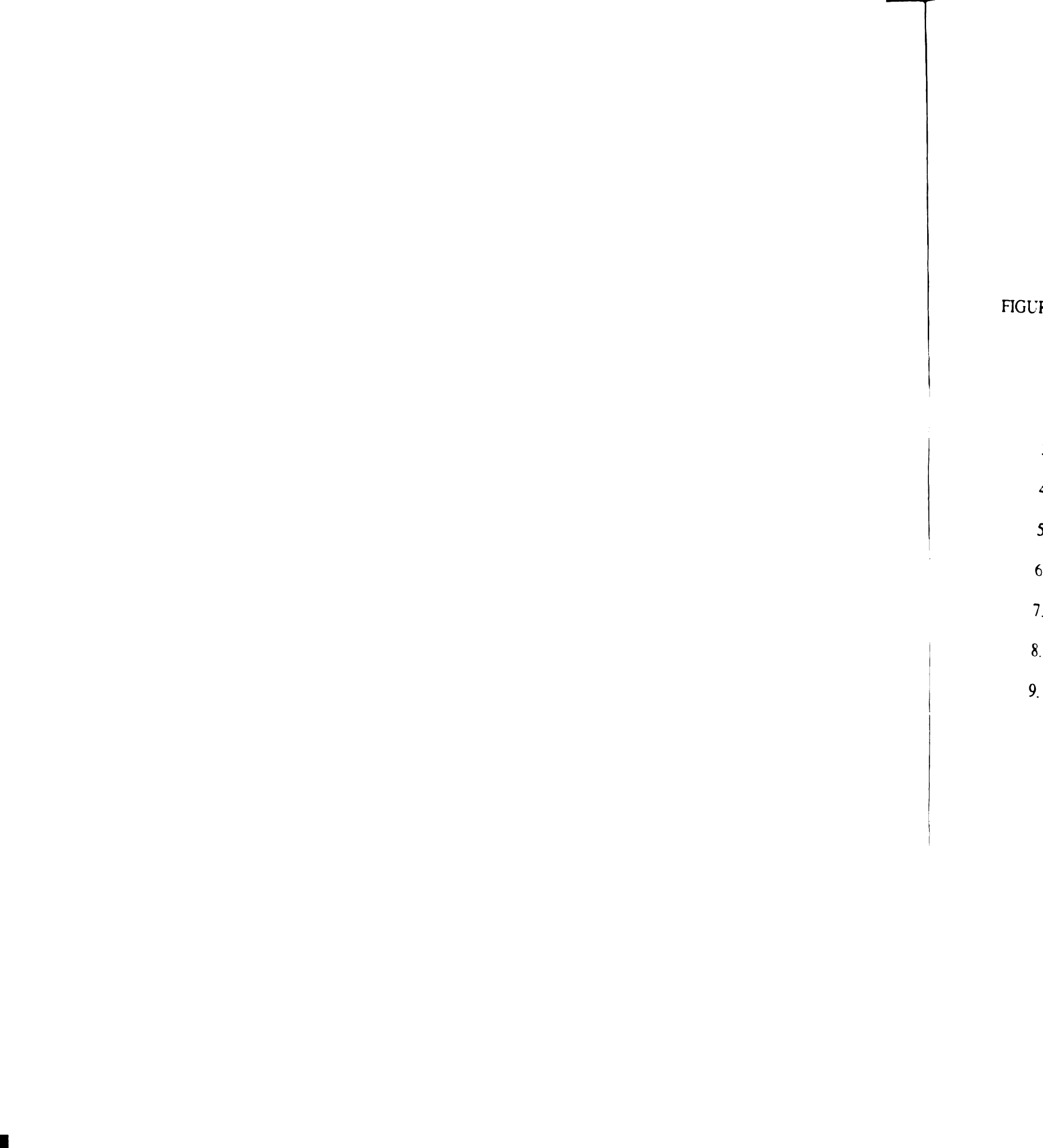
CHAPTER IV: RESULTS (continued)

TAB

LIST OF TABLES

TABLE PAGE

LIST OF TABLES (Cont.d)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LIST OF FIGURES

FIGURE PAGE

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Introduction and Literature Review

Alcoholism is one of the major health problems faced by the United States today (Department of Health and Human Services, 1990). As a result, these has been widespread interest in studying the etiology of alcoholism and in identifying risk factors for alcoholism. Much of the research which attempts to identify factors that increase risk for alcoholism has focused upon children of alcoholics (COAs), largely because a significant subset will experience alcohol problems of their own. It is now widely accepted that children of alcoholics are at elevated risk for alcoholism upon reaching adulthood (Goodwin, 1979; Winokur, Reich, Rimmer and Pitts, 1970; Rydelius, 1981; Vaillant, 1983); 25-30% of male children of alcoholics become alcoholic themselves in later life (Zucker, 1987a).

Unfortunately, much of the current etiological research involving children of alcoholics is overly simplistic. In particular, the literature may be flawed by its failure to integrate the concept of risk factors for alcoholism with the notion that there are different types of alcoholism, each with its own cause, course, and prognosis. Many recent studies indicate that alcoholism is not a heterogeneous disorder and that in fact different subtypes of alcoholics exist (Cloninger, Bohman and Sigvardsson, 1981; Cadoret, Troughton and Widmer, 1984; Schuckit, 1985; Zucker, 1987a). In order to gain a better understanding of the etiology of alcoholism and those factors which place a child at risk, it is necessary to more clearly delineate the various types of alcoholics as well as the different paths into alcoholism. However, most of the studies to date on COAs identify a variety of risk factors for alcoholism without considering whether or not each factor may be only be relevant to the development of a certain type of alcoholism. In addition, there has been almost no consideration in the alcoholism literature as to whether risk for alcoholism among COAs is a function of the alcoholic subtype of their parent such that a) some children of alcoholics are at higher risk than others and b) COAs are more likely to develop

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This discussion first turns to a review of the evidence that supports the notion that there are different types of alcoholism. Next, the relationship between these alcoholic subtypes and factors which may place a child at risk for alcoholism will be discussed. Finally, evidence that parental alcoholic subtype may be related to the type of alcoholism for which their child is at risk will be presented.

Typologies of Alcoholics

Clinicians and researchers in the alcoholism field have attempted to identify subtypes of alcoholics since the late nineteenth century (Babor and Lauerman, 1986). In their historical review of alcoholic typologies, Babor and Lauerman (1986) describe numerous classification schemes based upon the alcoholic's drinking pattern, the chronicity of alcoholic symptoms, various etiological theories and so on. However, in recent years there has been a resurgence of interest among alcohol researchers in the development of reliable, valid typologies for alcoholics due a) to an increased awareness of the heterogeneity of alcoholics (Donovan, Kivlahan and Walker, 1986) and b) to the resulting need for differentiation of alcoholic subtypes in order to chart alternate etiological pathways and develop more effective treatments.

E.M. Jellinek, the father of the disease concept of alcoholism (Zucker, in press), is often considered to have developed one of the first modern systems for subtyping alcoholics. Jellinek (1952) distinguished five types of alcoholics: alpha, beta, gamma, delta and epsilon. Alpha alcoholics represented the earliest stage of alcoholism, while epsilon alcoholics represented the final stage. Jellinek suggested that alpha and beta alcoholics were not physically addicted to alcohol- they experienced psychological dependence but not loss of control over their drinking. Gamma alcoholics were those showed signs of physical addiction and loss of control over their drinking but could abstain

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without withdrawal symptoms. Delta and epsilon alcoholics were physically addicted and were unable to abstain from drinking without experiencing withdrawal symptoms. Jellinek applied the disease concept not to excessive drinking per se, but to the loss of control that accompanied it; thus, only physically addicted alcoholics were considered to have the "disease" of alcoholism.

Jellinek's typology can be equated to that of DSM-III-R, as the distinction between addicted and non-addicted alcoholics is similar to the DSM-III-R categories of alcohol dependence and alcohol abuse (Hesselbrook, 1986). However, the classification schema has been criticized for its failure to adequately account for etiology, as it is heavily based upon the alcoholic's pattern of drinking and his drinking symptomatology (Hesselbrook, 1986).

More recent alcoholism typologies have included those which are empirically derived from cluster or factor analyses of alcohol symptom checklists and personality inventories such as the MMPI (Goldstein and Linden, 1969; Nerviano and Gross, 1983). However, the current classification schemes which have received the most attention have grown out of etiological theories of alcoholism. These include those of Cloninger's group (Cloninger, Bohman and Sigvardsson, 1981) and Zucker (1987a).

Cloninger developed his typology based upon his research on the genetics of alcoholism. He suggested that two types of alcoholism exist: Type 1 or milieu- limited and Type 2 or male-limited. Type 1 alcoholism has a late adulthood onset and is associated with loss of control over drinking and guilt over drinking; it is seen as more heavily environmentally than genetically mediated. Type 2 alcoholism has an early adulthood onset and is associated with aggressive, impulsive behavior; it is seen as heavily genetically rather than environmentally mediated. As implied by the nomenclature of this typology, most women would be classified as Type 1 alcoholics under Cloninger's classification schema. Although Cloninger and coworkers have accumulated an impressive data set (to

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be reviewed later) which supports their typology, a major limitation to their work is the lack of elaboration of early developmental antecedents, particularly environmental, for each type of alcoholism. In addition, the schema allows too much indeterminacy in that a substantial number of alcoholics cannot be unequivocally classified as Type 1 or Type 2.

Zucker (1987a) has proposed that four different alcoholisms, each with its own cause and course, exist: antisocial alcoholism, developmentally limited alcoholism, developmentally cumulative alcoholism and negative affect alcoholism. He suggested that the first type,antisocial alcoholism, is characterized by the presence of childhood and adulthood antisocial behavior as well as by the early onset of alcohol problems. A history of socialization to aggression is also considered to be a necessary etiologic factor. Although environmental factors are important potentiating variables, antisocial alcoholism is seen as having a heavily genetic diathesis. In developmentally cumulative alcoholism, any potential genetic diathesis is proposed to be environmentally mediated; it is harsh parent-child interactions during youth and inadequate marital and career adjustment in adulthood, as well as early socialization to the use of alcohol as a coping mechanism, which are considered most important in the development of this type of alcoholism. Developmentally limited alcoholism, or frequent heavy drinking, involves alcohol-related problems which peak during the early 20's, then drop out with the assumption of family and career roles. Finally, Zucker noted that the fourth type, negative affect alcoholism is most strongly tied to alcohol problems in women and often involves drinking in order to relieve depressed mood.

Current interest in alcoholic typologies reflects the growing awareness among alcohol researchers of the heterogeneity of alcoholism and the subsequent need to understand the various routes into alcoholism. However, as yet, these different paths have not been charted in depth by either cross-sectional or, more importantly, longitudinal studies. Zucker (1987a) notes that certain subtypes of alcoholics have been more widely studied

and to date are better understood. He suggests that this is particularly true of antisocial alcoholism, since it is more common among lower SES groups who are often connected with social agencies and the legal system, and who are thus more easily identified for research participation. This review now turns to a discussion of empirical evidence for the existence of two particular alcoholic subtypes: antisocial and non-antisocial .

Antisocial vs. Non-Antisocial Alcoholism

The distinction between antisocial and non-antisocial alcoholism is not a new one, as it has been consistently made in the alcoholism literature since the early part of this century (Lewis, 1990). Recently, the term antisocial alcoholic has been used to refer to individuals where alcohol problems are coexistent with a history of antisocial behavior which dates back to early adolescence and which predates the onset of alcohol-related difficulties (Schuckit, 1973). Antisocial alcoholism, by virtue of its association with sociopathy, is far more common among males than among females (Stabenau, 1984; Zucker, 1987a).

Several studies comparing antisocial and non-antisocial alcoholics support the notion that antisocial alcoholism is a valid alcoholic subtype- that it has a course and prognosis that differ from that of other types of alcoholism. Stabenau (1984) used the NIMH Diagnostic Interview Schedule to interview 156 male and 54 female alcoholic patients at inpatient treatment facilities. Current and lifetime diagnoses were made for various DSM-III categories, including antisocial personality. Stabenau found that alcoholism in association with antisocial personality was related to an earlier onset of all alcohol-related symptoms (e.g. age of first drunkenness) except for age at first entry into alcohol treatment. He also noted that antisocial alcoholics had more "psychosocial problems", although the exact nature of these problems was not elaborated.

Cadoret, Troughton and Widmer (1984) also interviewed alcoholic inpatients with the Diagnostic Interview Schedule. Subjects were divided into two groups : "pure" or

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"primary" alcoholics and antisocial alcoholics. The primary group, in addition to excluding all individuals whose antisocial behavior began before age fifteen, also excluded those individuals who qualified for a diagnosis of antisocial personality based upon all criteria except childhood onset. Cadoret et al.'s results supported those of Stabenau: antisocial alcoholics had more alcohol problems. However they also found that antisocial alcoholics reported significantly higher rates of anxiety, depression, schizophrenia and mania. In addition, they reported more drug use.

Schuckit (1985), using 432 male subjects admitted to a alcohol treatment program, diagnosed his sample as either "primary" (e.g. no other DSM-III diagnosis prior to the onset of drinking problems) or "secondary" (alcohol problems occured after subjects already made diagnostic criteria for a DSM-III diagnosis other than alcoholism) alcoholics. Three types of secondary alcoholics were identified: drug abusers, sociopaths, and those with affective disorders. Schuckit found that as compared to the primary alcoholics, sociopathic alcoholics had significantly earlier onset of first major life problem related to drinking. They also reported a higher rate of consumption of alcohol and a high rate of drug use other than alcohol.

Schuckit also conducted a twelve month follow-up to ascertain whether differences in outcome existed for the two groups after receiving treatment. He showed that antisocial alcoholics were more likely than primary alcoholics to use drugs during the follow-up period, and that they reported more alcohol-related life difficulties. Primary alcoholics also had significantly better social functioning at follow-up. So in addition to demonstrating more florid alcohol-related symptomatology than do non-antisocial alcoholics, prognosis for recovery appears to be worse among antisocial alcoholics.

A study by Zucker, Ellis and Fitzgerald (1992b) demonstrated the relevance of the antisocial/ non-antisocial typology when constructing developmental models of alcoholism. Subjects were 85 alcoholic men who were coded as either antisocial or non-antisocial

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alcoholics. The subjects were initially compared on a number of variables including socioeconomic status, child and adult antisociality, depression and alcohol symptomatology. An index of genetic loading for alcoholism, BIORISK, was calculated for each subject based upon their family history of alcoholism in order to assess the importance of inherited factors for both types of alcoholism.

Similar to findings discussed above, Zucker et. al. showed that antisocial alcoholics suffered more drinking-related life difficulties, experienced higher rates of psychopathology, such as depression, and had lower achieved socioeconomic status. Additionally, results of path modelling of developmental processes in the two groups indicated that genetic factors contributed strongly to adult alcohol problems only among antisocial alcoholics . Childhood antisocial behavior was also a strong determinant of adult alcohol problems for this type. However, for non-antisocial alcoholics, factors such as degree of depression were most important and the effects of genetic loading for alcoholism and childhood antisociality were negligible. Zucker et. al.'s work thus supports the antisocial/ non-antisocial typology as a useful means of conceptualizing and delineating developmental processes among alcoholics.

The studies reviewed above clearly show that antisocial alcoholics differ from alcoholics who do not exhibit sociopathic behavior. They suffer more problems from their alcohol abuse and their difficulties with alcohol begin at an earlier age. Antisocial alcoholics tend to experience higher rates of other psychological difficulties than do non-antisocial alcoholics. It also appears that antisocial alcoholism may be more difficult to treat than other types. Finally, antisocial alcoholism appears to have different developmental antecedents than does non-antisocial alcoholism.

A large body of evidence supporting the notion that it is possible to divide alcoholics into antisocial and non-antisocial types (at least for men). Furthermore, recent research by Zucker et. al. demonstrates the importance of this typology when building etiological

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theories of alcoholism. Subsequently, the question of whether certain risk factors are especially pertinent to the development of antisocial alcoholism or to the development of non-antisocial alcoholism becomes an important one. Various early risk factors which have been implicated in the development of alcoholism, especially among COAs, will now be reviewed, and their differential contribution to the development of antisocial alcoholism or non-antisocial alcoholism will be discussed.

Risk Factors For Alcoholism

Childhood Antisocial Behavior

Numerous studies have implicated childhood antisocial behavior, or conduct disorder, as a developmental antecedent to alcoholism (Robins, 1966; Berry, 1967; Zucker and Gomberg, 1986). For example, Rydelius (1981) reported on a twenty year follow-up study of 112 Swedish male children of alcoholics and 81 control children of non-alcoholics. Data on adult adjustment was obtained through information about registration with various Swedish social agencies, such as the Criminal Offenses Register; unfortunately, no attempt was made to collect any collateral self-report data. Nevertheless, Rydelius found that adult registration with local Temperance Boards (which are set up to control excessive drinking) due to alcohol problems was strongly predicted by acting-out and/or aggressive behavior in childhood and adolescence.

Cloninger, Sigvardsson and Bohman (1988), in another longitudinal study, followed up 233 male and 198 female Swedish participants from a research project on child development. Subjects had been assessed at age 11 and 15 through teacher reports of their classroom behavior. As did Rydelius, Cloninger and his coworkers evaluated alcohol abuse through age 27 by tracking the subjects' alcohol-related contacts with various social agencies, such as alcohol treatment facilities. Results showed that the childhood personality variables of high novelty seeking and low harm avoidance predicted early-onset

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alcohol abuse in adulthood. High novelty seeking and low harm avoidance included such behaviors as impulsivity, aggression and sociability. Thus, Cloninger's study also provides evidence of childhood antisocial behavior among males who later became alcoholic.

Consideration must be given to the fact that the majority of studies which report that childhood antisocial behavior is a risk factor for alcoholism have used low SES populations where violence and antisociality is more common (Zucker, 1987a) ; furthermore, many report increased rates of adult antisocial behavior in addition to alcoholism among their subjects (Robins, 1966; Rydelius, 1981). These factors indicate that a particular group, those individuals at risk for antisocial alcoholism, may have been tapped by studies reporting elevated rates of childhood antisocial behavior among alcoholics. Studies such as Cloninger et al. 's (1988) which may have used a more middle class sample, have not tracked their subjects for long enough to allow for the development of later-onset alcoholism. Therefore, as Cloninger's group points out, their current data can only support the role of conduct disorder in the development of early onset alcoholism (e.g. antisocial) and do not address the contribution of childhood antisocial behavior to other types of alcoholism which typically begin later in life.

One study which may cast some light on this question was done by Alterman, Bridges and Tarter (1986). They compared 17 sons of alcoholics (high risk) to 17 sons of non-alcoholic men (low risk) on a variety of self-reported variables including current alcohol consumption, lifetime alcohol problems and lifetime antisocial behavior. Subjects were all college students and therefore less likely to fit the profile for antisocial alcoholism. Alterman and his colleagues found that although childhood antisociality was significantly more common in the high risk group, antisocial symptoms in childhood were predictive of alcohol problems in late adolescence regardless of subjects' risk status. Schuckit (1985) also found some evidence for childhood antisocial behavior among "primary" alcoholics who did nor meet criteria for a diagnosis of antisocial personality either in childhood or

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In summary, most existing studies on early precursors of alcoholism, particularly longitudinal studies of COAs, strongly implicate childhood antisocial behavior as a developmental antecedent to alcohol problems later in life. However, such results are difficult to interpret in light of the fact that these studies commonly use populations which fit a profile for antisocial rather than non-antisocial alcoholism. Therefore, whether childhood antisocial behavior is precursive to alcohol problems among non-antisocial alcoholics remains unclear.

Aggression

Alcoholics in general tend to exhibit more violent behavior than nonalcoholics, particularly when drinking (Jaffe, Babor and Fishbein, 1988). Some researchers have suggested that this association between aggressiveness and drinking is due to the fact that alcohol has a pharmacological effect which causes the release of aggressive behavior (Gustafson, 1986). However, aggressiveness has also been proposed to be a trait which predates the development of alcoholism (Zucker, 1987a; Lewis, 1990).

Aggression in early childhood is known to predict delinquency and adult antisocial behavior (Stattin and Magnusson, 1989). In addition, it appears to predispose an individual to substance abuse. For example, Kellam, Ensminger and Simon (1980) found that aggressiveness in first grade was predictive at ten-year follow up of drug and alcohol use among males. Muntaner ,Nagoshi, Jaffe and Walter (1989) measured self-reported childhood aggression among 155 drug and alcohol abusers. They found that childhood aggression predicted both adult aggression and adult criminality; in addition, those subjects reporting the highest levels of aggression in childhood had the most difficulty with substance abuse in adulthood. Of particular interest was Muntaner and coworkers' finding that childhood aggression made a contribution to the development of substance abuse over and above that of antisocial personality disorder. These findings indicate that childhood

aggression leads to both antisociality and substance abuse and that aggression may need to be considered independently of antisocial behavior as a risk factor for alcoholism.

Huesmann, Eron, Lefkowitz and Walder (1984), in a 22 year longitudinal study, tracked the development of aggression in 366 subjects and 82 of their children. They found that aggression in subjects at age eight was significantly related to aggressiveness at age 30, as well as to number and seriousness of criminal convictions. In addition, childhood aggression was related to number of drunk driving arrests by age 30, supporting findings by Kellam et. al. and Muntaner et.al. that aggressiveness predicts alcohol problems in adulthood.

Aggressive subjects were also found to have aggressive children, even when subjects' social class was partialed out. Huesmann et al. concluded that aggressiveness is not only stable within an individual, but is transmitted across generations. They suggested that in addition to genetic and/or constitutional factors which might account for such a relation between parent-child aggression, children of aggressive parents are also exposed to "appropriate learning conditions" which increase the likelihood of aggressive behavior. These include observation of parental aggression and being reinforced for aggressive behavior. Modelling of aggression may be especially relevant to the development of aggression among children of alcoholics, as research suggests that such children are exposed to high rates of aggressive behavior, particularly marital violence (Reider, 1987).

It appears that childhood aggression places the individual at risk for both antisociality and substance abuse in adulthood. This makes it especially pertinent to the etiology of antisocial alcoholism. However, even those alcoholics who do not show elevated levels of antisocial behavior in adulthood (and thus would not be considered antisocial alcoholics) may have been aggressive as children. Research by Jaffe, Babor and Fishbein (1988) indicates that a significant number of alcoholics who retrospectively report aggressive behavior as children do not meet diagnostic criteria for antisocial personality disorder as

adults; 33% of their non-antisocial alcoholic sample reported highly aggressive behavior in childhood as compared to 50% of their antisocial alcoholic sample. Thus, the importance of aggression to the development of non-antisocial alcoholism is currently unclear, although there is some suggestion that aggression may play a role here too.

Hyperactivity

There exists a body of research which indicates that hyperactivity may be another factor which predisposes an individual to develop alcoholism. Such theories grew out of early longitudinal studies on child development. For example, Jones (1968), using a sample of 66 men from the Oakland Growth Study, classified subjects at age 38 as problems drinkers (i.e. alcoholics), moderate drinkers or abstainers. She found that significantly more problem drinkers had been characterized in childhood as having a "rapid tempo". McCord and McCord, following a sample of males identified in childhood as being at risk for delinquency and a matched sample of controls, found that those subjects who later became alcoholic had demonstrated elevated levels of hyperactivity in childhood (McCord, McCord and Gudeman,1960; McCord and McCord,1962).

Retrospective reports by alcoholics also appear to demonstrated a link between hyperactivity in childhood and adult alcohol problems. For example, Goodwin et al. (1975) interviewed 133 male Danish adoptees, 14 of whom were alcoholic, about childhood health and psychosocial adjustment. They found that a significantly higher rate of hyperactivity was reported by alcoholics versus non-alcoholics, with half of the alcoholics reporting hyperactive behavior during childhood. Tarter, McBride, Buonpane and Schneider (1977) compared alcoholic men to psychiatric patients without alcoholism and normal controls on a questionnaire which assessed minimal brain dysfunction in childhood. They found that alcoholic men reported significantly more symptoms of hyperactivity than did either control group.

Knop, Teasdale, Schulsinger and Goodwin (1985) also reported evidence for a link

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between hyperactivity and alcoholism among children of alcoholics. Their subjects were 95 nineteen to twenty year old sons of alcoholic fathers (high risk) and 49 sons of non-alcoholic fathers (low risk). The two groups were matched for age and social class. Subjects' grade school teachers were contacted and asked to fill out retrospective questionnaires regarding subjects' classroom behavior and academic performance. Knop et.al. found that the high risk group was rated significantly higher by teachers on questionnaire scales tapping hyperactive behaviors such as restlessness and impulsiveness.

Although all of these studies purport to demonstrate a link between alcoholism and hyperactivity, it is important to note that many of them also reported elevated rates of aggressive and/or antisocial symptoms in their subjects during childhood. Hyperactivity is often associated with conduct disorder among hyperactive children (Hinshaw, 1987). Thus, the question arises as to whether hyperactivity in and of itself is a developmental antecedent of alcoholism, or whether hyperactivity is only found in pre-alcoholics as a concomitant feature of conduct disorder. If so, hyperactivity might only be important in the development of those types of alcoholism where conduct disorder is precursive to alcohol problems.

In fact, follow-up studies of individuals who were hyperactive as children show that the strongest link exists between conduct disorder and later alcohol problems, rather than between hyperactivity and adult alcoholism. August, Stewart and Holmes (1983) conducted a four-year follow up study of boys originally diagnosed as hyperactive at age nine to ten. 22 subjects had originally been classified as " pure" hyperactives, while 30 had been classified as hyperactive and conduct disordered. At follow-up, the investigators found that while both subgroups continued to show evidence of inattention and impulsivity, the pure hyperactives were significantly less overactive than they had been at initial assessment. Pure hyperactives also demonstrated few problems with aggressiveness or antisocial behavior. Hyperactive/conduct disordered boys, on the other hand, continued

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to be overactive and showed continued difficulty with aggression and antisociality. Most importantly, while none of the pure hyperactive boys were reported by their parents to be abusing alcohol or drugs, thirty percent of the parents of hyperactive/conduct disordered boys reported such problems among their sons. August et al. concluded that it was aggressive, antisocial hyperactives who were at highest risk for adult antisocial behavior and substance abuse difficulties.

Gittelman, Mannuzza, Shenker and Bongura (1985) reported results from a longitudinal study of adolescents who had been diagnosed as hyperactive in childhood. Subjects were 101 males previously referred to a child guidance clinic for hyperactivity and 100 controls. At follow-up, Gittelman and her coworkers found that those subjects who continued to make diagnosis for attention-deficit disorder were the most likely to have a concurrent diagnosis of antisocial personality disorder. Moreover, the researchers found that almost all cases of substance abuse occured among subjects with antisocial disorders.

This research also supports the notion that it is hyperactivity only in conjunction with conduct disorder that predisposes an individual to alcohol problems in later life. It appears that hyperactivity is linked to alcoholism through its association with antisocial behavior during childhood and that hyperactivity alone is not a risk factor for alcoholism. Thus, the etiological significance of hyperactivity to alcoholism may best be understood by considering similarities between the two syndromes and how they might act synergistically in a way that leads to alcohol problems.

If hyperactivity is only a risk factor for alcoholism among children when it co-exists with conduct disorder, then hyperactivity might seem especially relevant to the etiology of antisocial alcoholism. But since the issue of whether childhood antisocial behavior is developmentally precursive only to antisocial alcoholism remains unresolved, the question of the relevance of hyperactivity to the development of various types of alcoholism is likewise an open one.

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Genetic Factors

Several converging lines of evidence have supported the notion that inherited factors play some role in the development of alcoholism. These include family studies, twin studies and adoption studies. McGue (1992) in a recent review article, summarized the findings from the past twenty years of research on the genetics of alcoholism. He suggested that the best available data currently support a moderate influence of genetic factors on alcoholism in men and a more modest influence on alcoholism in women. He also noted that the genetic diathesis which purportedly has a causal role in alcoholism may not be specific to alcohol problems, but may be more generally related to difficulties with behavioral undercontrol.

Data from family, twin and adoption studies indicate that although genetic factors may contribute to the development of alcoholism among other subtypes, they may be especially important in the genesis of antisocial alcoholism. Thus, as the evidence for the role of inherited factors in the etiology of alcoholism is reviewed, special attention will be paid to evidence that a genetic diathesis is particularly germane to antisocial alcoholics.

Family studies.

Data from family studies has indicated that rates of alcoholism are much higher among the families of alcoholics than among the general population. Cotton's (1979) literature review encompassed 39 studies of alcoholics. She found that regardless of the nature of the non-alcoholic population used as a comparison group, an alcoholic was more likely than a non-alcoholic to have a mother, father or other close relative who was alcoholic. The fact that alcoholics were twice as likely to report parental alcoholism as other psychiatric patients implied that a high rate of familial alcoholism was specific to alcoholics.

Family studies also indicate that the rate of alcoholism is increased in the offspring of alcoholics. Goodwin (1979) reported that male children of alcoholics were four times as likely as were sons of non-alcoholics to become alcoholics themselves. Winokur, Reich,

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Rimmer and Pitts (1970) also investigated the occurrence of alcoholism in children of alcoholics. They diagnosed 31% of the sons of male alcoholics to be alcoholic upon reaching adulthood; 51% of sons of female alcoholics were found to be alcoholic as adults. Thus, the COA population may carry a particularly high risk for alcoholism in part because of a heavier genetic load for alcoholism.

Of particular interest are family studies which show differences in family history of alcoholism for antisocial and non-antisocial alcoholics. Templer, Ruff and Ayers (1974) looked at differences between "essential" or early-onset alcoholics (more likely to be antisocial alcoholics) and "reactive" or late-onset alcoholics (more likely to be non-antisocial alcoholics); they found that essential alcoholics were significantly more likely to come from families with an alcoholic member. Reich, Cloninger and Lewis (1981) demonstrated that relatives of antisocial alcoholics had a much higher rate of alcoholism than did relatives of non-antisocial alcoholics. Penick et al. (1984) contrasted "primary alcoholics", or those who only met diagnostic criteria for alcoholism, with antisocial alcoholics who had a concurrent diagnosis of antisocial personality. These researchers also found that primary alcoholics were significantly less likely to have relatives who were alcoholic than were antisocial alcoholics.

Alterman (1988), using a sample of 83 alcoholic men, showed that alcoholics with an extensive family history of alcoholism (e.g. multigenerational) reported significantly higher rates of both childhood and adulthood antisocial behavior than did alcoholics with little or no family history of alcoholism. This is consistent with findings from other studies which indicate that antisocial behavior is much more common among family history positive alcoholics (Latcham, 1985; Cook and Winokur, 1985). Such data are suggestive of a stronger genetic loading for alcoholism among antisocial alcoholics than among non-antisocial alcoholics, although family studies do not allow genetic and environmental effects to be independently assessed.

Twin studies.

Twin studies have also been used to investigate the role of inheritance in the development of alcoholism. Drinking behavior among monozygous (MZ) twins pairs (who are assumed to be genetically identical) is compared to drinking behavior among dizygous (DZ) twins pairs (who are related as normal siblings). Higher rates of concordant drinking behavior in the monozygous twins can then be attributed to their more similar genotype.

Gabrielli and Plomin (1985) investigated drinking behavior among twins with 'normal' (i.e. non-abusive) drinking patterns. Their sample included 46 MZ and 44 DZ twin pairs as well as 46 genetically unrelated pairs of subjects who were raised together. 203 subjects were females and 143 were males; median level of schooling was 14.5 years. Genetically unrelated pairs of adoptees were included to assess the importance of shared family environment in alcohol consumption, independent of genetic influence. The Colorado Alcohol Behavior Questionnaire was used to assess amount, frequency and rate of alcohol consumption. Gabrielli and Plomin found significantly higher correlations of both amount and rate of alcohol consumption among MZ twins. Based on this data, they calculated a 66% heritability for rate and 25% heritability for amount of alcohol consumption. Gabrielli and Plomin concluded that genetic influences on drinking behavior were more important than shared family environment.

Gabrielli and Plomin's work was supported by Kaprio, Koshenvuo, Langinvanio, Romanov, Sarna and Rose (1987). They compared 879 male pairs of monozygous twins and 1940 pairs of dizygous twins from the Finnish Twin Cohort. The Finnish Twin Cohort consists of all like-sex twin pairs born in Finland in 1958 among whom both twins were living in 1967. Subjects used in this study comprised nearly all surviving male twins in the 25-49 age range. Information was requested on the frequency (number of days of alcohol use), quantity (amount of alcohol used) and density (number of days of excessive use) of alcohol consumption per month and the frequency of passouts in the previous year.

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Results confirmed genetic effects for frequency, quantity and density of drinking, but not for passouts. Kaprio's group found moderate heritability rates: .39 for frequency of beer consumption, .38 for frequency of spirit consumption, .40 for density of consumption and .36 for quantity of consumption.

The classic twin study which investigated alcohol abuse among twin pairs was Kaij and McNeil's (1960). Their subjects were 292 Swedish twins. At least one member of each twin pair had been registered with Temperance Boards set up to control excessive drinking. After categorizing each twin in terms of alcohol consumption, Kaij found that the co-twin of an index MZ twin was much more likely to fall into the same category of alcohol consumption as his twin than was the co-twin of an index DZ twin. For example, he found that among chronic alcoholics, 71.4% of co-twins in MZ pairs fell in the same category as their index twin, while this was only true of 32.3% of co-twins in DZ pairs. Based on these results, Kaij concluded that alcohol abuse was largely an inherited trait.

Murray, Clifford and Gurling (1983) criticized Kaij's findings on several grounds. One criticism was the low proportion of MZ twins in the study. This raised the possibility that some MZ twin pairs were mistakenly labelled as DZ. How this would lower the drinking concordance rate in the DZ group relative to the MZ group was not explained, however. Another criticism presented by Murray's group was that Kaij's sample was not representative of alcoholics in general. For example, alcoholics registered with the Temperance Board were much more likely to have been convicted of alcohol-related criminal acts than most alcoholics. Although Kaij appears to have selected his sample largely because of the ease of tracking drinking problems based upon subjects' contacts with social agencies rather than because he wanted to use a more antisocial sample, his findings may actually reflect the fact that genetic factors are of particular importance to the development of antisocial alcoholism.

A more recent study of twins with drinking problems was conducted by Hrubec and

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Omenn (1981). Hrubec and Omenn accessed records of the VA to collect data on alcohol-dependent twin pairs. They found MZ twins to be more concordant than DZ twins on rates of alcoholism, cirrhosis of the liver, and alcohol psychosis.

It has been argued that twin studies which find higher concordance rates for MZ than DZ twins do so simply because MZ twins share a more similar environment than DZ twins (Scarr, 1986). However, there exists behavioral-genetic research which disputes the notion that twin studies are biased due to confounding of genetic and environment influences (Scarr and Carter-Saltzmann, 1979; Matheny, 1979; Loehlin and Nichols, 1976). Nevertheless, in order to differentiate the effects of nature and nurture more clearly, it is helpful to turn to adoption studies.

Adoption studies.

Adoption studies allow researchers to more clearly separate the effects of heredity from the effects of environment. Assuming that the child of an alcoholic biological parent is separated from that parent shortly after birth, it is possible to see if the child's purported genetic predisposition for alcoholism affects him even in a family environment where alcohol abuse does not occur.

Attempts to use adoption studies to resolve the nature-nurture debate in the alcoholism arena date back to an early study by Roe and Burks (1945); these researchers found no evidence for genetic influences upon the development of alcoholism. However, several more recent studies have provided evidence for an inherited predisposition to alcoholism (Goodwin et al.,1974; Cadoret and Gath,1978; Cadoret, O'Gorman, Troughton and Haywood, 1985), although most have been criticized on methodological grounds. It should be noted that one critique of adoption studies which has been advanced is that participants in adoption studies are not a representative sample, since parents who give their children up for adoption may show more signs of antisocial behavior (Murray et al., 1983). If so, although subjects in adoption studies may not be representative of the

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general alcoholic population, they are of particular relevance when considering the importance of genetic factors in antisocial alcoholism.

One set of adoption studies in particular addresses the question of whether certain types of alcoholics have a higher genetic loading for alcoholism. These are those of Cloninger's group. One of the most pertinent studies (Cloninger, Bohman and Sigvardsson, 1981) involved 862 male Swedish adoptees, of whom 151 had some record of alcohol abuse. Subjects were part of the Stockholm Adoption Study. The sample included all persons born out of wedlock between 1930 and 1949 who were placed for adoption. Each of the adoptees, based on his drinking behavior, was classified as belonging to one of four groups. Data about both adoptive and natural parents was collected as well. Analysis of Cloninger et al.'s data showed a significant correlation between alcohol dependence in the biological parents and alcohol dependence in the adoptees.

The researchers also wished to know if the biological parents of severely alcohol dependent adoptees differed from biological parents of mildly alcohol dependent adoptees. They were able to demonstrate the existence of two types of alcoholism in the alcohol abusing adoptees which were associated with psychological standing of the natural parents. One type of alcoholism (male-limited or Type II) was found to be highly heritable from father to son and to result in a moderate degree of alcoholism in the son. Type II alcoholics were found to have no excess of alcoholic mothers. In addition, Type II alcoholism was found to be associated with criminality and severe alcoholism in the adoptees' natural father. Therefore, in the male-limited alcoholic, antisocial behavior and alcoholism were found to be closely linked. As previously discussed, Cloninger, Sigvardsson and Bohman (1988) also found that personality traits associated with antisocial behavior (such as novelty-seeking behavior and harm avoidance) which were measured in a large sample of eleven year olds predicted early-onset alcoholism (i.e. Type

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The other type of alcoholism described by Cloninger et al. (milieu-limited or Type I) was found to be somewhat heritable from either biological parent and was associated with milder alcohol dependence and no record of criminality in the natural parents. In addition, Type I alcoholism was thought to be influenced by post-natal environmental factors, and to result in either a mild or severe degree of alcohol abuse depending on the degree of post-natal environmental stress.

A replication of the group's results among 913 female Swedish adoptees from the Stockholm Adoption Study (Bohman, Sigvardsson and Cloninger, 1981) confirmed the initial findings. First, there was a three-fold excess of alcohol abusers among adopted daughters of alcoholic biological mothers as compared to adopted daughters of non-alcoholics. Biological fathers with a record of criminality and severe alcoholism had very few alcoholic daughters. This is consistent with the prediction that male-limited alcoholism is mostly passed on to sons. However, there was a high degree of alcohol abuse among daughters of biological parents who were not involved in criminal activity and whose alcohol abuse was mild, supporting the idea that milieu-limited alcoholism is heritable by either sex. Bohman et al. concluded that alcoholism in women generally fit the Type 1 pattern.

The work of Bohman and Cloninger is important for several reasons. It not only replicated earlier findings of a genetic contribution to alcoholism, but it was one of the first pieces of literature to suggest different degrees of heritability for different types of alcoholism. Although the Type 1/ Type 2 distinction is not synonymous with the antisocial/ non-antisocial typology, they are similar enough that Cloninger et. al.'s research can be said to support the notion that inherited factors are most important in the development of antisocial alcoholism, while they make a more minor contribution to the development of non-antisocial alcoholism.

If one assumes that alcoholism, particularly antisocial alcoholism, is influenced by genetic factors, then what exactly is being inherited? Factors from biochemical abnormalities to brain abnormalities have been implicated (see Appendix A). However, one of the more intriguing possibilities is that alcoholics might inherit temperamental differences which place them at risk for alcohol problems.

Temperament.

Allport (1961) defined temperament as "the characteristic phenomena of an individual's emotional nature, including his susceptibility to emotional stimulation, his customary speed and strength of response, the quality of his prevailing mood and all peculiarities of fluctuation and intensity of mood, the phenomena being regarded as dependent upon constitutional makeup and therefore largely hereditary in origin." Thomas and Chess (1977) similarly defined temperament as "the stylistic component, or 'how' of behavior."

It is possible that alcoholics inherit a particular type of temperament or certain temperament traits that makes them more vulnerable to alcohol abuse. There is significant evidence to indicate that temperament may be heritable (Buss and Plomin, 1986; Wilson and Matheny, 1986); although strong arguments have also been made for an interactionist or contextual view of temperament which suggests that temperament continuously interacts with and is modified by the environment (Thomas and Chess, 1977; Lerner and Lerner, 1983). Various temperament dimensions such as activity level, soothability, mood and emotionality are apparent early in life (e.g. infancy) and can be measured in a variety of ways (Lerner and Lerner, 1983). Temperament traits demonstrate a moderate degree of stability over time (Matheny, 1983; Cyphers, Phillips, Fulker and Mrazek, 1990; Persson-Blennow and McNeil, 1988). Finally, longitudinal research indicates that extremes of temperament in childhood may predispose to psychopathology later in life (Thomas and Chess, 1984; Maziade, Caron, Cote, Boutin and Thivierge, 1990). Late adolescent/ early

adult temperament has also been shown to be related to current mental health and psychological distress (Windle, 1989). For these reasons, researchers have focused upon certain types of temperament as potential constitutional antecedents of alcoholism.

Some of the best known theoretical work on temperamental traits which place an individual at risk for substance abuse is that of Tarter's group. Tarter, Alterman and Edwards (1985) discussed various temperament dimensions which might play a role in vulnerability to alcoholism, presented evidence that at least some of them might have a genetic component and discussed possible underlying biological mechanisms for them. For example, Tarter et.al argued that alcoholics tend to demonstrate a high activity level, that high activity is partly heritable and that such a temperament style could be driven by constitutional disturbances in the physiological ability to regulate arousal.

Tarter (1988) identified activity level, sociability and emotionality as three dimensions of temperament which have received empirical support and which appear to be most strongly linked to substance abuse. The evidence supporting the relationship of the first dimension, high activity level (or hyperactivity), to alcohol problems has been reviewed earlier in this paper and the fact that hyperactivity appears to be concomitant with conduct disorder among individuals who later become alcoholics has been noted. In his review, Tarter also pointed out that hyperactivity often co-occurs with childhood antisocial behavior and suggested that high activity level may in fact precede the development of conduct disorder. Thus, high activity level, a behavioral trait, would increase the risk for alcohol problems by predisposing the child to antisocial behavior in childhood and thus to alcohol problems to adulthood.

The second dimension identified by Tarter was emotionality (sometimes called emotional reactivity), or strong arousal in response to stimulation. Tarter defined emotionality as susceptibility to become easily and intensely distressed and noted that emotionality has been associated with neuroticism, as well as moodiness. He pointed out

that such behaviors during childhood have been associated with increased risk for alcohol-related difficulties in adulthood. For example, Block (1971) (cited in Tarter, 1988), following participants in the Berkeley/ Oakland longitudinal studies on child development, found that those children who had been characterized as crying easily, becoming angry easily and worrying excessively were at risk for problem drinking later in life.

According to Tarter, significant evidence also exists to link the third temperament dimension, sociability, to risk for alcoholism. For example, alcoholics have been described as talkative, expressive and prone to initiate humor (Jones, 1968, in Tarter, 1988). However, Tarter suggested that rather than reflecting true sociability, or gregariousness, these tendencies reflect a disinhibited, labile or impulsive behavioral disposition on the part of alcoholics; that is, an inability to exercise inhibitory control. Therefore, in children at risk for alcoholism, the temperament trait of "sociability" may be a marker for another putative temperament trait, impulsivity (Buss and Plomin, 1975).

Attempts to empirically demonstrate the existence of early temperamental deviations in alcoholics have focused upon comparisons of children of alcoholics and children of non-alcoholics. For example, Tarter et al. (1990), administered a questionnaire measure of temperament to 37 adolescent sons of alcoholic fathers and 49 control sons of non-alcoholic fathers. They found that sons of alcoholics rated themselves significantly higher on activity level than did controls. Tarter et al. also obtained questionnaire measures of family environment for all subjects. They found that the higher activity level in their at-risk subjects could not be accounted for merely by higher levels of family disruption or distress in the alcoholic families as there were no group differences on the family environment measure.

The empirical literature which might substantiate the existence of temperamental differences between alcoholics and non-alcoholics prior to the development of alcoholism is sparse and relies heavily upon retrospective reports about childhood traits; it may

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therefore be subject to reporting biases. However, at least one longitudinal study has been able to demonstrate the existence of temperament deviations in children who were found to be heavy substance users in adulthood. Lerner and Vicary (1984) looked at temperament as an antecedent of alcohol and drug use in young adulthood. Their subjects were 66 male and 67 female children from the New York Longitudinal Study sample, a study which attempts to delineate various influences upon child temperament, as well as the stability of temperamental traits over time and the effect of childhood temperament on adult adjustment. Lerner and Vicary used the constellation of temperament traits called "difficult temperament" (defined by low rhythmicity, low adaptability, tendency to withdraw from others, negative mood and intense reactions) as a predictor of later substance abuse difficulties. They coded substance use on a 0-4 scale where 0 indicated no use and 4 represented the highest use. The researchers were able to demonstrate that difficult temperament at age five and in young adulthood predicted the heaviest drug and alcohol use in young adulthood.

Lerner and Vicary's study demonstrates that heavier substance users may differ temperamentally from abstainers long before the onset of drinking problems. Additional support for Lerner and Vicary's hypothesis comes from a study by Windle (1991). Using a sample of 311 high school students, Windle also found that current self-reported difficult temperament was related to higher levels of substance use among subjects, as well as to increased number of lifetime symptoms of hyperactivity and conduct disorder.

Another body of research indicating that temperamental extremes or deviations may precede the development of alcoholism comes from work in the area of psychophysiology. Temperament researchers investigating the the psychophysiological correlates of emotionality, or the tendency to become easily distressed, demonstrated that high heart rate variability was predictive of higher emotional reactivity under conditions of both positive stimulation and mildly stressful stimulation in young children (Fox, 1989). Therefore,

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heart rate variability (or cardiovascular reactivity) at the physiological level appears to be linked to emotional reactivity at the behavioral level.

Concurrent work on the psychophysiological characteristics of alcoholics investigated the cardiovascular characteristics of individuals with drinking difficulties. Such studies indicated that alcohol had a stress-dampening effect both for alcoholics and individuals at high risk for alcoholism, which was significantly greater than that for low-risk subjects; cardiovascular reactivity to aversive situations was significantly reduced after alcohol intake (Finn and Pihl, 1987; Finn and Pihl, 1988; Levenson, Oyama and Meek; 1987). In addition, research by Finn and Pihl (1988) demonstrated that male children of alcoholics were more cardiovascularly reactive to stimuli even when sober than were men with no family history of alcoholism. Further work by Finn, Zeitouni and Pihl (1990) showed higher cardiovascular reactivity in male COAs than in control men when subjects were exposed to either stressful or non-stressful stimulation. These studies indicate that a) individuals at risk for alcoholism may inherit a physiological tendency toward high heart rate variability when stimulated and b) this physiological trait may express itself in the temperament domain as high emotional reactivity.

In summary, there appears to be evidence that alcoholics may inherit certain temperamental differences which may predispose them to develop difficulties with alcohol. However, it is noteworthy that of the limited research which currently exists in this area, there have been few attempts to integrate theories of alcoholic temperament with any alcoholic typology schema. For example, it seems likely that the types of temperamental deviations which might predispose to antisocial alcoholism, such as high activity level and sociability, might be quite different from those which predispose to other types of alcoholism. Supporting this notion, Tartar et al. (1985) pointed out that the increased risk for alcoholism which temperament traits such as high activity level and sociability might convey is probably most salient for young, early-onset drinkers with a family history of

alcoholism and early psychosocial maladjustment- that is, antisocial alcoholics. Emotional reactivity, on the other hand, seems also to be related to neuroticism and may be important to the development of non-antisocial alcoholism. Therefore, while temperament appears to be a promising area for researchers interested in risk factors for alcoholism, especially ones which may be inherited, future work needs to more clearly integrate different temperamental risk factors with particular developmental paths into alcohol problems.

Temperament and goodness of fit.

Currently, many temperament researchers do not view temperament as a purely personological construct, but rather see temperament as the product of child/ environment interactions (Lerner and Lerner, 1983). Thomas and Chess (1977) in particular are known for their discussion of temperament as an interactive construct- the notion of goodness of fit. Thomas and Chess have suggested that in order to assess whether a particular temperament is adaptive and leads to positive outcomes, it is first necessary to consider the child's environment. Goodness of fit is thought to occur when consonance exists between the expectations and demands of the child's environmental context and his temperamental characteristics. Such goodness of fit then leads to adaptive functioning and development in a positive fashion within this context. Thus, high activity level, which might at first glance appear to be an undesirable temperament trait, could lead to positive development when an active child lives with boisterous, active parents (a good fit) and maladaptive outcomes when a child has quiet, passive parents (a poor fit).

Lerner and Lerner (1983) contend that goodness of fit can occur in three different environmental contexts. The first of these is the attitudinal context- significant others will have attitudes and values which reflect their expectations for the child and the child's temperamental characteristics may either fit or not fit these. The second is the behavioral context- significant others will have their own temperamental attributes and, again, the child's temperament may either fit or not. The final context for fit is the physical

characteristics of the setting within which the child finds himself.

Thomas and Chess's theory of goodness of fit (and its expansion by Lerner and Lerner) provides an explanation of how environmental influences shape child temperament. Buss and Plomin (in Goldsmith, Buss, Plomin, Rothbart, Thomas, Chess, Hinde and McGill, 1987) using the concept of " matches", take a slightly different approach. Buss and Plomin suggest that consonance, or a match, between a child's temperament and that of his parent does not always lead to positive outcomes, because not all matches produce harmonious parent-child relationships. For example, they note that parents and children who are both high on the dimension of emotionality, although a "match", may each tend to become easily angered and thus may have a stressful, conflict-ridden relationship. On the other hand, parents and children who are both high on sociability may each be outgoing and talkative and thus feel comfortable with one another. Therefore, according to Buss and Plomin, consonance between child temperament and environmental demands and expectations does not always lead to positive development.

Particularly in troubled families, it seems questionable whether consonance between child temperament and environmental demands, or "goodness of fit", always leads to adaptive functioning and positive developmental outcomes. The question of whether goodness of fit leads to healthy development in dysfunctional families seems to be of particular relevance within the " behavioral context" identified by Lerner and Lerner (1983). For example, it is not difficult to imagine an alcoholic father and son who might both be highly active- a match in the behavioral context. Moreover, such a match could be rewarding for both parent and child, enhancing the stability of the child's temperament and the likelihood that such traits will persist over time (Goldsmith, Buss, Plomin, Rothbart, Thomas, Chess, Hinde and McGill, 1987). However, these temperament traits, although consonant with the demands of the child's environment, may place him at increased risk for alcoholism later in life. Therefore, rather than assuming that consonance between the

expectations and demands of a child's environment and his temperament leads to adaptive development, it seems necessary to look at each combination of parent-child temperaments on an individual basis as well as to consider the notion that consonance may lead to psychopathology as well as health .

To summarize, a number of factors have been discussed which place a child at increased risk for alcoholism; these include conduct disorder/ childhood antisocial behavior, aggression, hyperactivity and high genetic loading for alcoholism. Most of these factors have been identified using COA populations, making them particularly pertinent for this risk group. However, the literature allows only preliminary hypotheses regarding the specificity of these factors to the development of either antisocial or non-antisocial alcoholism, especially among children of alcoholics.

Influence of Parental Typology upon Risk for Alcoholism among COAs

Because the integration of etiological and typological research in the alcoholism field is in the early stages, studies which address the issue of whether the type of alcoholism expressed by an alcoholic parent affects his child's outcome are essentially non-existent. The only etiologic study to date which sheds any light upon this question is the previous discussed study by Cloninger, Sigvardsson and Bohman (1981). As mentioned in an earlier section of this review, Cloninger's group identified two types of alcoholism: Type 1, which is most similar to non-antisocial alcoholism and Type 2, which is most similar to antisocial alcoholism. Again, Cloninger et. al. also looked at the type of alcoholism expressed by biological parents of their COA sample. They found that Type 2 alcoholism, the highly heritable type, was associated with both severe alcoholism and criminality in the adoptees' natural father. Type I alcoholism, on the other hand, was associated with no record of criminality in the natural parents. Of particular interest here is the suggestion that antisocial alcoholics in particular may pass the same type of alcoholism on to their male

children. Therefore, there is some preliminary evidence from this study that male children of antisocial alcoholics are particularly at risk for antisocial alcoholism in adulthood. However, it sheds little light upon the mechanisms by which this risk might be transmitted.

Statement of the Problem

There have been increasing attempts to differentiate subtypes of alcoholics due to growing awareness that alcoholism is not a homogeneous disorder. Various alcoholism typologies have been proposed, but it is those typologies which classify alcoholics based upon etiological theories about the developmental antecedents of alcoholism which have received the most attention in the past decade. Although Cloninger's Type 1/ Type 2 typology is widely known and has been frequently (and inaccurately) equated with antisocial/ non-antisocial alcoholism, the antisocial/ non-antisocial typology has been the focus of this review because it is the most clearly grounded in developmental theory and can most parsimoniously account for the evidence presented that course and outcome differ for alcoholics who show both childhood and adulthood antisociality as compared to those who do not (Zucker, Ellis and Fitzgerald, 1992a).

Although theoretical models detailing the precursors of alcoholism for various alcoholic subtypes have been proposed, empirical testing of such models remains inadequate. Longitudinal rather than cross-sectional studies are needed in order to adequately chart those early factors which drive later alcoholism. However, early investigators who were aware of the need for longitudinal research on children at risk for alcoholism, such as children of alcoholics, do not appear to have given sufficient consideration to typological issues. Thus, while such early research provided data regarding the etiology of alcoholism, it did not provide information about the differential importance of various risk factors to different types of alcoholism (e.g.antisocial versus non-antisocial). For example, almost all early longitudinal studies on alcoholism implicate

childhood antisocial behavior as a factor which predisposes an individual to alcohol problems, yet it is unclear whether conduct disorder is only of importance in the development of certain types of alcoholism, such as antisocial alcoholism.

This study, using young male children of alcoholics, examines early developmental antecedents of alcoholism. It begins with the assumption that children of alcoholics are at risk for a type of alcoholism that is similar to that of their alcoholic parent- for example, that children of antisocial alcoholics are at elevated risk for antisocial alcoholism. Insufficient data are currently available regarding drinking problems in these children due to their youth, but factors precursive to alcoholism, such as aggression/ antisocial behavior and hyperactivity, are used as outcome variables in order to determine whether antisocial behavior and hyperactivity are particularly characteristic of children who are at risk for antisocial alcoholism or whether they characterize children of non-antisocial alcoholics as well. This allows further elaboration of early developmental models of risk for these two alcoholic subtypes and provides information as to whether pathways into antisocial and non-antisocial alcoholism differ qualitatively or quantitatively. The study also provides information as to whether vulnerability factors for alcoholism which may in part be heritable, such as risky temperament types, are especially pertinent to children of antisocial alcoholics.

Finally, few studies have adequately integrated biopsychosocial processes in their attempts to delineate developmental antecedents to alcoholism. Studies such as those of Cloninger's group, which have demonstrated apparent differences in level of genetic risk for alcoholism for various alcoholic subtypes, have considered psychosocial (i.e. environmental) influences only in a very simplistic fashion. On the other hand, other research that has attempted to provide information about psychosocial risk factors for different types of alcoholics has not focused upon the role of inherited differences. Therefore, the interplay between genetic and environmental factor and their relative

importance for various subtypes of alcoholics has been insufficiently investigated. The current study attempted to integrate the role of potentially heritable influences (e.g.multigenerational family history of alcoholism), as well as environmental factors (e.g. socialization to aggression) in the development of childhood behavior problems. Such data are unique in furnishing information about early childhood difficulties in children at risk for alcoholism, while also providing a model for externalizing behavior problems such as aggression and hyperactivity which integrates genetic and environmental influences.

Hypotheses

There is a wealth of data suggesting that children of alcoholics are at increased risk for alcoholism in adulthood. Developmental precursors to these later alcohol problems have their roots in childhood and appear to include childhood antisocial behavior, aggression and possibly hyperactivity. The purpose of the current investigation was to examine the relationships between various genetic and environmental risk factors and their differential ability to predict externalizing behavior problems. In addition, the relevance of alcoholic typology of the parent to child outcome was investigated. The following hypotheses were proposed:

Hypothesis 1a: Children of antisocial alcoholics will show elevated levels of externalizing child behavior problems. Children of non-antisocial alcoholics will not differ from control children from non-alcoholic families.

Hypothesis 1b: No differences will exist between children of antisocial and non-antisocial alcoholics. However, children of alcoholics will have higher levels of externalizing child behavior problems than control children.

Hypothesis 2a: Children of antisocial alcoholics will more strongly express temperament styles that have been associated with alcoholism (particularly high activity level, high emotional reactivity and high sociability), whereas children of non-antisocial alcoholics will not differ from controls.

Hypothesis 2b: No differences will exist between children of antisocial and non-antisocial alcoholics. However, temperament styles that have been associated with alcoholism (particularly high activity level, high emotional reactivity and high sociability) will be more strongly expressed among children of alcoholics than among children from non-alcoholic families.

Hypothesis 3a: There will be a significant positive correlation between family expression of alcoholism and those preschool temperament dimensions which appear to be of particular importance in the later development of alcoholism (e.g. high activity level, high sociability and high emotional reactivity) among children of antisocial alcoholics. These variables will be uncorrelated for children of non-antisocial alcoholics and children of controls

Hypothesis 3b: Family expression of alcoholism will be significantly positively correlated with the variables listed in Hypothesis 3a among children of alcoholics, but not among control children.

Hypothesis 4a: There will be a significant positive correlation between temperament dimensions of particular importance to the later development of alcoholism (e.g. high activity level, high sociability and high emotional reactivity) and child externalizing behavior problems among children of antisocial alcoholics. These variables will be uncorrelated for children of non-antisocial alcoholics and children of controls.

Hypothesis 4b: Child temperament risk will be significantly positively correlated with child externalizing behavior problems among children of alcoholics but not controls.

Hypothesis 5: The degree of similarity between parent and child temperament will affect child outcome. Temperament styles such as high activity level, high sociability and high emotional reactivity will be more strongly correlated with externalizing behavior problems if there is a match between child temperament and parent temperament.

Hypothesis 6: Socialization to aggression through exposure to models of antisocial behavior or through being the target of aggressive behavior from a parent will be positively correlated with child externalizing behavior problems among both children of alcoholics and controls.

Method

Subjects

The subjects for the present study were 128 families participating in the Michigan State University Longitudinal Study (Zucker, Noll and Fitzgerald, 1986; Zucker, 1987a). This ongoing longitudinal project utilizes a population-based sample of alcoholic men and their families, along with a contrast group of non-substance abusing families. 98 families were high risk (alcoholic) families whereas 30 were controls.

Alcoholic fathers were identified from the population of all males convicted of drunk driving in a four-county mid-Michigan area. In order to meet selection criteria for recruitment into the study, fathers were required to have had a blood alcohol concentration (BAC) of .15% (150 mg/100 ml) or higher when arrested or a BAC of .12% but also a history of multiple alcohol-related driving offenses. Alcoholic fathers were screened using items from the Short Michigan Alcohol Screening Test (SMAST; Selzer, 1975) shortly after recruitment and again later with items from the NIMH Diagnostic Interview Schedule (DIS-Version III, Robins, Helzer, Croughan and Ratcliffe, 1980) to verify that they meet Feighner diagnostic criteria (Feighner, Robins, Winokur, Guze et al., 1972) for either probable or definite alcoholism. 88% of fathers met a definite diagnosis. Thereafter, DSM-III-R diagnoses were verified for fathers.

Alcoholic fathers also met the following requisite demographic characteristics at initial contact: they had a male child (hereafter referred to as the target child) and they resided with the child's mother. Mothers' drinking status was assessed, but maternal alcoholism was neither a requirement nor a basis for exclusion. Data used in the present study came from the first wave of data gathered from the families when the target children were between three and five years old (3-0 to 5-11).

In addition to alcoholic families, data from community families which function as

matched controls for the alcoholic families were also included in this study. These families were homogeneous with risk families for age of the target child. However, neither parent met Feighner criteria for alcoholism or for other drug abuse/ dependence. In addition, every effort was made to match control families with risk families on the basis of family socioeconomic status by attempting to recruit controls from the same neighborhood in which the risk family lived. However, in some cases a neighborhood match proved impossible due to high levels of drug and/ or alcohol abuse among potential control families living in neighborhoods where the alcoholic families resided.

Data Collection

Data were collected by trained project staff who were blind to family risk status. Because of the large volume of data collected, a number of contacts with the family were necessary. Wave One data collection took place across eight data collection sessions, six of which took place in the family home and two of which took place on the M.S.U. campus. The visits involved approximately 11 hours of contact time for each parent and seven hours of time for the target child. Contacts included questionnaire sessions, semi-structured interviews and interactive tasks.

Measures

Parent Measures

Antisocial Behavior

Each parent completed the Antisocial Behavior Inventory (ASB) (Zucker and Noll, 1980). The ASB is a 46 item revision of an earlier antisocial behavior inventory utilized in the Rutgers Community Study (Zucker and Fillmore, 1968; Zucker and Barron, 1973) that has been modified so that items are also salient for adult antisocial activity. Set within the framework of "leisure time" activities, the ASB questionnaire measures the frequency of

the parent's participation in a variety of aggressive and antisocial activities. Antisocial behavior is measured in both the childhood (e.g. being suspended or expelled from school for fighting, lying to parents, running away from home for more than a day) and adulthood (e.g. defaulting on a debt, being fired for absenteeism, resisting arrest) domains. A series of reliability and validity studies with populations ranging from male and female college students to male and female jail inmates has shown that the instrument has adequate test-retest reliability (.91 over four weeks) and internal consistency reliability (coefficient alpha =.93); it also differentiates between individuals with long histories of antisocial behavior (prisoners) versus individuals with minor offenses in district court versus university students (Noll and Zucker, 1980).

Alcoholic subtype.

In order for target children to be identified as offspring of antisocial alcoholics (AALs) or non-antisocial alcoholics (NAALs), their fathers were classified as AALs or NAALs. First, fathers' scores on the Antisocial Behavior Inventory were summed over both childhood and adulthood domains. By using both childhood and adulthood antisocial behavior to determine alcoholic subtype of fathers, the classification schema insures that high-scoring subjects have established a developmental trajectory which begins early in life with aggressive/antisocial behavior and crystallizes in alcoholism and sociopathy during adulthood, rather than simply providing a dimensional classification based upon adult functioning. In other words, the life history for high-scoring subjects (AALs) involves a pattern of sustained antisociality rather than one that is potentially more epiphenomenal.

A score of 24 on the ASB was used as a cutoff, with those fathers scoring below 24 classified as NAALs and those scoring 24 or above classified as AALs. This particular cutoff score was chosen by computing its sensitivity and specificity when DSM-III-R codings of adult antisocial personality were used as a standard. Sensitivity of the ASB when 24 was used as a cutoff was calculated to be .85 and specificity was calculated to be

.83; by comparison, cutoff scores of 21 and 27 yielded sensitivity and specificity scores of .94 and .75 and .79 and .87 respectively. In addition, 18.4% of father were "misclassified", that is, coded as NAAL/ positive for DSM-III-R antisocial personality or AAL/ negative for DSM-III-R antisocial personality, when a score of 21 was used as a cutoff. 16.3% were "misclassified" with a score of 24 and 15.3% were "misclassified" with a score of 27. Thus, establishing AAL/ NAAL status using a score of 24 on the ASB was judged to provide the best combination of sensitivity and specificity, as well as providing a classification that was similar to the DSM-III-R antisocial personality category.

Family Aggression

Each parent completed the Conflict Tactics Scale (CTS) (Straus, 1979). The CTS is an interview instrument which was designed to assess family conflict and the ways in which it is resolved by family members. Six subscales exist which assess use of these different styles of conflict resolution. These are, in increasing levels of aggressiveness: reasoning, verbal aggression, indirect physical violence/ threats of violence, physical violence and severe physical violence. The CTS has been revised for use in the MSU Longitudinal Study by adding several items to the instrument as well as by regrouping some existing items (Reider, Zucker, Maguin, Noll and Fitzgerald, 1989). Straus (1979) in his paper on the psychometric aspects of the CTS, reported adequate reliability and validity. Coefficient alphas for the CTS ranged from .70 to .88; correlations between CTS scores and other measures relevant to family violence, such as socioeconomic status, are high.

The CTS inquires about highly sensitive behaviors, especially those questions about family violence. In order to decrease refusal rates and the likelihood that parents would distort their responses in a self-protective fashion, the CTS was administered two thirds of the way through an administration of the NIMH Diagnostic Interview Schedule, a semi-structured interview used to assess adult psychopathology. Thus, the CTS was given only

after parents had had considerable time to develop a rapport with the interviewer.

Although the CTS can be used to examine aggression between any two family members, parent aggression toward their child and aggression between the parents were the scales of relevance to the current study. Data from the Conflict Tactics Scale regarding physical violence from parent to child was missing for 28% of the sample; these data were missing because a project decision led to a change in questionnaire format such that respondents were only asked to report on verbal aggression and indirect physical violence toward their child. Because a large number of data on parent-child physical violence were missing, regression analyses were not considered an appropriate means for estimating this data. Rather, for those subjects where parent-child physical violence data were unavailable, reports of parent-child verbal aggression and parent-child indirect physical violence were used as the best available estimator of overall parent-child aggression. However, as a result, aggression from parents toward the target children may be underestimated due to the restricted range of this variable in over a quarter of the sample.

For each dyad (e.g. parent-child aggression, parent-parent aggression), the CTS yields two scores which are of particular interest: severity of aggression in the past year and cumulative intensity of aggression in the past year (Reider, Zucker, Maguin, Noll and Fitzgerald, 1989). Severity is the highest level of aggression reported, based on a Guttman scale where a 0 indicates no aggression and a four indicates severe physical aggression. Cumulative intensity is the product of level of aggression and frequency of occurrence of those aggressive acts, summed across all levels of aggression (see Table 1 for computational equations).

Temperament

Each parent completed the Dimensions of Temperament Survey (DOTS) (Lerner, Palermo, Spiro and Nesselroade, 1982) on themselves (DOTS- Self) and on the target child (DOTS-Child). The DOTS is a 34 item questionnaire measure designed to measure

Table 1

Calculation of Cumulative Intensity Score from the Conflict Tactics Scale

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Cumulative Intensity = Frequency of Verbal Aggression + (4 * Frequency of Indirect Physical Aggression) + (9 * Frequency of Physical Aggression) + (16 * Frequency of Severe Physical Aggression)

Frequency of Verbal Aggression= d+e+f+g+h

d) insulted or swore at you
e) sulked and/ or refused to talk about it
f) stomped out of the room or house
g) cried
h) did or said something to spite you

Frequency of Indirect Physical Aggression= i+j

i) threw or smashed or hit or kicked something, but not at you
j) threatened to hit or threatened to throw something at you

Frequency of Physical Aggression= k+l

k) actually threw something at you
l) pushed or grabbed or shoved you, slapped you, hit you, spanked you

---

Frequency of Severe Physical Aggression= m+n+o

m) used a belt on you
n) kicked you, bit you or beat you up
o) threatened to, or actually, used a knife or gun on you.

Note. Modified from Reider (1989).

various dimensions of temperament originally identified by the New York Longitudinal Study. Lerner et al. (1982) in a factor analyses of the DOTS, found the instrument to consist of five temperament factors: activity level, attention span/distractibility, adaptability/ approach-withdrawal, rhythmicity and reactivity. The DOTS has moderate (i.e. .40 to .80) internal consistency reliability and construct validity (Lerner et al., 1982).

Child Measures

Achenbach Child Behavior Checklist- Parent Version

Each parent completed the Achenbach Child Behavior Checklist (CBCL) (Achenbach and Edelbrock, 1983). The CBCL was used to assess child behavior problems in the target child. This factor-analytically derived parent report form was developed as a descriptive system which could be used to classify children for research and clinical purposes (Achenbach, 1978). The CBCL has been normed and standardized on children aged four to sixteen. Test-retest reliability of the CBCL has been shown to range from .95 over a two-week interval to .84 over a three month interval, while parent agreement on CBCL scores falls between .62 and .69 (Achenbach and Edelbrock, 1983). Achenbach and Edelbrock also noted that construct validity of the CBCL is adequate, as correlations between CBCL scores and scores on other measures of child behavior problems are high. Finally, external validity of the CBCL has been shown to be adequate. For instance, Bird, Gould, Rubio-Stipec, Staghezza and Canino (1991), using a community sample of children and adolescents, compared DSM-III diagnoses generated by psychiatrists after an interview with the child to parent CBCL ratings. CBCL sensitivity and specificity ranged from modest to good. Such research suggests that parent CBCL questionnaire ratings are related to independent raters' perceptions of the child.

The CBCL yields scores on two broad band factors reflecting externalizing and internalizing behavior as well as scores on various narrow band factors. It also provides a overall index of child behavior problems known as the Total Behavior Problem score.

Slightly different narrow band factors emerged from Achenbach and Edelbrock's (1983) factor analyses for different age groups. For the age group of relevance here, 4-5 year olds, the narrow band factors which correspond to the larger externalizing factor are Aggression, Delinquency and Schizoid whereas those which correspond to the larger internalizing factor are Depression, Immaturity, Social Withdrawal and Somatic Complaints. Factors of particular interest as outcome measures in the current study are the broader externalizing factor, as well as the narrow band factors of aggression and delinquency. The CBCL uses T-scores of > 63 (90 th percentile) and > 70 (98th percentile) to identify scores which fall into the clinically significant range.

Although a CBCL form for two and three years olds has now been published, it did not exist when data collection began. Questions on the CBCL form now available for use with two and three year olds have some overlap with those on the CBCL form for use with four to five year olds, but are not completely analogous. Thus, for three years olds included in the study, the above mentioned factors (broad band and narrow band), which were developed for use with four and five year olds, were used as guidelines for evaluating parental report of child behavior problems. However, in order to maximize the appropriateness of the four to five year form for analyses of three year old behavior problems, children's raw score on the various factors were used in all analyses rather than T-scores.

Conners Parent Questionnaire

Each parent completed a 51-item version of the 93 item Conners Parent Questionnaire (Conners, 1973). This version is similar to the 48 item Revised Conners Parent Questionnaire (Goyette, Conners & Ulrich, 1978), having 44 identical items, 6 similar items and one new item (Maguin, 1991). The Conners Hyperactivity Index was used to assess the target child's degree of hyperactivity. The Hyperactivity Index is a ten item scale which was developed to assess behaviors indicative of hyperactivity (Conners,

1989), such as restlessness, short attention span and fidgeting.

Test-retest reliability of the Conners has ranged from .40 to .70 for the various subscales over a period of a year. (Glow et. al.,1982, cited in Conners, 1989). Inter-rater reliability has ranged from .46 to .57, with correlations of mother and father ratings on the Hyperactivity Index falling into the .50 range (Conners, 1989). Validity of the Conners is also adequate. For example, ratings on the Hyperactivity Index of the Conners are correlated with DSM-III criteria for attention deficit disorder as well as with physician-rated medication response (Conners, 1989).

Temperament

See above description of assessment of parent temperament for information on the DOTS, which was also used to assess child temperament.

Family Expression of Alcoholism

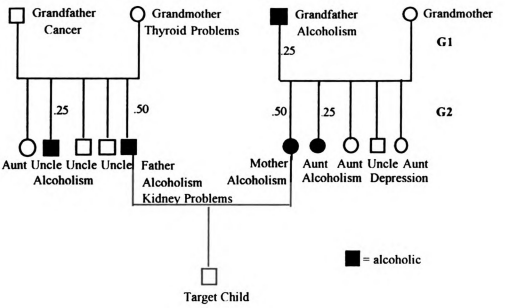
Information on alcoholism in the target children's families was obtained via a family history interview, or genogram, where the child's parents provided data on psychiatric and physical disorders for themselves and for other family members. Parents were first asked to produce a family tree extending back to their grandparental generation and which included such second degree relatives as their aunts, uncles and first cousins. They were then given a standardized list of various physical and psychological disorders, including alcoholism, and asked to identify any relatives who were affected by any of the listed disorders; this process created a genogram. Any additional information provided by parents about their family, such as disorders not included on the list, was also recorded.

Several studies have investigated the reliability and validity of the family history method. O'Malley, Carey and Maisto (1986) compared young adults' reports of alcohol use and alcohol related problems in their parents to the parents' self-report; the two were found to be highly correlated (e.g. the Pearson correlation between students' and fathers' estimates of average monthly consumption was .72). Thompson, Orvascel, Prusoff and

Kidd (1982) compared subjects' reports of various psychiatric illnesses in their relatives to diagnoses made by psychiatrists during personal interviews. They found that the family history method generated few false positives (specificity=.96) but more false negatives (sensitivity =.57). Offspring were found to produce the most accurate reports of illness as compared to spouses and parents. Therefore, positive diagnoses generated by the family history method are highly likely to be accurate, although true incidence of alcoholism in relatives appears to be underestimated (Thompson et. al., 1982)

The family expression of alcoholism (FEA) score used here was derived from genogram data. In order to determine FEA scores for each child, alcoholic family members were primarily identified by using the genograms of each of the child's parents . However, if diagnostic information from other measures collected by the larger research project identified parents as alcoholic, even though not self-identified as such on the genogram, they were also coded as alcoholics for the purpose of calculating FEA scores. Thereafter, the individual genograms completed by each of the child's parents were combined to produce a genogram for the child. Although the genograms provided data on cousins and other more distant relatives, only data on the target child's parents, aunts/uncles, grandparents and great aunts/uncles were used in the analyses, since it became clear during genogram coding that in this data set, lack of familiarity with more distant relatives did not allow respondents to accurately label them as alcoholic or not.

After identification of alcoholic relatives, the child's first degree relatives, such as parents, were allotted a weighting of .50. Second degree relatives, such as grandparents, aunts and uncles, were allotted a weighting of .25. More distant relatives such as great aunts and uncles were allotted a weighting of .125. FEA scores were then calculated by 1) within each generation, summing the weightings for all alcoholic relatives 2) multiplying this sum by the ratio of alcoholics to total number of family members in that generation and 3) summing the subscores across generations. A sample FEA calculation is shown in



Step 1: within each generation, sum the weightings for all alcoholic relatives

G1: .25 + 0 = .25

G2: .25 + .50 + .50 + .25 = 1.50

Step 2: multiply this sum by the ratio of alcoholics in each generation to the total number of family members in that generation

G1: (.25) .25 = .06

G2: (1.50) .40 = .60

Step 3: sum the subscores across generations

FEA = .06 + .60 = .66

Figure 1

Sample Calculation: Family Expression of Alcoholism

Figure 1.

Since the child's FEA score includes points assigned for alcoholic parents, who both raised him and contributed to his genetic makeup, FEA cannot be considered to be a pure measure of genetic loading for alcoholism as separate from the effects of being raised by an alcoholic. However, the FEA score reflects the density of alcoholism in the child's extended family as well as the degree of relatedness of these alcoholic family members to the child. Additionally, most of the alcoholic relatives contributing to the child's FEA score would not have participated in his day to day rearing. Thus, FEA does give some index of inherited risk for alcoholism.

The FEA score can be compared to BIORISK, an index of inherited risk for alcoholism (Zucker, Ellis and Fitzgerald, 1992b). BIORISK is scored as follows: 1=neither of the subject's parents is alcoholic and neither parents has any first degree alcoholic relatives; 2=neither of the subject's parents is alcoholic but one has a first degree alcoholic parent; 3= neither of the subject's parents is alcoholic but both have a first degree alcoholic relative; 4= one of the subject's parents is alcoholic; 5= one of the subject's parents is alcoholic and the other has a first degree alcoholic relative; 6= both of the subject's parents are alcoholic. Due to the fact that range on the BIORISK variable would have been artificially restricted by the target child's group assignment (e.g. control group versus risk group), it was not used in this study. However, FEA and BIORISK were strongly correlated (r=.55, $p \leq .01$).

Parent- Child Temperament Mismatch

In order to assess the degree to which child and parent temperament were dissimilar or a "mismatch", discrepancy scores were generated for each parent-child dyad (Lerner, 1983). Constraints of discrepancy scores include the fact that when the variables used to construct the score are correlated, the score becomes disproportionately a measure of error (Plomin and Daniels, 1983). Despite this problem, discrepancy scores have been

successfully used in a number of studies as a measure of a child's match to a particular context and have been shown to predict child success in school (Lerner, Lerner and Zabski, 1985) as well as adolescent adjustment at home and at school (Nitz, Lerner, Lerner and Talwar, 1988).

The discrepancy score was determined by first subtracting the child's score on each DOTS temperament dimension from that of his parent's corresponding score. The absolute value of the difference between parent and child temperament scores was then calculated. Thus, a discrepancy score of 0 reflects the best match between parent/ child temperament, while higher scores reflect increased degree of mismatch. It is important to note that parent-child temperament mismatch is here being assessed within the behavioral context- that is, how well the parent's perception of the child's behavioral temperament attributes match the parent's perception of his or her own behavioral temperament attributes.

Results

Missing Data and Outliers

A screen was performed for missing data and outliers prior to the start of data analyses. Subjects' missing data on a particular variable was estimated via regression analyses on those data which were complete for the subject. For all variables except those derived from the Conflict Tactics Scale, no more than 5% of the sample had missing data.

Outliers were defined as nonadjacent values which fell outside a normal distribution which was superimposed upon the histogram plot of the frequency distribution. In order to normalize outlier data points, each was assigned a value adjacent to the closest non-outlier value in the distribution. This allowed rank order of subjects to be maintained for each variable.

Factor Analyses

In order to create a variable which would assess the degree of socialization to aggression that the child experienced within his family, a factor analyses of measures of family aggression from the Conflict Tactics Scale and of adult antisocial behavior from the Antisocial Behavior Inventory was performed. A maximum likelihood extraction was used, allowing a factor solution which best fit the observed correlation matrix; an oblique rotation (oblimin) allowed those factors which were extracted to be correlated. Examination of the scree plot (Cattell, 1966) indicated that two factors should be extracted; the eigenvalue of the first factor was 2.35 while that of the second was 1.85. The first factor accounted for 23.5% of the variance and the second accounted for 18.5 %. Table 2 shows the factor loadings: cumulative intensity of mother's aggression toward the child, cumulative intensity of father's aggression toward the child, severity of mother's aggression toward the child and severity of father's aggression toward the child loaded on the first

Table 2

Factor Loadings of Oblimin Factor Solution for Family Aggression Variables: Two Factor Solution

Items	Factor 1: [a] Loadings	Factor 2: [b] Loadings
Severity of Father's Aggression Toward Child	**.99**	-.15
Severity of Mother's Aggression Toward Child	**.88**	-.06
Cumulative Intensity of Mother's Aggression Toward Child	**.38**	.12
Cumulative Intensity of Father's Aggression Toward Child	**.38**	.10
Cumulative Intensity of Father's Aggression Toward Wife	-.04	**.70**
Severity of Father's Aggression Toward Wife	-.01	**.69**
Cumulative Intensity of Mother's Aggression Toward Husband	-.01	**.63**
Severity of Mother's Aggression Toward Husband	-.05	**.61**
Father's Adult Antisocial Behavior	.06	**.50**
Mother's Adult Antisocial Behavior	.11	**.49**

[a] Parental Aggression Toward the Child

[b] Contextual Aggression

Note. Derived factor measures are computed using bold-faced items and summing with unit weights for each item.

factor, which was labelled parental aggression toward the child, while mother's adult antisocial behavior, father's adult antisocial behavior, cumulative intensity of mother's aggression toward her husband, cumulative intensity of father's aggression toward his wife, severity of mother's aggression toward her husband and severity of father's aggression toward his wife loaded on the second factor, which was labelled contextual aggression. Alpha coefficients for the two factors were adequate- .74 for parental aggression toward the child and .73 for contextual aggression.

Relationship Between Mother and Father-Rated Child Risk Variables and Mother and Father-Rated Child Outcome Variables

Variables in these analyses can be classified as child risk variables (i.e. family expression of alcoholism, child temperament risk, parent-child temperament mismatch, parental aggression toward the child and contextual aggression) or as child outcome variables (i.e. CBCL scales, Conners Hyperactivity Index). For some child risk variables and all child outcome variables, both a mother and a father rating existed. In order to determine whether or not mother and father ratings of their child were sufficiently related to be combined, correlations between these two sets of ratings were calculated.

Table 3 shows the relationship between mother-rated child behavior problems and father-rated child behavior problems from the CBCL for all families in the sample. Correlations between mother and father rating of their child on the same scale were significant and positive for all scales and ranged from .17 to .45 (mean = .36). On the Conners Hyperactivity Index, mother ratings and father ratings of child hyperactivity were also significantly positively correlated (r=.55, $p \leq .01$). Since there was evidence that mother and father rating of their child were significantly related on these child outcome measures, mother and father ratings were averaged in order to produce a summary variable for each CBCL scale and for the Conners Hyperactivity Index. Intercorrelations between the various CBCL scales after mother and father ratings were combined are presented

Table 3

Correlations Between Mother-Rated CBCL Child Behavior Problems and Father-Rated CBCL Child Behavior Problems for All Families (n=128).

	DTBP	DEXT	DINT	DSOW	DDEP	DIMM	DSOM	DSCH	DAGG	DDEL
MTBP [a]	.45 **	.42 **	.35 **	.26 **	.32 **	.34 **	.10	.31 **	.41 **	.31 **
MEXT [b]	.42 **	.43 **	.29 **	.20 *	.26 **	.28 **	.03	.28 **	.43 **	.30 **
MINT [c]	.42 **	.35 **	.39 **	.34 **	.35 **	.37 **	.09	.30 **	.33 **	.31 **
MSOW [d]	.25 **	.19 *	.24 *	.33 **	.20 *	.21 *	-.05	.21 *	.18 *	.13
MDEP [e]	.35 **	.27 *	.35 **	.27 **	.34 **	.30 **	.08	.20 *	.25 **	.31 **
MIMM [f]	.39 **	.40 **	.31 **	.29 **	.22	.43 **	-.01	.29 **	.39 **	.33 **
MSOM [g]	.16	.06	.21	.11	.25 *	.09	.26 **	.09	.05	.01
MSCH [h]	.17	.18	.09	.04	.09	.07	.01	.17 *	.17 *	.09
MAGG [i]	.41 **	.43 **	.27 **	.19 *	.24 *	.28 **	.03	.26 **	.44 **	.27 **
MDEL [j]	.38 **	.34 **	.32 **	.22 *	.31 **	.28 **	-.01	.29 **	.31 **	.40 **

[a] Total Behavior Problems
[b] Externalizing Behavior Problems
[c] Internalizing Behavior Problems
[d] Social Withdrawal
[e] Depression
[f] Immaturity
[g] Somatic Complaints
[h] Schzoid
[i] Aggression
[j] Delinquency

** $p \leq .01$ * $p \leq .05$

Table 4

Intercorrelations Between CBCL Scales for Overall Sample (n =128 families): Pooled Data from Mothers and Fathers.

	TBP	EXT	INT	SOW	DEP	IMM	SOM	SCH	AGG	DEL
TBP [a]	1.00									
EXT [b]	.93 **	1.00								
INT [c]	.90 **	.78 **	1.00							
SOW [d]	.68 **	.59 **	.81 **	1.00						
DEP [e]	.81 **	.70 **	.93 **	.68 **	1.00					
IMM [f]	.78 **	.74 **	.82 **	.62 **	.63 **	1.00				
SOM [g]	.41 **	.30 **	.53 **	.33 **	.47 **	.29 **	1.00			
SCH [h]	.64 **	.70 **	.61 **	.51 **	.54 **	.50 **	.33 **	1.00		
AGG [i]	.91 **	.99 **	.73 **	.55 **	.64 **	.70 **	.26**	.59 **	1.00	
DEL [j]	.74 **	.76 **	.74 **	.52 **	.71 **	.68 **	.25 **	.56 **	.66 **	1.00

[a] Total Behavior Problems
[b] Externalizing Behavior Problems
[c] Internalizing Behavior Problems
[d] Social Withdrawal
[e] Depression
[f] Immaturity
[g] Somatic Complaints
[h] Schzoid
[i] Aggression
[j] Delinquency

** $p \leq .01$

in Table 4; it is clear from the table that externalizing and internalizing behavior problems are strongly related in this sample.

In order to investigate the relationship of child temperament to other variables in the analyses, the three DOTS scales theoretically predicted to be most related to child externalizing behavior problems were combined into a child temperament risk variable. These three scales were activity level, approach/ withdrawal (the closest approximation from the DOTS questionnaire of sociability) and emotional reactivity. The child's scores on these three scales were standardized (i.e. converted to z-scores) and summed. Thus, high scores on this child temperament risk variable reflect a child with a high activity level who tends to approach others and who is highly reactive. As with the CBCL scales and Conners Hyperactivity Index, mother and father ratings on the child temperament risk variable were significantly positively correlated ($r = .45$, $p \leq .01$), so these ratings were combined and averaged.

In order to create a parent-child temperament mismatch variable which would capture the degree to which parent and child resembled each other on all three relevant DOTS temperament dimensions (i.e. the risky temperament triad of activity level, approach/withdrawal and reactivity), parent-child mismatch on each dimension was standardized (converted to a z-score) and summed. This procedure created a mother-child temperament mismatch variable for activity level, approach/withdrawal and reactivity and a father-child temperament mismatch variable for activity level, approach/withdrawal and reactivity. Mother-child temperament mismatch and father-child temperament mismatch were not correlated ($r = .06$, n.s.). However, since child outcome variables used in the study were to be a composite of mother and father ratings, it was felt that the same should be true of the parent-child temperament mismatch variable. Therefore, mother- child temperament mismatch and father-child temperament mismatch on activity level, approach/withdrawal and reactivity were added to create a summary variable which

reflected the child's similarity to both parents. Again, lower scores on this variable reflected a match, while higher scores reflected a mismatch between parent-child temperament.

Demographic Variables

A multivariate analysis of variance (MANOVA) was conducted on the following demographic variables: father age, mother age, target child age, years of education (mother), years of education (father), annual family income and number of children living in the household. MANOVA was used in order to control for Type 1 error which can arise when multiple comparisons are performed. Demographic information on the sample is presented in Table 5. The MANOVA revealed significant effects of group assignment (i.e. AAL, NAAL or control family) upon demographic variables [$F(14, 254)= 2.54$, $p \leq .01$]. Univariate analyses of variance (ANOVAs) showed significant group effects on Mother Age, Mother Education, Father Education, and Annual Family Income.

Post hoc comparisons between AAL, NAAL and control families using the Duncan Multiple Range Test (DMRT) identified which of the three groups differed significantly at the .05 level. Mothers from AAL families were significantly younger than both mothers from NAAL families and mothers from control families. Mothers from AAL families also had significantly less education than mothers from either NAAL or control families. Fathers from AAL families had significantly less education than did fathers from control families; fathers from NAAL families also had significantly less education than did control fathers. The annual family income in AAL families was lower than that of either NAAL families or of control families. However, age of the target child did not differ significantly across the three groups, nor did the number of children living in the household. Group differences are all consistent with earlier work done on the AAL /NAAL distinction (Wynblatt, 1990; Zucker, Ellis and Fitzgerald, 1992).

Because not all children in the sample were the same age at the time of data

collection, correlational analyses were also performed to assess the relationship between child age and child risk/ child outcome variables used in the analyses. If child age appeared to be strongly related to other variables, especially those outcome variables assessing child externalizing behavior problems, it was to be used as a covariate in the analyses. The relationship between child age and child risk/child outcome variables for the overall sample is shown in Table 6. The majority of the correlations were non-significant. However, two CBCL subscales which measure child behavior problems that might be expected to increase as a function of age did show low order, positive correlations with child age: Delinquency ($r = .17$, $p \leq .05$) and Depression ($r = .27$, $p \leq .01$). Likewise, the CBCL Internalizing Behavior Problems scale also showed a low order, positive correlation with child age ($r = .18$, $p \leq .05$). Because most of the relationships between child age and child risk/ child outcome variables were non-significant and because those which were significant were of a low order of magnitude, child age was not used as a covariate in the data analyses.

Comparison of AALs, NAALs and Controls: Differences on Child Risk Variables and Child Outcome Variables

MANOVAs were first used in order to explore main effects for group status (i.e. child from an AAL, NAAL or control family) upon child outcome variables and child risk variables. Correlational relationships between child risk and child outcome variables were then explored.

MANOVAs

Children from AAL, NAAL and control families were found to differ on child risk variables. Table 7 shows the results of a MANOVA, which demonstrated that group assignment was significantly related to differences in child risk variables [$F(10, 236) =$

Table 5

Demographic Characteristics of Subject Families.

[Multivariate F(14, 254) =2.52, $p \leq .01$]

	AALs (n=43)	NAALs (n=55)	Controls (n=30)	
		X(s.d.)		F
Father Age	30.9 (4.5)	32.0 (5.2)	32.6 (4.2)	1.15
Mother Age	28.1 (4.5)	30.1 (4.3)	30.8 (4.2)	3.99 * ab
Child Age	4.1 (0.9)	4.1 (1.0)	4.2 (0.9)	0.91
Mother Education (in years)	12.1 (1.4)	13.2 (2.3)	13.6 (1.8)	6.19 ** ab
Father Education (in years)	12.0 (1.6)	12.7 (2.0)	14.2 (2.0)	12.10 ** bc
Annual Family Income	$23,988 (15,855)	$31,725 (16,810)	$38,774 (15,747)	7.49 ** ab
Number of Children in the Household	2.3 (0.8)	2.3 (0.9)	2.5 (0.9)	0.53

** $p \leq .01$ * $p \leq .05$

a AALs < NAALs, Duncan Multiple Range Test
b AALs < Controls, Duncan Multiple Range Test
c NAALs < Controls, Duncan Mulitiple Range Test

Table 6

Correlations Between Child Age and Risk/ Outcome Variables for Overall Sample (n=128).

	Child Age r
Risk Variables	
Family Expression of Alcoholism	-.07
Child Risk Temperament	-.09
Parent-Child Temperament Mismatch	-.02
Parental Aggression to Child	-.06
Contextual Aggression	-.07
Outcome Variables	
CBCL Total Behavior Problems	.09
CBCL Externalizing Behavior Problems	.05
CBCL Schizoid	-.03
CBCL Aggression	.02
CBCL Delinquency	.17 *
CBCL Internalizing Behavior Problems	.18 *
CBCL Depression	.27 **
CBCL Immaturity	-.03
CBCL Social Withdrawal	.16
CBCL Somatic Complaints	-.01
Connors Hyperactivity Index	-.05

* $p \leq .05$ ** $p \leq .01$

5.57, $p \leq .001$]. Univariate ANOVAs revealed that the three groups differed significantly on the family expression of alcoholism, child temperament risk , parental aggression toward the child and contextual aggression variables. In addition, univariate ANOVAs revealed a trend toward a significant difference on the parent-child temperament variable.

Post hoc comparisons using the DMRT indicating that children from AAL families had significantly higher scores than children from NAAL families and children from control families on FEA. Contextual aggression was also higher for children from AAL families than for children from NAAL or control families. Children of AALs scored significantly higher than children of controls but not children of NAALs on child temperament risk and parental aggression toward the child. Children of NAALs differed from children of controls only on the family expression of alcoholism variable, where they scored significantly higher.

Children from AAL, NAAL and control families were also found to differ on child outcome variables which assess behavior problems. Table 8 shows the results of a MANOVA, which demonstrated that group assignment was significantly related to level of child behavior problems [F (22, 246) = 1.72, $p \leq .05$]. The univariate ANOVAs showed significant group effects upon the CBCL Total Behavior Problem scale, Externalizing Behavior Problems scale, Internalizing Behavior Problems scale, Schizoid scale, Aggression scale, Delinquency scale, Depression scale and Immaturity scale. Univariate ANOVAs also revealed a trend toward significant group differences on the CBCL Social Withdrawal scale and the Conners Hyperactivity Index.

Post hoc comparisons between AALs, NAALs and controls using the Duncan Multiple Range Test (DMRT) identified which of the three groups differed significantly at the .05 level. In general, children from AAL families had significantly more child behavior problems as indexed by the CBCL Total Behavior Problems scale than either children from NAAL or control families. No significant differences between children from NAAL and

Table 7

Differences Between Children from AAL , NAAL and Control Families on Child Risk Variables.

	[Multivariate F (10, 236) = 5.57, $p \leq .001$)]			
	AALs (n=43)	NAALs (n=55)	Controls (n=30)	
		X(s.d.)		F
Family Expression of Alcoholism	.42 (.32)	.29 (.24)	.09 (.15)	14.38 *** abc
Parent Aggression Toward the Child	.77 (2.52)	.56 (2.58)	-.81 (3.24)	3.22 * b
Contextual Aggression	2.88 (4.42)	-.51 (3.37)	-2.32 (2.27)	19.33 *** ab
Child Temperament Risk	.30 (1.42)	-.01 (1.52)	-.71 (1.60)	3.80 * b
Parent-Child Temperament Mismatch	.31 (2.47)	.03 (2.28)	-1.07 (2.74)	2.83 +

** $p \leq .01$ * $p \leq .05$ + $p \leq .10$

a AALs > NAALs, Duncan Multiple Range Test
b AALs > Controls, Duncan Multiple Range Test
c NAALs > Controls, Duncan Multiple Range Test

Table 8

Differences Between Children from AAL , NAAL and Control Families on Child Outcome Variables.

[Multivariate F (22, 246) = 1.72, $p \leq .05$)]

	AALs (n=43)	NAALs (n=55)	Controls (n=30)	
		X(s.d.)		F
CBCL Total Behavior Problems	38.79 (14.00)	31.81 (13.65)	28.65 (12.81)	5.64 ** ab
CBCL Broad Band Factors				
Externalizing Behavior Problems	19.43 (8.03)	15.24 (8.36)	13.28 (6.99)	5.99 ** ab
Internalizing Behavior Problems	14.74 (6.26)	11.02 (5.95)	10.10 (6.03)	6.68 ** ab
CBCL Narrow Band Factors				
Schizoid	1.42 (1.40)	1.07 (1.16)	.72 (.76)	3.23 * b
Aggression	16.35 (6.23)	13.19 (6.70)	11.83 (5.86)	5.12 ** ab
Delinquency	2.01 (1.75)	1.11 (1.32)	.93 (1.05)	6.84 ** ab
Depression	7.50 (3.90)	5.73 (3.33)	5.23 (3.52)	4.51 * ab
Immaturity	4.77 (2.30)	3.38 (2.04)	3.28 (2.24)	6.31 ** ab
Social Withdrawal	3.41 (2.06)	2.74 (1.94)	2.33 (1.89)	2.85 +
Somatic Complaints	.99 (.84)	.90 (.90)	.67 (.79)	1.28
Conners Hyperactivity Index	9.08 (4.91)	7.71 (4.52)	6.60 (3.43)	2.90 + b

** $p \leq .01$ * $p \leq .05$ + $p \leq .10$

a AALs > NAALs, Duncan Multiple Range Test

b AALs > Controls, Duncan Multiple Range Test

control families were found.

Children from AAL families demonstrated significantly more externalizing behavior problems than did children from NAAL or control families. As shown in Table 8, children of AALs showed significantly higher scores on both the CBCL Externalizing Behavior Problems scale than did children of NAALs or controls, as well as on the Aggression and Delinquency scales. Children of AALs also had significantly higher scores on the Schizoid scale than did children of control but not NAAL families. Finally, children from AAL families had significantly higher scores on the Conners Hyperactivity Index than did children from control but not NAAL families.

However, children from AAL families also scored significantly higher on measures of internalizing behavior problems. As shown in Table 8, children of AALs showed significantly higher scores on the CBCL Internalizing Behavior Problems scale than did children of NAALs or controls, as well as on the Depression and Immaturity scales.

Correlational Analyses

As with MANOVAs, correlational analyses also revealed differences on the various risk and outcome variables for children of AALs, NAALs and controls. The relationship between family expression of alcoholism and child temperament risk is presented in Table 9. For children from AAL families, FEA was found to be significantly positively correlated with child temperament risk (r=.51, $p \leq .01$). For children from NAAL families and control families, correlations between FEA and child temperament risk were non-significant.

Furthermore, the magnitude of the correlation between family expression of alcoholism and child temperament risk showed a trend toward being significantly higher for children of AALs than for children of NAALs (z=1.77, $p \leq .10$). The magnitude of the correlation between FEA and child temperament risk also showed a tend toward being significantly higher for children from AAL families than for children from control families (z= 1.85,

Table 9

Correlations Between Family Expression of Alcoholism and Child Temperament Risk.

	r
AALs (n=43)	.51 ** ab
NAALs (n=55)	.19 a
Controls (n=30)	.10 b

** $p \leq .01$

ab Correlations with this superscript show a trend toward significant difference, $p \leq .10$

Note. Child temperament risk is a summation of three DOTS scales: activity level, approach /withdrawal and reactivity.

$p \leq .10$).

In addition to being related to child temperament risk for children from AAL families but not for children from NAAL or control families, family expression of alcoholism was also more strongly related to child behavior problem variables for children of AALs. Table 10 shows the relationship between family expression of alcoholism and child behavior problems. For children of AALs, FEA was significantly positively correlated with the CBCL Total Behavior Problems scale ($r = .50$, $p \leq .01$) and with a number of measures of externalizing behavior problems: the CBCL Externalizing Behavior Problems scale ($r = .49$, $p \leq .01$), the Schizoid scale ($r = .41$, $p \leq .01$), the Aggression scale ($r = .48$, $p \leq .01$), and the Delinquency scale ($r = .39$, $p \leq .05$), as well as the Conners Hyperactivity Index ($r = .60$, $p \leq .01$). In addition, family expression of alcoholism was significantly correlated with measures of internalizing behavior problems for children of AALs including the CBCL Internalizing Behavior Problems scale ($r = .36$, $p \leq .05$) and the Depression scale ($r = .32$, $p \leq .05$).

For children of NAALs, all correlations between family expression of alcoholism and child behavior problems were non-significant, with the exception of the correlation between FEA and the CBCL Somatic Complaints scale ($r = .27$, $p \leq .05$). For children from control families, all relationships between child behavior problems and FEA were non-significant.

Further evidence to support the notion that family expression of alcoholism is more strongly related to child behavior problems among children of AALs than among children of NAALs or children of controls emerged from comparisons of the magnitude of the correlations between FEA and child behavior problems for the three groups. The magnitude of the correlation between family expression of alcoholism and CBCL Total Behavior Problems was significantly higher for children of AALs than for children of controls ($z = 2.12$, $p \leq .05$) and showed a trend toward being significantly higher

for children from AAL families than children from NAAL families (z=1.75, $p \leq .10$).

The magnitude of the correlations between FEA and several of the measures of externalizing behavior problems were also significantly higher for children of AALs than children of NAALs. This was true for the CBCL Externalizing Behavior Problems scale (z=1.98, $p \leq .05$), the Aggression scale (z=2.16, $p \leq .05$) and the Conners Hyperactivity Index (z=2.53, $p \leq .01$).

Correlations between the CBCL Somatic Complaints scale, an internalizing measure, and family expression of alcoholism were significantly lower for children from AAL families than for children from NAAL families (z=2.58, $p \leq .01$).

Similar to comparisons of children of AALs and NAALs, comparisons between children of AALs and children of controls revealed significant differences in the magnitude of the correlation between FEA and child behavior problems on several measures of externalizing behavior problems, namely the CBCL Delinquency scale (z= 2.17, $p < .05$) and the Conners Hyperactivity Index (z=2.57, $p < .01$). There were also trends toward a significant difference in the magnitude of the correlation between FEA and the CBCL Externalizing Behavior Problems scale (z= 1.82, $p < .10$) and FEA and the CBCL Aggression scale (z= 1.77, $p < .10$) for children of AALs versus children of controls. Correlations between the CBCL Internalizing Behavior Problems scale and family expression of alcoholism also showed a trend toward being significantly higher for children of AALs than for children of controls (z=1.70, $p < .10$).

No significant differences were found in the magnitude of the correlations between FEA and child behavior problems for children from NAAL families as compared to children from control families.

To summarize, family expression of alcoholism was found to be significantly positively correlated with various CBCL scales and with the Conners Hyperactivity Index for children of AALs but not for children of NAALs or children of controls. Family

expression of alcoholism appeared to be particularly strongly related to measures of externalizing behavior problems for children from AAL families. Moreover, FEA appeared to be more strongly related to child behavior problems for children of AALs than for children of NAALs and children of controls, since the magnitude of the correlations between FEA and child behavior problems tended to be higher for children of AALs. Again, this was particularly true of measures of externalizing behavior problems.

Correlations between child temperament risk and child behavior problem variables are presented in Table 11. For children of AALs, child temperament risk was significantly positively correlated with the CBCL Total Behavior Problems scale (r=.41, $p \leq .01$), Externalizing Behavior Problems scale (r= .41, $p \leq .01$), Aggression scale (r=.41, $p \leq .01$), and Immaturity scale (r=.33, $p \leq .05$), as well as with the Conners Hyperactivity Index (r=.63, $p \leq .01$). For children of NAALs, child temperament risk was significantly positively correlated with the CBCL Total Behavior Problems scale (r=.39, $p \leq .01$), Externalizing Behavior Problems scale (r=.47, $p \leq .01$), Internalizing Behavior Problems scale, Schizoid scale (r= .31, $p \leq .05$), Aggression scale (r=.48, $p \leq .01$), Delinquency (r=.30, $p \leq .05$) and Immaturity scale (r=.34, $p \leq .05$), as well as with the Conners Hyperactivity Index (r= .50, $p \leq .01$), For children from control families, child temperament risk was significantly positively correlated only with the CBCL Schizoid scale (r=.47, $p \leq .05$) and with the Conners Hyperactivity Index (r=.36, $p \leq .05$). However, the magnitude of the relationships between child temperament risk and child behavior problems were not significantly different between children of AALs, NAALs and controls. It is likely that small sample size in the control group (i.e. lack of power) may partly account for the paucity of significant correlations, given that the relationships in this group are generally positive but of slightly lower magnitude than those in the other two groups. Overall, these analyses suggest that child temperament risk is related to child behavior problems among all the groups.

Table 10

Correlations Between Family Expression of Alcoholism and Child Behavior Problem Variables.

	AALs (n=43)	NAALs (n=55)	Controls (n=30)
		r	
FEA and CBCL Total Behavior Problems	.50 ** bc	.18 c	.02 b
FEA and CBCL Broad Band Factors			
Externalizing Behavior Problems	.49 ** bc	.12 b	.08 c
Internalizing Behavior Problems	.36 * c	.20	-.05 c
FEA and CBCL Narrow Band Factors			
Schizoid	.41 **	.23	.21
Aggression	.48 ** bc	.07 b	.08 c
Delinquency	.39 * b	.19	-.13 b
Depression	.32 *	.22	.03
Immaturity	.30 c	.14	-.13 c
Social Withdrawal	.30	.08	-.07
Somatic Complaints	-.26 a	.27 * a	-.09
FEA and Conners Hyperactivity Index	.60 ** a	.16 a	.05 a

** $p \leq .01$ * $p \leq .05$

a correlations with this superscript differ significantly from one another, $p \leq .01$

b correlations with this superscript differ significantly from one another, $p \leq .05$

c correlations with this superscript show a trend toward differing significantly from one another, $p \leq .10$

Table 11

Correlations Between Child Temperament Risk and Child Behavior Problem Variables.

	AALs (n=43)	NAALs (n=55)	Controls (n=30)
		r	
Temp Risk and CBCL Total Behavior Problems	.41 **	.39 **	.19
Temp Risk and CBCL Broad Band Factors			
Externalizing Behavior Problems	.41**	.47 **	.32
Internalizing Behavior Problems	.19	.26 *	-.03
Temp Risk and CBCL Narrow Band Factors			
Schizoid	.23	.31*	.47 *
Aggression	.41 **	.48 **	.28
Delinquency	.24	.30 *	.17
Depression	.05	.21	-.07
Immaturity	.33 *	.34 **	.04
Social Withdrawal	.10	.10	-.10
Somatic Complaints	-.21	.09	.11
Temp Risk and Conners Hyperactivity Index	.63 **	.50 **	.36 *

** $p \leq .01$ * $p \leq .05$

Note. Child temperament risk is a summation of three DOTS scales: activity level, approach /withdrawal and reactivity.

Table 12 shows the correlations between the parent-child temperament mismatch variable and child outcome. All the correlations between parent-child temperament mismatch variable on the risky temperament triad and child behavior problem variables were non-significant among children from AAL families, although there was some suggestion that the correlations were in the predicted direction (i.e. negative), suggesting that high match was related to the appearance of behavior problems. For children of NAALs, only the CBCL Social Withdrawal scale was significantly positively correlated with parent-child temperament mismatch. However, for children of controls, the parent-child temperament mismatch variable was significantly positively correlated with the CBCL Total Behavior Problems scale (r=.41, $p \leq .05$), Externalizing Behavior Problems scale (r=.40, $p \leq .05$), Internalizing Behavior Problems scale (r=.42, $p \leq .05$), Schizoid scale (r=.46, $p \leq .05$), Delinquency scale (r=.49, $p \leq .05$), Depression scale (r=.41, $p \leq .05$) and the Immaturity scale (r=.41, $p \leq .05$). This supports the notion that mismatch between control children and their parents is related to greater incidence of child behavior problems.

In addition, comparisons of the magnitude of the correlations between parent-child temperament mismatch and child behavior problems for children from AAL, NAAL and control families showed significant differences among the three groups. Among children of controls, the relationship between CBCL Total Behavior Problems and the parent-child temperament mismatch variable was significantly higher than it was for children of AALs (z=2.35, $p \leq .05$) ; this was also true for the CBCL Internalizing Behavior Problems scale (z=2.56, $p \leq .01$), Schizoid scale (z= 2.51, $p \leq .05$), Delinquency scale (z= 2.30, $p \leq .05$), Depression scale (z=2.68, $p \leq .01$) and the Social Withdrawal scale (z=2.00, $p \leq .05$). There were also trends toward a significant difference in the magnitude of the correlation between the parent-child temperament mismatch variable and the CBCL Externalizing Behavior Problems scale (z= 1.78, $p \leq .10$) as well as between parent-child temperament

mismatch and the CBCL Immaturity scale (z= 1.90, $p \leq .10$) for children of controls versus children of AALs. Again, the correlations for children of controls tended to be significantly higher.

The magnitude of the correlations between the parent-child temperament mismatch variable and child behavior problems did not differ significantly for children of NAALs and children of controls. This was generally true for children from AAL families as compared to children from NAAL families, although the magnitude of the correlation between parent-child temperament mismatch and CBCL Social Withdrawal did differ for the two groups (z=2.64, $p \leq .01$). Children of AALs showed a negative relationship between Social Withdrawal and parent-child temperament mismatch while children of NAALs showed a relationship that was positive as well as significantly different.

To summarize, parent-child temperament mismatch was significantly positively correlated with child behavior problems for children of controls, but not for children of NAALs or AALs. In addition, there were differences in the magnitude of the correlations between the parent-child temperament mismatch variable and child behavior problems for children from control families as compared to children from AAL families, with mismatch positively correlated with child behavior problem variables among children of controls, and uncorrelated or negatively correlated with child behavior problems among children of AALs.

The relationship between contextual aggression and child behavior problem variables is shown in Table 13. For children from AAL families, contextual aggression was significantly positively correlated with the Conners Hyperactivity Index (r= .35, $p \leq .05$) and significantly negatively correlated with CBCL Somatic Complaints (r= -.31, $p \leq .05$). For children from NAAL families, contextual aggression was significantly positively correlated with the CBCL Total Behavior Problems scale (r= .32, $p \leq .05$), Externalizing Behavior Problems scale (r=.33, $p \leq .05$), Internalizing Behavior Problems scale (r=.26, p

Table 12

Correlations Between Parent-Child Temperament Mismatch on the Risky Temperament Triad and Child Behavior Problem Variables.

	AALs (n=43)	NAALs (n=55)	Controls (n=30)
		r	
Temperament Mismatch and CBCL Total Behavior Problems	-.15 [b]	.19	.41 * [b]
Temperament Mismatch and CBCL Broad Band Factors			
Externalizing Behavior Problems	-.02 [c]	.20	.40 * [c]
Internalizing Behavior Problems	-.19 [a]	.23	.42 * [a]
Temperament Mismatch and CBCL Narrow Band Factors			
Schizoid	- .13 [b]	.09	.46 * [b]
Aggression	.00	.20	.33
Delinquency	-.04 [b]	.13	.49 * [b]
Depression	-.23 [a]	.21	.41 * [a]
Immaturity	-.04 [c]	.21	.41 * [c]
Social Withdrawal	-.24 [ab]	.30 * [a]	.25 [b]
Somatic Complaints	.11	.11	.11
Temperament Mismatch and Conners Hyperactivity Index	.06	.18	-.23

** $p \leq .01$ * $p \leq .05$

a correlations with this superscript differ significantly from one another, $p \leq .01$

b correlations with this superscript differ significantly from one another, $p \leq .05$

c correlations with this superscript show a trend toward differing significantly from one another, $p \leq .10$

Table 13

Correlations Between Contextual Aggression and Child Behavior Problem Variables.

	AALs (n=43)	NAALs (n=55)	Controls (n=30)
		r	
Contextual Aggression and CBCL Total Behavior Problems	.17	.32 *	.25
Contextual Aggression and CBCL Broad Band Factors			
Externalizing Behavior Problems	.06	.33 *	.31
Internalizing Behavior Problems	.08	.26 *	.19
Contextual Aggression and CBCL Narrow Band Factors			
Schizoid	-.11	.12	.01
Aggression	.05	.33 *	.32
Delinquency	.26	.29 *	.27
Depression	.10	.26 *	.19
Immaturity	.16	.31 *	.27
Social Withdrawal	.03	.12	-.06
Somatic Complaints	-.31 * bc	.08 bc	.10 c
Contextual Aggression and Conners Hyperactivity Index	.35 *	.28 *	.28

* $p \leq .05$

bc correlations with this superscript show a trend toward differing significantly from one another, $p \leq .10$

$\leq .05$), Aggression Scale ($r = .33$, $p \leq .05$), Delinquency scale ($r = .29$, $p \leq .05$), Depression scale ($r = .26$, $p \leq .05$) and Immaturity scale ($r = .31$, $p \leq .05$), as well as the Conners Hyperactivity Index ($r = .28$, $p \leq .05$).

There were no significant relationships between contextual aggression and child behavior problems for children from control families. However, there was also little indication that the magnitude of the correlations between contextual aggression and child behavior problem variables differed between the groups. Only for the CBCL Somatic Complaints scale did a trend toward a significant difference emerge between children of AALs and controls ($z = 1.68$, $p \leq .10$) and between children of AALs and children of NAALs ($z = 1.90$, $p \leq .10$). Lack of significant relationships between contextual aggression and child behavior problems in the control group may again have been affected by low power, but the existing data also suggest that the effect is a comparatively weak one.

Table 14 presents the relationship between parental aggression toward the child and child behavior problem variables. For children from AAL families, the CBCL Delinquency scale was significantly positively correlated with parental aggression toward the child ($r = .36$, $p \leq .05$), as was the Immaturity scale ($r = .35$, $p \leq .05$). For children from NAAL families, no significant relationships emerged. For children from control families, CBCL Delinquency was significantly positively correlated with parent aggression toward the child ($r = .48$, $p \leq .01$).

Comparisons of the magnitude of the correlations between parental aggression toward the child and child behavior problems for children of AALs, NAALs and controls showed few differences. However, there was a trend toward a significant difference for children from NAAL families and children of controls on the CBCL Delinquency scale, with Delinquency and parental aggression toward the child more strongly related for children of controls.

Table 14

Correlations Between Parental Aggression Toward Child and Child Behavior Problem Variables.

	AALs (n=43)	NAALs (n=55)	Controls (n=30)
		r	
Aggression Toward Child and CBCL Total Behavior Problems	.24	.06	.36
Aggression Toward Child and CBCL Broad Band Factors			
Externalizing Behavior Problems	.22	.14	.31
Internalizing Behavior Problems	.17	.04	.30
Aggression Toward Child and CBCL Narrow Band Factors			
Schizoid	.06	.06	.19
Aggression	.18	.14	.27
Delinquency	.36 *	.10 a	.48 ** a
Depression	.07	-.09	.34
Immaturity	.35 *	.15	.19
Social Withdrawal	.08	.07	.20
Somatic Complaints	-.01	.16	.08
Aggression Toward Child and Conners Hyperactivity Index	.15	.13	.20

** $p \leq .01$ * $p \leq .05$

[a] correlations with this superscript show a trend toward differing significantly from one another, $p \leq .10$

Path Analyses

The results presented so far provide clear evidence of differences in patterning of relationships, and therefore process, among the three groups. On these grounds, path analytic procedures were next used in order to better understand the underlying causal processes linking child risk variables to child outcome variables. Path analysis is an application of multiple regression in which the entire structure of linkages between independent and dependent variables can be described (Hunter and Gerbing, 1982).

PATH (Hunter and Hamilton, 1992) was used to test causal models in these analyses. PATH uses a multiple regression procedure (least squares analysis) to determine the influence of each variable on others that follow it in a hypothesized path. For example, if a variable has only one antecedent variable, then the path coefficient is the simple correlation between the dependent variable and its antecedent. If there is multiple causation, then the path coefficients are equal to beta weights. Unlike programs designed purely for regression analyses, however, PATH also provides indicators of fit for the overall model. This is done through use of a chi-square goodness of fit test, where a test demonstrating no significant difference supports the model. Finally, PATH allows correction for attenuation of each variable used in the path model, based upon estimates of the variable's reliability.

The theoretical model tested in these path analyses is presented in Figure 2. The dependent variable chosen for the model was the CBCL Externalizing Behavior Problems scale. This variable was chosen because as a broad-band factor from the CBCL, it captures a broader display of externalizing behavior problems than other measures of externalization used in the study. It was highly correlated with other measures of externalizing behavior used in the study (e.g. .98 with CBCL Aggression, .76 with CBCL Delinquency, .80 with Conners Hyperactivity Index for the overall sample).

The path model shown in Figure 2 was first tested for the overall sample. Although,

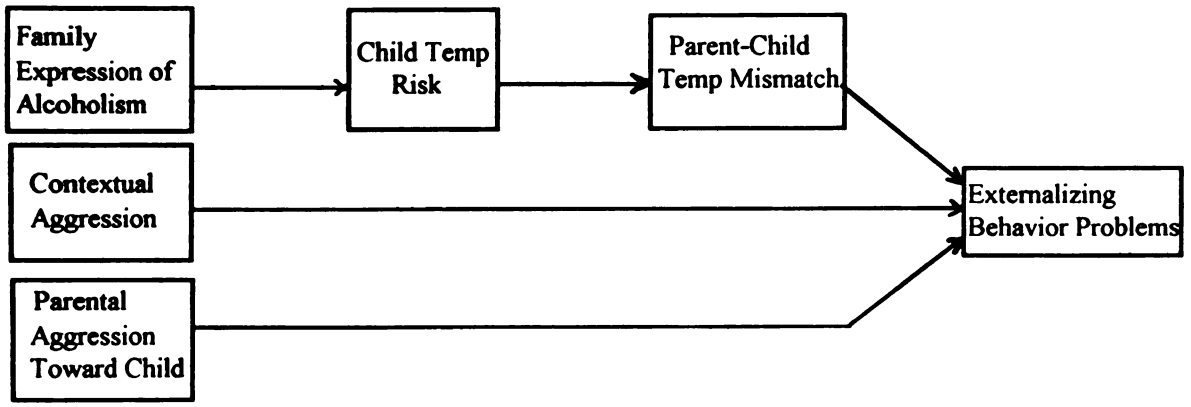


Figure 2
Hypothesized Path Model of Child Risk Variables Which Predict Externalizing Behavior Problems.

as already noted, analyses presented so far clearly point to the appropriateness of creating different models for children from AAL, NAAL and control families, it was considered important to generate a test of the model for the overall sample in order to provide a baseline for comparison. In addition, first testing the path model for the overall sample provided the benefit of larger sample size.

The path model for all children in the sample is shown in Figure 3. The chi-square statistic for the model was non-significant, indicating that the model fit the data (X^2 with 5 df = 8.79, n.s.) The majority of paths in the model were significant, except for the path from parental aggression toward the child to externalizing behavior problems. The path between parent-child temperament mismatch and externalizing behavior problems was only marginally significant. This model accounted for 21 percent of the variance in child behavior problems.

The model shows that degree of parent-child temperament mismatch had a direct effect upon externalizing behavior problems, as did contextual aggression. Child risk temperament had an indirect effect upon externalizing behavior problems through its relationship to degree of temperament mismatch; family expression of alcoholism had an indirect effect upon externalizing behavior problems through its relationship to child temperament risk. Therefore, for the overall sample, the hypothesized path appeared to acceptably model processes leading to childhood externalizing behavior problems, with the exception of the proposed link between parental aggression toward the child and externalization.

PATH was next used to examine separate path models for children from AAL, NAAL and control families. Figure 4 shows the test of the hypothesized path model for children of AALs. This model accounted for 7 percent of the variance in child externalizing behavior problems. However, none of the variables were significantly predictive of child behavior problems. In addition, the goodness of fit statistics showed

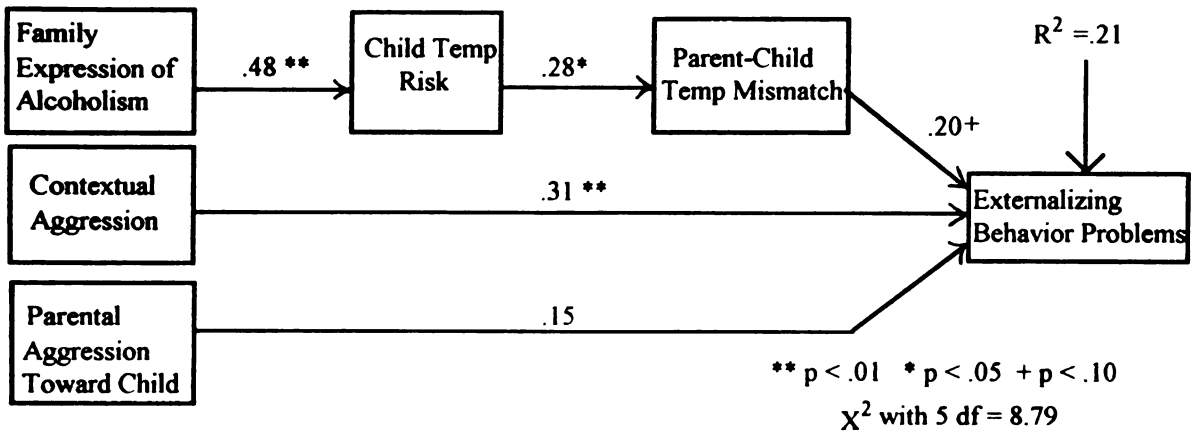


Figure 3
Path Model for Overall Sample (n=128).

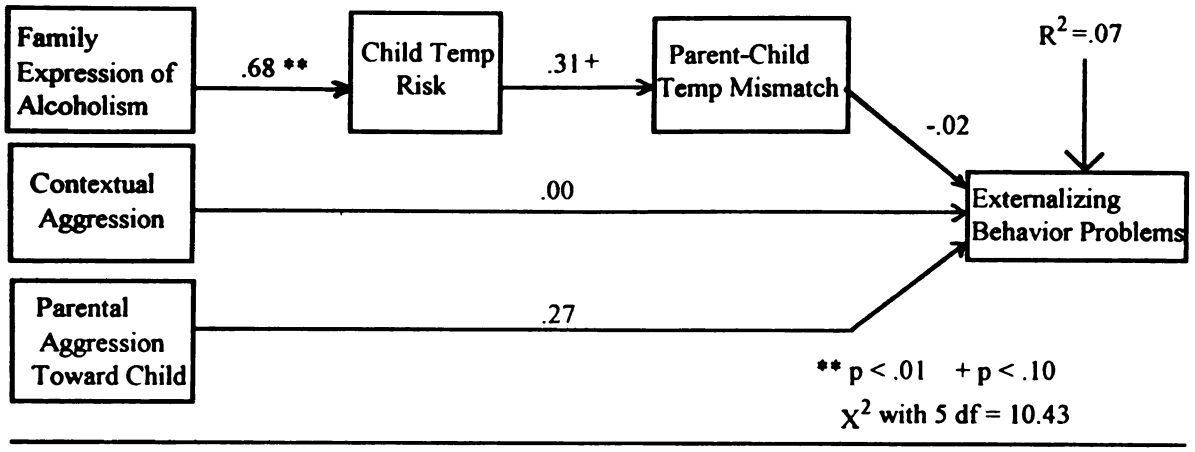


Figure 4
Path Model for Children From AAL Families (n=43).

a trend toward significance, (X^2 with 5 df = 10.43, $p \leq .10$), indicating that this model might not adequately fit the data. Model fit statistics also suggested that a direct path should be included from child temperament risk to externalizing behavior problems for children of AALs. Finally, since contextual aggression appeared to be unrelated to externalizing behavior problems for children of AALs, it was dropped from the model.

An alternate, trimmed model is presented in Figure 5 which appeared to adequately fit the data (X^2 with 1 df =1.00, n.s.). The difference chi-square for the two models was significant (X^2 with 4 df = 9.43, $p \leq .05$), indicating that the second model was a better fit for children of AALs. Furthermore, the alternate model accounted for 29 percent of the variance in child behavior problems, as compared to the first model which only accounted for 7 percent.

In the alternative model, child temperament risk was significantly predictive of externalizing behavior problems. Child temperament risk also showed a trend toward being significantly related to parent-child temperament mismatch. However, degree of parent-child temperament mismatch was not significantly predictive of externalizing behavior problems, although the path coefficient was in the expected direction (i.e. negative). Family expression of alcoholism was again indirectly predictive of externalizing behavior problems through its strong relationship with child temperament risk . In this model, parental aggression toward the child was still not significantly predictive of child behavior problems.

Figure 6 shows the test of the hypothesized path model for children from NAAL families. As with the overall sample, this model fit the data adequately (X^2 with 5 df = 4.01, n.s.) for children of NAALs. The model accounted for 22 percent of the variance in child externalizing behavior problems.

In this model, only contextual aggression was predictive of externalizing behavior problems. However, model fit statistics suggested the need for a direct link between child

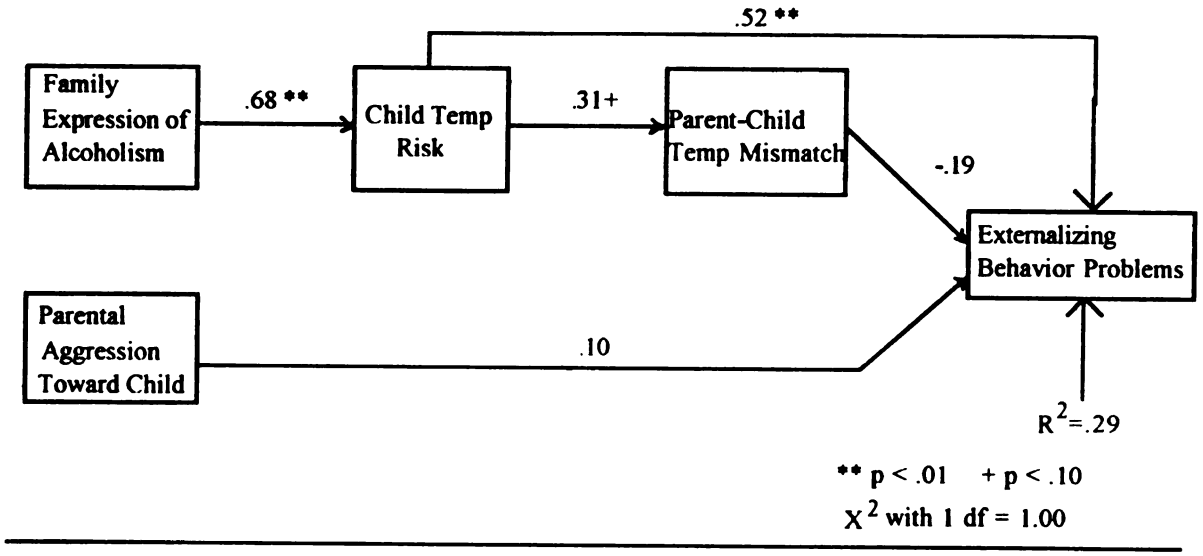


Figure 5
Alternate, Best Fit Path Model for Children From AAL Families (n=43).

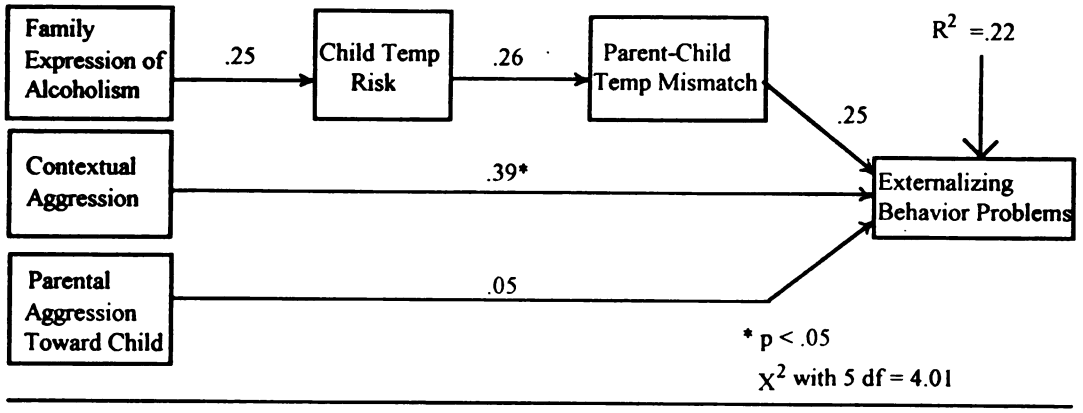


Figure 6
Path Model for Children From NAAL Families (n=55).

temperament risk and externalizing behavior problems. Also, since the magnitude of the correlation between parent aggression toward the child and externalizing behavior problems was close to zero, it was dropped from the model.

An alternate, trimmed model is presented in Figure 7 which also adequately fit the data (X^2 with 1 df =0.19, n.s.) The difference chi-square for the two models was non-significant (X^2 with 4 df =3.82, n.s.), suggesting no statistical preference for the second model. However, the alternate model accounted for 44 percent of the variance in child behavior problems as compared to 22 percent for the first model and therefore may be better.

Finally, Figure 8 shows the the test of the hypothesized path model for children from control families. The hypothesized model appeared to adequately fit the data for children of controls (X^2 with 5 df = 1.62, n.s.). It accounted for 32 percent of the variance in child externalizing behavior problems. The model showed only degree of parent-child temperament mismatch to be predictive of externalizing child behavior problems, and the relationship was weak ($p \leq .10$). As with children of NAALs, however, parental aggression toward the child appeared to be uncorrelated with externalizing behavior, Therefore, it was deleted from the model.

Figure 9 shows the alternate trimmed model. As expected, the model fit the data adequately (X^2 with 4 df = .60, n.s.) and the difference chi-square for the two models was non-significant (X^2 with 1 df =1.02, n.s.), indicating no statistical preference for the second model. The alternate model accounted for no more of the variance than the first model (32 percent). However, when parental aggression toward the child was dropped from the model, parent-child temperament mismatch became significantly predictive of child externalizing behavior problems and contextual aggression showed a trend toward significance. The second model appeared to be preferable for children of controls.

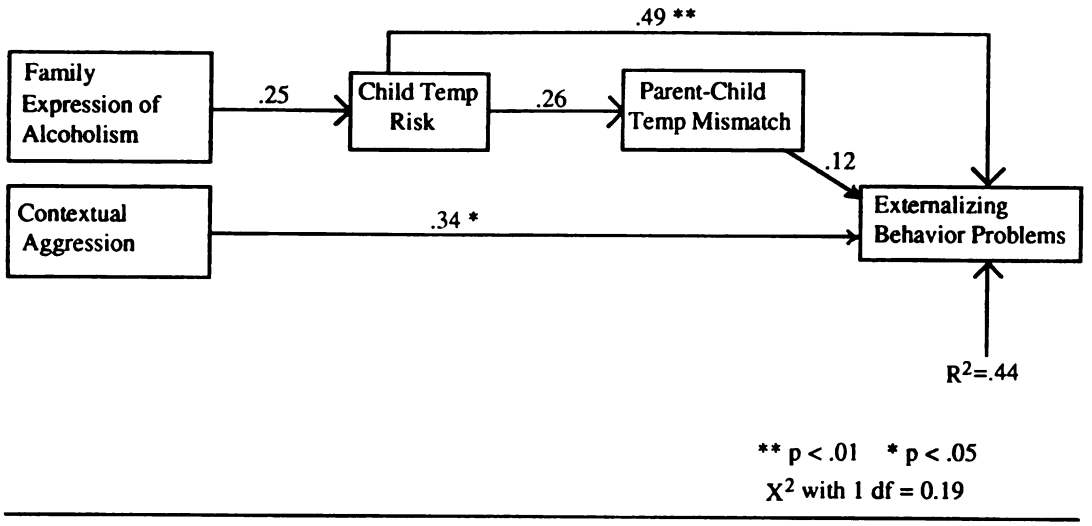


Figure 7
Alternate Path Model for Children From NAAL Families (n=55).

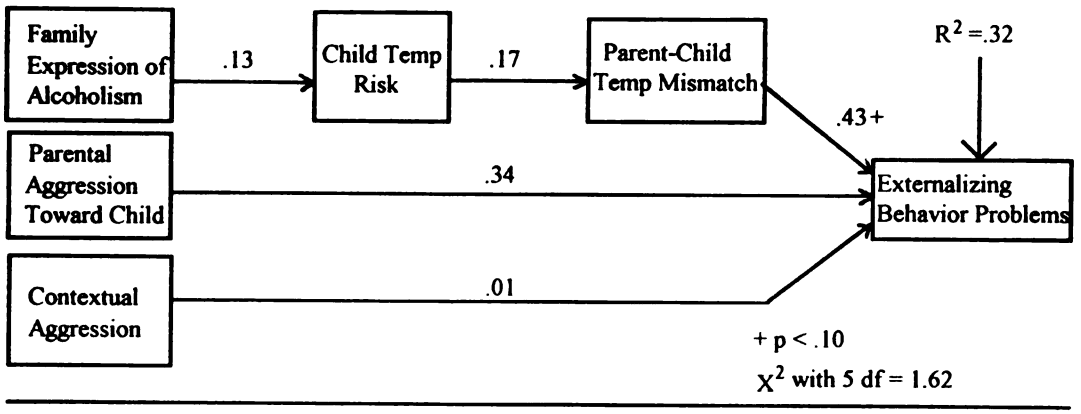


Figure 8
Path Model for Children From Control Families (n=30).

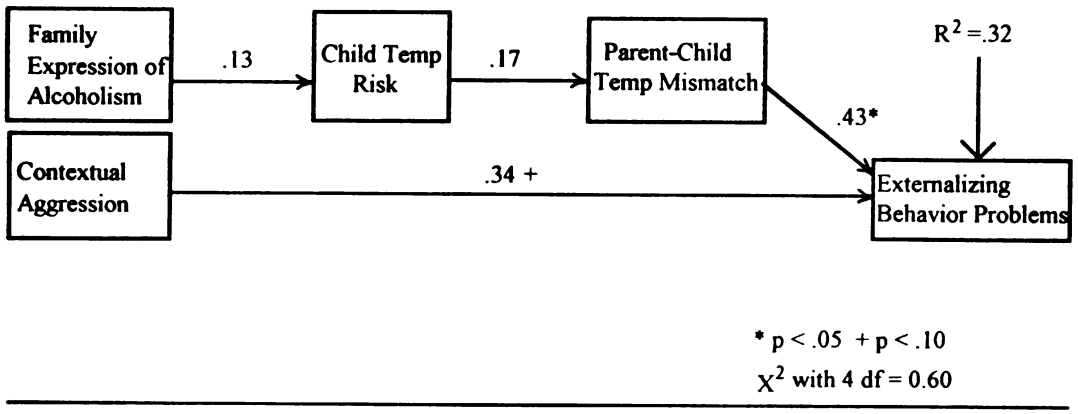


Figure 9
Alternate Path Model for Children From Control Families (n=30).

Discussion

There has been renewed interest in devising typological schemes which can be used to classify alcoholics, due to the gradual realization among alcohol researchers that various subtypes of alcoholism may each have a different onset, course and prognosis. Simultaneously, research on the etiology of alcoholism has increased substantially, particularly with groups known to be at risk for alcoholism such as children of alcoholics. However, conceptual integration of these two areas of study remains poor. Therefore, few studies of COAs have taken into account the notion that risk for alcoholism among children of alcoholics may differ depending upon which type of alcoholism a child is at risk for and that the latter may largely be influenced by the alcoholic subtype of the child's parent(s).

The present study demonstrates that beginning in the preschool years, children of antisocial alcoholics are exposed to substantially higher levels of various factors which place them at risk for child behavior problems (and ostensibly for alcoholism in later life) than are children of non-antisocial alcoholics or children of non-alcoholic controls. It is already clear from earlier research (e.g. Cadoret, Troughton and Widmer, 1984; Schuckit, 1985) that fathers in AAL families have more alcohol-related life difficulties, are more antisocial and suffer higher rates of depression and anxiety than do parents in NAAL or control families. Thus, children of AALs are exposed to parents who display significantly more psychopathology than is true for children of NAALs. In addition, this study confirmed prior findings by Wynblatt (1990) that AAL families have lower incomes than do NAAL or control families and that parents in such families are less educated; low socioeconomic status is known to be related to behavior problems in childhood (Rutter, Yule, Quinton , Rowlands, Yule and Berger, 1975) as well as to alcohol problems in adolescence and adulthood (Zucker, 1987a; Cahalan and Cisin, 1976).

Results of the present study also demonstrated that children of AALs are more

vulnerable to child behavior problems due to a number of other risk variables. Family expression of alcoholism is substantially higher for children of AALs than for children of NAAL or controls, indicating that children of AALs have a denser alcoholic pedigree which imparts both a higher genetic loading for alcoholism and more exposure to alcoholism in the rearing environment. Children from AAL families also appear to be the targets of more aggression from their parents than children of controls. Furthermore, they are exposed to more contextual aggression, including marital conflict (both verbal and physical), than are children from NAAL or control families. Finally, children of AALs have the highest scores on the temperament risk triad, meaning that they have the highest activity levels, are the most approaching of others and the most reactive. Again, this indicates that children of AALs are more likely to have a temperament style which has been proposed to be a risk factor for alcoholism

Children from NAAL families, on the other hand, differ little from controls on those risk factors investigated by the present study. Socioeconomics are similar to those of children from control families, although NAAL fathers are less educated than control fathers. The only other risk variable which differentiates children of NAALs from children of controls is family expression of alcoholism, with children of NAALs having a denser family history of alcoholism than children of controls.

Given this information on differences in child risk variables among the three groups, it is not surprising to find that by preschool age, children from AAL , NAAL and controls families already show substantially different adaptations. In general, children of AALs show increased rates of child behavior problems while children of NAALs do not differ significantly from controls. One of the main hypotheses of this study was that children of AALs would have higher rates of child externalizing behavior problems than children of NAALs or controls. In fact, children of AALs do have significantly more externalizing behavior problems, including aggression and delinquency, than do children of NAALs or

controls. They are also more likely to have higher hyperactivity scores than control children. However, what was not predicted was that children from AAL families would also have higher rates of internalizing behavior problems, including depression and immaturity, than either children from NAAL or control families.

Higher rates of internalizing behavior problems among children of AALs can be explained in a number of ways. First, this finding is not inconsistent given that children's internalizing and externalizing problems were found to be highly correlated on the CBCL. It is possible that parent tend not to differentiate between externalizing and internalizing behavior problems for children this young, but rather see their child as either globally "difficult" or not. Therefore, parent ratings may not differentiate well between externalizers and internalizers among 3-5 year olds. Another explanation is that at this age, children's problem behaviors have not yet solidified into an externalizing or an internalizing pattern and that children of AALs will specialize more as "externalizers" as they get older. Finally, the fact that prior research has shown antisocial alcoholics to have increased rates of internalizing problems such as depression and anxiety must be taken into account, as it may indicate that children of AALs should be expected to be at risk for increased rates of internalizing as well as externalizing behavior problems.

In summary, then, findings from this study support the hypothesis that some children of alcoholics are at higher risk for child behavior problems than others and that this higher degree of risk is a function of the father's alcoholic subtype.

The present study also predicted differences in the degree of relatedness between the various risk variables for children of AALs, NAALs and controls, as well as between risk variables and outcome variables (i.e. child behavior problems). Univariate correlational analyses confirmed that relationships between child risk/ outcome variables for the three groups are in fact quite dissimilar.

For children of AALs, family expression of alcoholism is strongly related to child

temperament risk. On the other hand, FEA is not significantly correlated to temperament risk for children of NAALs or controls. Furthermore, for children of AALs, family expression of alcoholism is strongly correlated with child behavior problems, particularly externalizing ones. Again, FEA is not significantly related to child behavior problems for children of NAALs or controls. These findings confirm that a dense family history of alcoholism is related to a risky temperament and to child behavior problems only for children of AALs.

For children of controls, lack of relationships between FEA and risky temperament/ child behavior problems may be related to restricted range on the FEA variable- by definition, children of controls cannot have an alcoholic parent, and, having fewer alcoholic relatives, their FEA scores show less variability. However, the differences between AALs and NAALs on these variables cannot be explained in this fashion.

The best summaries to date of the evidence that alcoholism has a heritable basis suggest that a dense family background alcoholism confers a high genetic loading for alcoholism (cf. McGue, in press). Findings that FEA is related to risky temperament and child externalizing behavior problems only among AALs are consistent with earlier research which suggests that inherited factors are relevant to the development of antisocial but not non-antisocial alcoholism. Extrapolating from this work, it is reasonable to assume that for children of AALs, heredity may more strongly influence the development of early risk factors for alcoholism- such as externalizing behavior problems- than is true for children of NAALs or controls.

Since FEA also represents being reared in an alcoholic environment, results also indicate that in the preschool years, an alcoholic rearing environment is most strongly related to risky temperament and child behavior problems for children of AALs. Again, non-antisocial alcoholism appears to be more benign and to invade less of the lifespace than does antisocial alcoholism (Zucker, Ellis, and Fitzgerald, 1992b). Therefore, parental

alcohol problems are probably less severe for NAALs and may not have as much effect upon children of NAALs as they do upon children of AALs, at least at this young age.

The relationship between child temperament risk and child behavior problems is similar among the three groups. For children of both AALs and NAALs, the risky temperament triad is consistently related to externalizing behavior problems, including aggression and hyperactivity, as well as to internalizing behavior problems, including immaturity. For children of controls, fewer significant relationships emerge (possibly due to lack of power), but child temperament risk is still positively correlated with hyperactivity and schizoidality. These results are particularly interesting because they suggest that even though risky temperament is more common among children of AALs, having this temperament type may be related to negative child outcome for children in all three groups. The question of whether child temperament risk is related to child behavior problems for children of controls is addressed again below when results of path models are discussed.

Findings from the study differ from the initial prediction that child temperament risk would be positively correlated with child behavior problems only for children from AAL families. However, they suggest the possibility of "phenotypic" similarity but "genotypic" differences between the groups: for children of both AALs and NAALs, the risky temperament triad causes behavior problems, but only among children of AALs does child temperament risk appear to be driven by a dense family history of alcoholism. This issue of causal links will be raised again when findings from path analyses are discussed.

As with family expression of alcoholism, the relationship between degree of parent-child temperament mismatch and child behavior problems is different for children from AAL, NAAL and control families. As expected, for children of controls, a temperament mismatch with parents is strongly related to a range of externalizing and internalizing child behavior problems. Therefore, findings from the control group support the child

development research which has demonstrated a link between adverse child outcomes and a poor fit between child/ parent temperament styles in cases where parental temperament and behavior are consonant with societal norms (Lerner, 1984).

The correlations between parent-child temperament mismatch and child behavior problems are also positive for children of NAALs, although few correlations were significant. For children of AALs, most correlations between parent-child temperament mismatch and child behavior problems are negative, although non-significant. Because correlations are non significant in this group, it is probable that the findings are due to chance. However, it is also possible that for children of AALs, temperamental similarity to parents may be undesirable because such a match is related to child behavior problems. Again, prior research has shown that AAL fathers will tend to be the most troubled; the more dysfunctional the parent, the more likely s/he is to have a temperament style which has contributed to life difficulties and the less beneficial a temperament match with him/her may be.

There are few significant relationships between child behavior problems and parental aggression toward the child for any of the three groups. Parental aggression toward the child is significantly positively correlated with delinquency and immaturity for children of AALs and with delinquency for children of controls, while no significant relationships emerge for children of NAALs. These findings are surprising, as it was expected that socialization to aggression-including that which occured through aggression directed toward the child- would be related to child externalizing behavior problems for all three groups.

One possible explanation for the lack of significant relationships is that the measure of parental aggression toward the child used in this study had a truncated range for a large number of subjects- higher levels of aggression were not tapped. That is, real violence toward the child-the kind that may be most strongly related to child behavior problems-

was not measured for over a quarter of the families. Therefore, a better measure of parental aggression toward the child should probably be used before concluding that such aggression is not as strongly related to child behavior problems as other variables used in this study. Another possible explanation for the lack of strong relationships between child behavior problems and parental aggression toward the child is that parental aggression toward the child will have a "sleeper effect"- that is, while it may not be related to preschool child difficulties, it will be more strongly related to child behavior problems as the children get older.

The relationship between contextual aggression and child behavior problems also differs for children from AAL, NAAL and control families. Again, it was predicted that socialization to aggression- including aggression between the parents- would be positively correlated with child behavior problems for children from all three groups. In fact, contextual aggression is strongly related to child behavior problems only for children of NAALs, where it is correlated with a range of both externalizing behavior problems and internalizing behavior problems. For children of AALs, contextual aggression is significantly positively related only to hyperactivity and significantly negatively related only to somatic complaints. For children of controls, there are no significant relationships between contextual aggression and child behavior problems. Thus, even though children from AAL families are exposed to the highest levels of contextual aggression, it is among NAALs that contextual aggression is related to child behavior problems.

The results of MANOVAs and correlational analyses suggest that as preschoolers, children of AALs, NAALs and controls a) are exposed to differing levels of factors which have been identified as placing a child at risk for externalizing behavior problems and /or alcoholism b) can be differentiated by the level of child behavior problems they experience and c) show different patterns of relationships between child risk/ child outcome variables, indicating that different factors play a role in the development of child behavior problems

among these groups. Results of path analyses confirm that underlying causal processes linking child risk variables to child outcome variables differ for children of AALs, NAALs and controls. Although an initial test of the hypothesized path model for the overall sample supports the role of all variables except parent aggression toward the child in the development of externalizing behavior problems, further tests of individual path models for the three groups indicate that different causal processes are operating for children from AAL, NAAL and control families.

The best fit model for children of AALs shows that family expression of alcoholism is strongly predictive of child temperament risk and that child temperament risk directly predicts externalizing behavior problems. Child temperament risk's indirect effect upon externalizing behavior problems through its relationship with parent-child temperament mismatch is non-significant. The effect of parental aggression toward the child on externalizing behavior problems is also not significant. Thus for children of AALs, externalizing behavior problems in the preschool years can be explained as a function of a risky temperament style - high activity level, high approach to others (possibly an index of impulsivity) and high reactivity - that is predicted by a dense family history of alcoholism which conveys both a heavy genetic load for alcoholism and a high exposure to alcoholism in the rearing environment.

For children of NAALs, the path model also shows child temperament risk to be strongly predictive of externalizing behavior problems. However, for children from NAAL families, contextual aggression also has a direct effect upon the development of externalizing behavior problems. Family expression of alcoholism does not exert a significant influence on behavior problems, either directly or indirectly through a relationship to child temperament risk.

The fact that family expression of alcoholism does not predict externalizing child behavior problems among children of NAALs suggests neither genetic variation nor

variability in the overt manifestations of alcoholism in the child's environmental surround is a significant factor in child functioning/outcome. Rather, the effects of parental alcoholism appear to influence children of NAALs in different ways- for example, through contextual aggression, which in part represents verbal and physical conflict between the child's parents. For children of NAALs it may be more indirect family processes- such as marital difficulties- rather than the more overt parent psychopathology which exists in AAL families, which leads to child behavior problems.

For children of controls, the path model demonstrates that only parent-child temperament mismatch is significantly predictive of externalizing behavior problems, although contextual aggression shows a trend toward being predictive as well. Although correlational analyses left some question as to whether child temperament risk might be predictive of externalizing behavior problems for children of controls as well as for the two COA groups, path analyses indicate that mismatch with parents- who assumedly are unlikely to have a risky temperament- is the most important predictor of negative child outcome.

Limitations of the Study

This study provides strong support for the idea that risk for child behavior problems among children of alcoholics is a function of parental alcoholic subtype and that the etiology of child behavior problems for children from AAL, NAAL and control families differs greatly. However, it is important to note some limitations on the present work. First, children in the study are still very young. As a result, some symptoms of problem behavior, such as delinquent symptoms, had a very low base rate. These behaviors will be more easily investigated when the children are somewhat older.

Although the fact that families are recruited while target children are still preschoolers allows the larger study to document very early differences between alcoholic and non-alcoholic families, the present study cannot provide any information on the

relationship of identified risk variables to later alcohol problems. That is, although clear differences emerged between children of AALs, NAALs and controls on variables which prior research has linked to later alcohol problems (i.e. externalizing behavior problems), results from this study cannot in fact provide data on the link between child behavior problems and alcoholism. For example, it is possible that children of AALs are not in fact at increased risk for antisocial alcoholism, but only for childhood antisocial behavior. Therefore, it is important to continue this line of research as longitudinal data on these children becomes available.

It is also important to note that although childhood externalizing behavior problems such as aggression and hyperactivity were the focus of this study- that is, they were used as proxies for later externalizing problems such as alcoholism- there may be other factors which are more important to the development of alcoholism among children of NAALs and children of controls. Although there is essentially no other research on this, one could speculate that such risk factors might include alcohol-specific ones such as socialization to the use of alcohol as a coping mechanism during periods of stress or alcohol-non-specific ones such as anxiety and or depression. Future work can trace these alternate paths into alcohol problems in more depth.

Because risk for alcoholism can ultimately be assessed only as it accumulates over developmental time, longitudinal data will also provide additional information regarding the continued importance of those risk variables investigated by the present study when children are older. For example, the present analyses found some limited evidence to support the hypothesis that a match between parent and child temperament is detrimental for children of AALs. However, a match between parent-child temperament may become increasing predictive of child behavior problems for children of AALs as they get older.

Although this study attempted to capture the interplay between inherited and environmental risk factors for alcoholism, the only measure which taps genetic loading for

alcoholism, family expression of alcoholism, is not a pure one. Therefore, further research using behavioral-genetic methodologies such as the twin study, can cast more light upon the relative importance of genetic loading for alcoholism versus rearing in an alcoholic environment for children of AALs and children of NAALs.

Because results from this study which suggest differences between children of AALs, NAALs and controls were based purely upon parent report on questionnaires, the question of whether the findings merely reflect differing parental perceptions of children in the three groups can be raised. For example, the possibility exists that parents with more psychopathology tend to view their children as more difficult; since parents in the AAL group are the most troubled, it could be argued that they are more likely to report that their children have behavioral difficulties whether or not this is actually the case. This explanation of the present study's findings is refuted by research on the CBCL which suggests that a) psychologically distressed parents do not rate their children as more disturbed than normal parents (Conrad and Hammen, 1989) and b) CBCL ratings by psychologically distressed parents and ratings of the child by other independent sources such as teachers are quite similar (Richters and Pellegrini, 1989). However, findings from the present study should be replicated at later stages of the research using behavioral measures of variables such as aggression, activity level and impulsivity in addition to questionnaire measures.

Finally, a rather obvious point, but one which is frequently ignored in the alcoholism literature: the sample of children used in this study consisted purely of males. Thus, it cannot provide information upon the early development of female children of alcoholics. This population is often overlooked, in part because incidence rates of alcoholism are not as elevated in early adulthood for female COAs as they are for male COAs. However, in order to better understand etiologic processes of alcoholism among women, tracking such a sample is crucial.

Summary

Alcoholism researchers are in general agreement that children of alcoholics are at increased risk for alcoholism in adulthood. As a result, much of the research which attempts to identify factors that increase vulnerability to alcoholism has focused upon COAs. Developmental antecedents to these later alcohol problems have their roots in childhood and have been found to include childhood antisocial behavior, aggression and possibly hyperactivity. The current investigation examined the relationships between various genetic and environmental risk factors and their differential ability to predict childhood externalizing behavior problems. However, this study was more complex than most in its attempt to investigate the relevance of parental alcoholic typology to child outcome. In fact, one of the major premises of this study was that risk for alcoholism- as currently expressed by child externalizing behavior problems- among children of alcoholics will differ depending upon the type of alcoholism for which a child is at risk. Furthermore, risk for alcoholism was hypothesized to be influenced by alcoholic subtype of the child's alcoholic parent.

The present study demonstrates that beginning in the preschool years, children of antisocial alcoholics are exposed to substantially more factors which place them at risk for child behavior problems than are children of non-antisocial alcoholics or children of non-alcoholic controls. As a result, children of AALs already experience significantly higher levels of child behavior problems by the time they are three to five years of age. The fact that children from AAL families have more externalizing behavior difficulties puts them on a trajectory which is likely to be linked to alcohol problems in later life, particularly antisocial alcoholism.

Because children of AALs, NAALs and controls show varying patterns of relationships between child risk/ child outcome variables, it appears that different factors

play a role in the development of child behavior problems among these groups. Results of path analyses in fact demonstrate that the underlying causal processes linking child risk variables to child outcome variables differ for children of AALs, NAAL and controls. Whereas for children of AALs, family history factors at least partly attributable to genetic variation appear to play a role in the development of externalizing behavior problems, this is not true for children of NAALs or controls. Moreover, the impact of being raised by an alcoholic parent seems less germane to the emergence of psychopathology among children of NAALs, possibly because their parents are less troubled. There are hints that it may be more covert processes, such as marital conflict between parents which leads to poorer parenting, rather than exposure to more overt psychopathology, which create behavioral difficulties for children of NAALs. It remains for future longitudinal research to confirm that these early developmental problems are in fact pathways into alcoholism.

Appendices

Appendix A
Heritable Factors and Alcoholism

Appendix A

Biochemical Abnormalities

It is often hypothesized that alcoholics inherit a biochemical abnormality which somehow affects their interactions with alcohol. Schuckit and Rayses (1979) proposed that alcoholics produce higher amounts of acetaldehyde than non-alcoholics; because acetaldehyde is a breakdown product of alcohol metabolism in the liver, genetic variations in the efficiency of alcohol-metabolizing enzymes would affect acetaldehyde concentrations in the body. To prove that this was an inherited vulnerability, Schuckit and Rayses compared non-alcoholic subjects with a positive family history of alcoholism to matched controls with no family history of alcoholism. Results confirmed that after drinking alcohol, the subjects with a positive family history had significantly higher breath concentrations of acetaldehyde. Unfortunately, attempts to replicate this important finding have been unsuccessful (Knop, Angelo and Christensen,1981).

Another biochemical abnormality which may be inherited by alcoholics is low levels of monoamine oxidase (MAO), an mitochondrial enzyme that catalyzes the oxidative deamination of biogenic amines (Faraj, Lenton, Kutner, Camp, Stammers, Lee, Lolies and Chandora, 1987). Monoamine oxidase is involved in brain neurotransmitter metabolism, but is also found in blood platelets. Initial research suggested that chronic alcoholics had MAO levels which were lower than normal (Oreland et al., 1983); (Faraj et al., 1987). Puchall, Coursey, Buchsbaum and Murphy (1983) were than able to demonstrate that MAO level was genetically determined. 75 subjects with either high or low MAO levels were chosen and MAO level was correlated with that of their parents. Results showed significant and positive correlations.

Low MAO levels have been shown to be correlated with a tendency to increase or 'augment' stimulus intensity (Buchsbaum, Landau, Murphy and Goodwin, 1973); alcoholics as a group are likely to be stimulus augmenters (Petrie, 1967). In addition, low

MAO levels are associated with the type of fast tempo and vigorous behavioral response style which is typical of alcoholics, particularly antisocial ones (Tarter, Alterman and Edwards 1985).

Von Knorring, Bohman, Von Knorring and Oreland (1985) used Cloninger's Type 1/ Type 2 typology to classify 31 male and five female alcoholics treated through a university outpatient psychiatric clinic. They demonstrated that the MAO levels of milieu-limited alcoholics did not differ significantly from those of healthy controls, whereas male-limited alcoholics had significantly lower MAO levels than controls. These findings indicate that there are differences in the biochemistry of certain alcoholic subtypes, with Type 2 alcoholics (most similar to antisocial alcoholics) differing significantly from both Type 1 alcoholics (most similar to non-antisocial alcoholics) and non-alcoholic controls.

Von Knorring, Oreland and Von Knorring (1987) also looked at MAO differences among pure alcohol abusers and mixed drug abusers (those who abused both alcohol and other drugs); mixed drug abusers were assumed to be similar to Type 2 alcoholics, who often use illegal drugs. Von Knorring et. al. found that blood platelet MAO levels among the mixed drug abusers were significantly lower than those of both pure alcohol abusers and a normal control group.

Findings of lower MAO levels among Type 2 alcoholics have also been confirmed by Pandey, Fawcett, Gibbons, Clark and Davis (1988). Such research is of importance because it once again supports the hypothesis that genetic factors are most germane to the development of antisocial alcoholism, while demonstrating that antisocial (Type 2) alcoholics may inherit a particular type of biochemical abnormality- low MAO levels.

Brain Abnormalities

Alcoholics might inherit an anomalous brain structure which leads to some type of neurological dysfunction. Schuckit (1984) proposed that alcoholics were less able than non-alcoholics to use internal cues to estimate their blood alcohol level (BAL) after

drinking. His sample consisted of 23 non-alcoholic male college students with either a positive or negative family history of alcoholism. After consuming alcohol, subjects with a family history of alcoholism had significantly lower self-ratings of intoxication than controls. These results indicate that alcoholics may inherit a deficit in the ability to learn to process cues about internal state, especially when the internal state experienced is alcohol-induced.

Several studies have been conducted on the electroencephalograms (EEGs) of persons at high risk for alcoholism. Propping (1977), in a study of 52 healthy twin pairs, showed that the extent of alcohol action on the resting EEG was under genetic control. After giving subjects a dose of ethanol, he recorded their EEGs; EEGs of MZ twins reacted identically to alcohol loading whereas EEGs of DZ twins became more dissimilar. Propping and his colleagues then conducted a follow-up study on relatives of alcoholics and matched controls (Propping, Kruger and Nark, 1981). They found that non-drinking females with a positive family history of alcoholism had a significantly poorer EEG synchronization than female controls. No such effect was found for males, however.

Pollock, Volavka, Mednick, Goodwin et al. (1984) found that after consuming alcohol, 44 subjects at high risk for alcoholism could be differentiated from 28 matched controls by their EEG alpha frequencies. Subjects in the high-risk group showed significantly greater increases in slow alpha frequencies and decreases in fast alpha frequencies. The researchers interpreted the results to mean that EEGs could function as a biological marker for an inherited central nervous system (CNS) sensitivity to the effects of alcohol among alcoholics. Gabrielli, Mednick, Volavka, Pollock et al. (1982) found that 27 young high- risk children of alcoholics showed more beta wave activity in their EEGs than 27 matched controls.

Begleiter, Porjesz, Bihari and Kissin (1984) studied visually produced event-related brain potentials (ERPs) among 25 non-drinking sons of alcoholic fathers and matched

controls with no family history of alcoholism. They found significant group differences in the P300 component of the ERP. Begleiter's group proposed that because P300 potentials reflect processes involved in revising representations stored in memory, alcoholics might inherit deficits in memory processing. Such findings, which indicate that deviations in the P300 component of the ERP may distinguish individuals at risk for alcoholism, have been supported by several studies.

One problem with research on the EEGs of alcoholics is that many different anomalous brain wave patterns have been identified, raising the question of whether findings may be sample specific (Peele, 1986; Branchey, Branchey and Lieber, 1988). Since conflicting findings in this area do seem to reflect heterogeneity in the subjects who have been used, the question of whether particular alcoholics subtypes show deficits on neurophysiological measures is of interest. Research pertaining to this issue is unfortunately very sparse. However, Branchey, Branchey and Lieber (1988) looked at the P300 component of the ERP among different subgroups of alcoholics. Their subjects were 51 male alcoholics admitted to a detoxification unit. Branchey et al. found that as compared to alcoholics with no history of aggression, aggressive alcoholics had significantly lower P300 amplitudes. The largest decrement in the P300 component was found among subjects who had been incarcerated for violent crimes. Although no normal control group was used for comparison, these findings support the notion that there are constitutional differences between antisocial and non-antisocial alcoholics, with antisocial alcoholics showing the grossest deficits on measures of brain abnormalities.

Appendix B
Antisocial Behavior Inventory

FYASB
MSU Family Study (3/89)

Respondent Number:_____
Given By:_____
Date:_____
T1.0
Answer Check:_____

Many of us have had adventures during our lives...times that were exciting and carefree, even though they may have been a bit impulsive or happy-go-lucky. Please read each of the following items. Indicate (with a check) if you have ever done any of the following activities and how often.

NEVER - You have never done this

RARELY - Once or twice in your life

SOMETIMES - Three (3) to nine (9) times in your life

OFTEN - More than ten (10) times in your life

NEVER	RARELY	SOMETIMES	OFTEN		
				1.	Skipped school without a legitimate excuse for than 5 days in one school year.
				2.	Been suspended or expelled from school for fighting.
				3.	Been suspended or expelled from school for reasons other than fighting.
				4.	Lied to a teacher or principal.
				5.	Cursed at a teacher or principal (to their face).
				6.	Hit a teacher or principal.
				7.	Repeated a grade in school.
				8.	Taken part in a gang fight.
				9.	"Beaten up" another person.
				10.	Broken street lights, car windows, or car antennas just for the fun of it.

NEVER	RARELY	SOMETIMES	OFTEN		
					NEVER - You have never done this RARELY - Done only once or twice in your life SOMETIMES - Done three (3) to nine (9) times in your life OFTEN - Done more than ten (10) times in your life
				11.	Gone for a ride in a car someone else stole.
				12.	Teased or killed an animal (like a dog or cat) just for the fun of it.
				13.	Defied your parent's authority (to their face).
				14.	Hit your parents.
				15.	Cursed at your parents (to their face).
				16.	Stayed out overnight without your parent's permission.
				17.	Run away from home for more than 24 hours.
				18.	Lied to your parents.
				19.	Snatched a woman's purse.
				20.	Rolled drunks just for the fun of it.
				21.	Shoplifted merchandise valued over $25.
				22.	Shoplifted merchandise valued under $25.
				23.	Received a speeding ticket.
				24.	Been questioned by the police.
				25.	Taken part in a robbery.
				26.	Taken part in a robbery involving physical force or a weapon.
				27.	Been arrested for a felony.

NEVER	RARELY	SOMETIMES	OFTEN		
					NEVER - You have never done this RARELY - Done only once or twice in your life SOMETIMES - Done three (3) to nine (9) times in your life OFTEN - Done more than ten (10) times in your life
				28.	Resisted arrest.
				29.	Been arrested for any other non-traffic police offenses (except fighting or a felony).
				30.	Been convicted of any non-traffic police offense.
				31.	Defaulted on a debt.
				32.	Passed bad checks for the fun of it.
				33.	Ever used an alias.
				34.	Gone AWOL from the military.
				35.	Received a bad conduct or undesirable discharge from the military.
				36.	Performed sexual acts for money.
				37.	Engaged in homosexual acts.
				38.	Had intercourse with more than one person in a single day.
				39.	"Fooled around" with other women/men after you were married.
				40.	Hit your husband/wife during an argument.
				41.	Lied to your spouse.
				42.	Spent six months without any job or permanent home.
				43.	Been fired for excessive absenteeism.
				44.	Been fired for poor job performance (except absenteeism)
				45.	Changed jobs more than 3 times in one year.
				46.	Lied to your boss.

Thank you very much for your cooperation.

Appendix C
Conners Parent Questionnaire

Parent Questionnaire
MSU FAMILY STUDY (2/90)

Respondent's Number: _____
Given By: _____
Date: _____
T1.0 T1.1 T1.2 T1.3
Ans. Chk: _____

Listed below are items concerning children's behavior or the problems they sometimes have. Read each item carefully and decide how much you think your child has been bothered by this problem during the past month. Use the following scale to indicate your answer.

0...NOT AT ALL
1...JUST A LITTLE
2...PRETTY MUCH
3...VERY MUCH

Indicate your choice by circling the number corresponding to your rating.

		Not at all	Just a little	Pretty much	Very much
1.	Afraid of new situations	0	1	2	3
2.	Does not act his or her age	0	1	2	3
3.	Lets him/herself get pushed around by other children	0	1	2	3
4.	Bullying	0	1	2	3
5.	Shy making friends	0	1	2	3
6.	Feels cheated with brothers and sisters	0	1	2	3
7.	Disturbs other children	0	1	2	3
8.	Restless or overactive	0	1	2	3
9.	Has temper outbursts, explosive and unpredictable behavior	0	1	2	3
10.	A very early riser	0	1	2	3
11.	Has difficulty learning in school	0	1	2	3
12.	Denies having done wrong	0	1	2	3
13.	Steals things	0	1	2	3
14.	Inattentive, easily distracted	0	1	2	3

		Not at all	Just a little	Pretty much	Very much
15.	Constantly fidgeting; restless in the "squirmy sense"	0	1	2	3
16.	Always climbing	0	1	2	3
17.	Disobeys parents	0	1	2	3
18.	Afraid of people	0	1	2	3
19.	Cries easily	0	1	2	3
20.	Unhappy	0	1	2	3
21.	Bragging and boasting	0	1	2	3
22.	Afraid friends do not like him/her	0	1	2	3
23.	Mean towards brothers and sisters	0	1	2	3
24.	Wants to run things	0	1	2	3
25.	Excitable, impulsive	0	1	2	3
26.	Pouts and sulks	0	1	2	3
27.	Does not like to go to school	0	1	2	3
28.	Blames others for his/her mistakes	0	1	2	3
29.	Throws and breaks things	0	1	2	3
30.	Demands must be met immediately; easily frustrated	0	1	2	3
31.	Gets overexcited easily	0	1	2	3
32.	Forgets to do important tasks; unreliable	0	1	2	3
33.	Cries often and easily	0	1	2	3
34.	Easily bored by a repetitive activity	0	1	2	3
35.	Acts as if driven by a motor	0	1	2	3
36.	Afraid of being alone	0	1	2	3
37.	Wants help doing things he/she should do alone	0	1	2	3

		Not at all	Just a little	Pretty much	Very much
38.	Carries a chip on his/her shoulder	0	1	2	3
39.	Sassy to grown-ups	0	1	2	3
40.	Feelings are easily hurt	0	1	2	3
41.	Fights constantly with brothers and sisters	0	1	2	3
42.	Picks on other children	0	1	2	3
43.	Fails to finish things he/she started; short attention span	0	1	2	3
44.	Is afraid to go to school	0	1	2	3
45.	Tells stories which did not happen	0	1	2	3
46.	Mood changes quickly and drastically	0	1	2	3
47.	Poorly aware of surroundings or time of day	0	1	2	3
48.	Clings to parents or other adults	0	1	2	3
49.	Has no friends	0	1	2	3
50.	Daydreams	0	1	2	3
51.	Will not obey school rules	0	1	2	3

Appendix D
Dimensions of Temperament Survey-Self

Dots - Adult
(2/88)

Respondent Number:_____
Given By: _____
Date: _____
T1.0 T1.1 T1.2 T1.3 T2.0
Ans. Chk: _____

HOW TO ANSWER: On the following pages are some statements about how people behave. Some of the statements may be true of your own behavior, and others may not apply to you. For each statement we would like you to indicate if the statement is usually true of you or is usually untrue of you. There are no "right" or "wrong" answers because all people behave in different ways. All you have to do is answer what is true for you.

Here is an example of how to fill out this questionnaire. Suppose a statement said:

"I eat the same things for breakfast every day."

If the statement were generally true for you, you would respond:

"1" more true than false.

If the statement were generally untrue for you, you would respond:

"2" more false than true.

Circle the "1" if the statement is more true than false.

Circle the "2" if the statement is more false than true.

PLEASE KEEP THESE FOUR THINGS IN MIND AS YOU ANSWER:

1. Give only answers that are true for you. It is best to say what you really think.

2. Don't spend too much time thinking over each question. Give the first, natural answer as it comes to you. Of course, the statements are too short to give all the information you might like, but give the best answer you can under the circumstances. Some statements may seem similar to each other because they ask about the same situation. However, each one looks at a different area of your behavior. Therefore, your answers may be different in each case.

3. Answer every question one way or the other. Don't skip any.

4. Remember: 1 = more TRUE than false
   2 = more FALSE than true

THANK YOU FOR YOUR COOPERATION

		MORE TRUE THAN FALSE	MORE FALSE THAN TRUE
1.	I can't sit still for long.	1	2
2.	I wake up at different times.	1	2
3.	Once I am involved in a task, I can't be distracted away from it.	1	2
4.	I persist at a task until it's finished.	1	2
5.	I can make myself at home anywhere.	1	2
6.	I react intensely when hurt.	1	2
7.	No matter what I'm doing, I can be distracted by something else.	1	2
8.	There is no set time when I go to sleep.	1	2
9.	I stay with an activity for a long time.	1	2
10.	If I'm doing one thing, something else occurring won't get me to stop.	1	2
11.	I do not do any one thing for a long period.	1	2
12.	I eat about the same amount for dinner whether I am home, visiting someone, or traveling.	1	2
13.	Things going on around me can take me away from what I'm doing.	1	2
14.	Sunlight bothers my eyes.	1	2
15.	Once I take something up, I stay with it.	1	2
16.	When I have to be still, I get very restless after a few minutes.	1	2
17.	When a person comes towards me my first response is to move back.	1	2
18.	I don't keep at an activity when other things are going on around me.	1	2
19.	On meeting a new person, I tend to move towards him or her.	1	2
20.	When I react to something, my reaction is intense.	1	2
21.	If stopped from doing something, I will always go back to it.	1	2
22.	I never seem to slow down.	1	2

		MORE TRUE THAN FALSE	MORE FALSE THAN TRUE
23.	It takes me no time at all to get used to new people.	1	2
24.	If watching something, I will keep at it for a long period.	1	2
25.	I move a great deal in my sleep.	1	2
26.	I seem to get sleepy just about the same time every night.	1	2
27.	I move towards new situations.	1	2
28.	When I am away from home I still wake up at the same time each morning.	1	2
29.	I eat about the same amount at breakfast from day to day.	1	2
30.	I move a lot in bed.	1	2
31.	It takes me a long time to get used to new people.	1	2
32.	I eat about the same amount at supper from day to day.	1	2
33.	I don't move around much at all in my sleep.	1	2
34.	My appetite seems to stay the same day after day.	1	2

from Lerner, Palermo, Spiro & Nesselroade, 1982.

Appendix E
Dimensions of Temperament Survey- Child

Dots - Child
(2/88)

Respondent Number:_____
Given By: _____
Date: _____
T1.0 T1.1 T1.2 T1.3 T2.0
Ans. Chk: _____

HOW TO ANSWER: On the following pages are some statements about how children like your own may behave. Some of the statements may be true of your child's behavior, and others may not apply to him or her. For each statement we would like you to indicate if the statement is usually true of your child or is usually untrue of your child. There are no "right" or "wrong" answers because all children behave in different ways. All you have to do is answer what is true for your child.

Here is an example of how to fill out this questionnaire. Suppose a statement said:

"My child eats the same things for breakfast every day."

If the statement were generally true for your child, you would respond:

"1" more true than false.

If the statement were generally untrue for your child, you would respond:

"2" more false than true.

Circle the "1" if the statement is more true than false.

Circle the "2" if the statement is more false than true.

PLEASE KEEP THESE FOUR THINGS IN MIND AS YOU ANSWER:

1. Give only answers that are true for your child. It is best to say what you really think.

2. Don't spend too much time thinking over each question. Give the first, natural answer as it comes to you. Of course, the statements are too short to give all the information you might like, but give the best answer you can under the circumstances. Some statements may seem similar to each other because they ask about the same situation. However, each one looks at a different area of your child's behavior. Therefore, your answers may be different in each case.

3. Answer every question one way or the other. Don't skip any.

4. Remember: 1 = more TRUE than false
   2 = more FALSE than true

THANK YOU FOR YOUR COOPERATION

Dots - Child

		MORE TRUE THAN FALSE	MORE FALSE THAN TRUE
1.	My child can't sit still for long.	1	2
2.	My child wakes up at different times.	1	2
3.	Once my child is involved in a task, he/she can't be distracted away from it.	1	2
4.	My child persists at a task until it's finished.	1	2
5.	My child can make him/herself at home anywhere.	1	2
6.	My child reacts intensely when hurt.	1	2
7.	No matter what my child is doing, he/she can be distracted by something else.	1	2
8.	There is no set time when my child goes to sleep.	1	2
9.	My child stays with an activity for a long time.	1	2
10.	If my child is doing one thing, something else occurring won't get him/her to stop.	1	2
11.	My child does not do any one thing for a long period.	1	2
12.	My child eats about the same amount for dinner whether he/she is home, visiting someone, or traveling.	1	2
13.	Things going on around my child can take him/her away from what he/she is doing.	1	2
14.	Sunlight bothers my child's eyes.	1	2
15.	Once my child takes something up, he/she stays with it.	1	2
16.	When my child has to be still, he/she gets very restless after a few minutes.	1	2
17.	When a person comes towards my child, his/her first response is to move back.	1	2
18.	My child doesn't keep at an activity when other things are going on around him/her.	1	2
19.	On meeting a new person my child tends to move towards him or her.	1	2
20.	When my child reacts to something, his/her reaction is intense.	1	2

Dots - Child

		MORE TRUE THAN FALSE	MORE FALSE THAN TRUE
21.	If stopped from doing something, my child will always go back to it.	1	2
22.	My child never seems to slow down.	1	2
23.	It takes my child no time at all to get used to new people.	1	2
24.	If watching something, my child will keep at it for a long period.	1	2
25.	My child moves a great deal in his/her sleep.	1	2
26.	My child seems to get sleepy just about the same time every night.	1	2
27.	My child moves towards new situations.	1	2
28.	When my child is away from home, he/she still wakes up at the same time each morning.	1	2
29.	My child eats about the same amount at breakfast from day to day.	1	2
30.	My child moves a lot in bed.	1	2
31.	It takes my child a long time to get used to new people.	1	2
32.	My child eats about the same amount at supper from day to day.	1	2
33.	My child doesn't move around much at all in his/her sleep.	1	2
34.	My child's appetite seems to stay the same day after day.	1	2

from Lerner, Palermo, Spiro & Nesselroade, 1982.

Appendix F
Conflict Tactics Scale

MSU-CT(3/90)-1

1a) In raising children, all of them are troublesome some of the time. At those times, parents and children sometimes use different ways of trying to settle these differences. I'm going to read a list of some things that (_____) might have done when you had a dispute or disagreement. For each one, I want to ask you about (_____)'s behavior with you. Tell me how how often in the past year when you had a disagreement with (_____), he:

1a/1a1 How often?	1b Earliest age(T.C.)	1c Most recent age(T.C.) T.C. Age = _____
a) Discussed the issue calmly with you.		
b) Got information to back up his side of things.		
c) Brought in or tried to bring in someone to help settle things.		
d) Insulted or swore at you.		
e) Sulked and/or refused to talk about it.		
f) Stomped out of the room or house(or yard).		
g) Cried.		
h) Did or said something to spite you.		
i) Threatened to hit or throw something at you.		
j) Threw or smashed or hit or kicked something, but not at you.		
k) Actually threw something at you.		
l) Pushed, grabbed, or shoved you; slapped you, hit you, or spanked you.		
m) Used a belt on you.		
n) Kicked you, bit you, or beat you up.		
o) Threatened to, or actually used a knife or gun on you.		

Respondent Number: _____
Given By: _____
Date: _____ T1.0 T3.0
Ans. Chk: _____

Page 1 of 8

(1a1- If answer to 1a is zero, ask if it ever occurred. If it did, write answer as ever under 1a).

(If Ever, Once, or More than once answered to 1a, ask 1b):

1b) How young was (_____) the first time he used this manner to settle things?

(If Ever answered to 1a1, ask 1c; No need to ask 1c if occurred during past year).
1c) How old was (_____) the most recent time he used this manner to settle things?

2a We've just talked about the ways your child is with you when the two of you have had a dispute or disagreement. Now I want to ask you about the way you are and what you do during these times. I am going to read a list of some things that you might have done. For each one, I would like you to tell me how often in the past year you did this with ( ):

2a.2a' How often?	2c Earliest age	2c Most recent age
a Discussed the issue calmly.		
b) Got information to back up your side of things.		
c) Brought in or tried to bring in someone to help settle things.		
d) Insulted or swore at your child.		
e) Sulked and/or refused to talk about it.		
f) Stomped out of the room or house(or yard).		
g) Cried.		
h) Did or said something to spite your child.		
i) Threatened to hit or throw something at your child.		
j) Threw or smashed or hit or kicked something, but not at your child.		
k) Actually threw something at your child.		
Bruises? ___ 1) Pushed, grabbed, or shoved your child; slapped, hit, or spanked your child.		2d)
Bruises? ___ m) Used a belt on your child.		2d)
Bruises? ___ n) Kicked your child, bit your child, or beat up your child.		2d)
Bruises? ___ o) Threatened to, or actually used a knife or gun on your child.		2d)

Bruises? ___

(2a1- If answer to 2a is zero, ask if ever occurred, and write answer as ever under 2a).

(If Ever, Once, or More than once, answered to 2a, ask 2b):
2b) How young was ( ) the first time it was necessary to settle things this way?

(If Ever answered to 2a1, ask 2c; No need to ask 2c if occurred during past year).
2c) How old was ( ) the most recent time it was necessary to settle things this way?

(For items k-n answered Yes, ask 2d):
2d) Did this activity cause any bruises? Were they hard enough so that he had to stay in bed or see a doctor?

2e1) (If any item of i-o answered as yes on 2a, ask the following at the end):

Let me ask a little more about some of the disagreements that occurred in the last year. (Interviewer: List items from i-o). Was any alcohol or any other drug used during the most recent time that this happened?

(If yes, note which type of incident (i-o)):

2e2) What was the drug?

2e3) How much did you have? (# of drinks, joints, pills, or dose levels)

2e4) How long was it consumed before the disagreement with ( )?

2e5) What was the nature of the disagreement after you had _____(drug)? What did you do?

3a) Now to a different area. About your own childhood, do you recall ever being physically punished or abused by your parents when you were a child or teenager? (Probe even if respondent says punishment was deserved)

3a) _____

(If question 3a was answered as yes, ask 3b):

3b1) By whom?

_____

3b2) For what kind of disagreement?

_____

3b3) How? What happened?

_____

3b4) How often did this occur? (same scale as questions 1a & 2a)

_____

3b5) What was your earliest age at which this occurred?

_____

3b6) What was your oldest age at which this occurred?

_____

3b7) Were there any typical circumstances for these occasions? (probe for alcohol or other drug use)

_____

4a) Even if you weren't(or were) physically punished, were you ever sexually abused by someone in your family, or by a neighbor or friend?

_____

(If question 4a was answered as yes, ask 4b):

4b1) By whom?

_____

4b2) How ? What happened?

_____

4b3) How often did this occur?

_____

4b4) What was your earliest age at which this occurred?

_____

4b5) What was your oldest age at which this occurred?

_____

4b6) Were there any typical circumstances for these occasions? (probe for alcohol or other drug use)

_____

MSU-CT(3/90)-5

5a) Now I would like to ask you a few questions about your relationship with your (wife/husband). First, how long have you been married? _____ Did you live together before that? (Yes ___, No___); If yes, for how long? _____ No matter how well a couple gets along, there are times when they disagree on major decisions, get annoyed about something the other person does, or just have spats or fights because they are in a bad mood or tired, or for some other reason. They also use many different ways of trying to settle their differences. I am going to read a list of some things that you and your spouse might have done when you had a dispute. I would like you to tell me, for each one, how often your spouse did it in the past year:

	5a/5a1 How often?	5b Earliest time	5c Most recent time
a) Discussed the issue calmly.			
b) Got information to back up (his/her) side of things.			
c) Brought in or tried to bring in someone to help settle things.			
d) Insulted or swore at you.			
e) Sulked and/or refused to talk about it.			
f) Stomped out of the room or house(or yard).			
g) Cried.			
h) Did or said something to spite you.			
i) Threatened to hit or throw something at you.			
j) Threw or smashed or hit or kicked something, but not at you.			
k) Actually threw something at you.			
l) Pushed, grabbed, or shoved you; slapped you, hit you, or spanked you.			
m) Used a belt on you.			
n) Kicked you, bit you, or beat you up.			
o) Threatened to, or actually used a knife or gun on you.			

(5a1- If answer to 5a is zero, ask if it ever occurred. If it did, write answer as ever under 5a).

(If Ever, Once, or More than once answered to 5a, ask 5b):

5b) How long ago was the first time ( ) needed to settle things in this manner?

(If Ever answered to 5a1, ask 5c; No need to ask 5c if occurred during past year).

5c) How long ago was the most recent time ( ) used this manner to settle things?

5d1) (If any item of i-o answered as yes on 5a, ask the following at the end):

Let me ask a little more about some of the disagreements that occurred in the past year). (Interviewer: List items from i-o). Had your spouse used any alcohol or any other drugs during the most recent time that this happened?

(If yes, note which type of incident(i-o)):

5d2) What was the drug?

5d3) How much did your spouse consume? (# of drinks, joints, pills, or dose levels)

5d4) How long did your spouse consume it before the disagreement?

5d5) What was the nature of the disagreement after your spouse had _____(drug)? What did your spouse do? (Describe in detail)

MSU-CT(3/90)-7

6a) We have just talked about the way your spouse is with you when the two of you have had a dispute or disagreement. Now I want to ask you about the way you are and what you do during these times. Tell me how often in the past year, when you and your spouse had a dispute or disagreement, you:

	6a/6a1 How often?	6b Earliest time	6c Most recent time
a)	Discussed the issue calmly.		
b)	Got information to back up your side of things.		
c)	Brought in or tried to bring in someone to help settle things.		
d)	Insulted or swore at your spouse.		
e)	Sulked and/or refused to talk about it.		
f)	Stomped out of the room or house(or yard).		
g)	Cried.		
h)	Did or said something to spite your spouse.		
i)	Threatened to hit or throw something at your spouse.		
j)	Threw or smashed or hit or kicked something, but not at your spouse.		
k)	Actually threw something at your spouse.		
l)	Pushed, grabbed, or shoved your spouse; Slapped, hit or spanked your spouse.		
m)	Used a belt on your spouse.		
n)	Kicked your spouse, bit your spouse, or beat up your spouse.		
o)	Threatened to, or actually used a knife or gun on your spouse.		

(6a1- If answer to 6a is zero, ask if it ever occurred. If it did, write answer as ever under 6a).

(If Ever, Once, or More than once answered to 6a, ask 6b):
6b) How long ago was the first time you needed to settle things in this manner?

(If Ever answered to 6a1, ask 6c; No need to ask 6c if occurred during past year).
6c) How long ago was the most recent time you used this manner to settle things?

7a1) (If any item of i-o answered as yes on 6a, ask the following at the end):

Let me ask a little more about some of the disagreements that occurred in the last year. (Interviewer: List items from i-o). Was any alcohol or other drug used during the most recent time that this occurred?

(If yes, note which type of incident(i-o):

7a2) What was the drug?

7a3) How much was consumed? (# of drinks, joints, pills, or dose levels)

7a4) How long was it consumed before the disagreement with your spouse?

7a5) What was the nature of the disagreement after you had _____(drug)? What did you do?

---

8) Now to a different subject. As you were growing up, were there ever occasions when your parents hit each other, or threw things at each other or used violence with each other?

(If answer is no, were there occasions where they yelled at each other or verbally abused each other?)

(If 8 is answered yes, ask 9a-9e):

9a) For what kind of disagreements?

9b) How often did this occur?(once or twice, monthly, weekly?)

9c) What was your youngest age when this occurred?

9d) What was the oldest age at which this occured?

9e) Were there typical circumstances for these occasions? (probe for alcohol or other drug use)

Now I'm going to ask you about your sexual experience. (To DIS p. 63- Q. 219)

INTERVIEW ANSWERING GUIDE

Number of Times per Week, Month, or Year	Number of Times In The Last Year
Never	0
Once a year	1
2-3 times a year	2-3
3-6 times a year	3-6
6-12 times a year	6-12
Approximately monthly	12
Approximately twice a month	25
Approximately weekly	50
Approximately twice a week	100
More than twice a week but less than daily	200
Approximately daily	350

Appendix G
Child Behavior Checklist

CHILD BEHAVIOR CHECKLIST FOR AGES 4-18

For office use only
ID #

CHILD'S NAME

SEX ☐ Boy ☐ Girl

AGE

ETHNIC GROUP OR RACE

TODAY'S DATE Mo. ____ Date ____ Yr. ____

CHILD'S BIRTHDATE Mo. ____ Date ____ Yr. ____

GRADE IN SCHOOL ____

NOT ATTENDING SCHOOL ☐

Please fill out this form to reflect *your* view of the child's behavior even if other people might not agree. Feel free to write additional comments beside each item and in the spaces provided on page 2.

PARENTS' USUAL TYPE OF WORK, even if not working now. *(Please be specific – for example, auto mechanic, high school teacher, homemaker, laborer, lathe operator, shoe salesman, army sergeant.)*

FATHER'S TYPE OF WORK: ____

MOTHER'S TYPE OF WORK: ____

THIS FORM FILLED OUT BY:

☐ Mother (name): ____

☐ Father (name): ____

☐ Other – name & relationship to child: ____

I. Please list the sports your child most likes to take part in. For example: swimming, baseball, skating, skate boarding, bike riding, fishing, etc.

☐ None

	Compared to others of the same age, about how much time does he/she spend in each?				Compared to others of the same age, how well does he/she do each one?			
	Don't Know	Less Than Average	Average	More Than Average	Don't Know	Below Average	Average	Above Average
a. ____	☐	☐	☐	☐	☐	☐	☐	☐
b. ____	☐	☐	☐	☐	☐	☐	☐	☐
c. ____	☐	☐	☐	☐	☐	☐	☐	☐

II. Please list your child's favorite hobbies, activities, and games, other than sports. For example: stamps, dolls, books, piano, crafts, cars, singing, etc. (Do not include listening to radio or TV.)

☐ None

	Compared to others of the same age, about how much time does he/she spend in each?				Compared to others of the same age, how well does he/she do each one?			
	Don't Know	Less Than Average	Average	More Than Average	Don't Know	Below Average	Average	Above Average
a. ____	☐	☐	☐	☐	☐	☐	☐	☐
b. ____	☐	☐	☐	☐	☐	☐	☐	☐
c. ____	☐	☐	☐	☐	☐	☐	☐	☐

III. Please list any organizations, clubs, teams, or groups your child belongs to.

☐ None

	Compared to others of the same age, how active is he/she in each?			
	Don't Know	Less Active	Average	More Active
a. ____	☐	☐	☐	☐
b. ____	☐	☐	☐	☐
c. ____	☐	☐	☐	☐

IV. Please list any jobs or chores your child has. For example: paper route, babysitting, making bed, working in store, etc. (Include both paid and unpaid jobs and chores.)

☐ None

	Compared to others of the same age, how well does he/she carry them out?			
	Don't Know	Below Average	Average	Above Average
a. ____	☐	☐	☐	☐
b. ____	☐	☐	☐	☐
c. ____	☐	☐	☐	☐

1-91 Edition

V. 1. About how many close friends does your child have? ☐ None ☐ 1 ☐ 2 or 3 ☐ 4 or more
(Do not include brothers & sisters)

2. About how many times a week does your child do things with any friends outside of regular school hours? ☐ Less than 1 ☐ 1 or 2 ☐ 3 or more
(Do not include brothers & sisters)

VI. Compared to others of his/her age, how well does your child:

	Worse	About Average	Better	
a. Get along with his/her brothers & sisters?	☐	☐	☐	☐ Has no brothers or sisters
b. Get along with other kids?	☐	☐	☐	
c. Behave with his/her parents?	☐	☐	☐	
d. Play and work by himself/herself?	☐	☐	☐	

VII. 1. For ages 6 and older – performance in academic subjects. If child is not being taught, please give reason _____

	Failing	Below average	Average	Above average
a. Reading, English, or Language Arts	☐	☐	☐	☐
b. History or Social Studies	☐	☐	☐	☐
c. Arithmetic or Math	☐	☐	☐	☐
d. Science	☐	☐	☐	☐
Other academic subjects – for example: computer courses, foreign language, business. Do *not* include gym, shop, driver's ed., etc. e. _____	☐	☐	☐	☐
f. _____	☐	☐	☐	☐
g. _____	☐	☐	☐	☐

2. Is your child in a special class or special school? ☐ No ☐ Yes – what kind of class or school?

3. Has your child repeated a grade? ☐ No ☐ Yes – grade and reason

4. Has your child had any academic or other problems in school? ☐ No ☐ Yes – please describe

When did these problems start?

Have these problems ended? ☐ No ☐ Yes – when?

Does your child have any illness, physical disability, or mental handicap? ☐ No ☐ Yes – please describe

What concerns you most about your child?

Please describe the best things about your child:

Below is a list of items that describe children and youth. For each item that describes your child now or within the past 6 months, please circle the 2 if the item is very true or often true of your child. Circle the 1 if the item is somewhat or sometimes true of your child. If the item is not true of your child, circle the 0. Please answer all items as well as you can, even if some do not seem to apply to your child.

0 = Not True (as far as you know) **1 = Somewhat or Sometimes True** **2 = Very True or Often True**

0 1 2 1. Acts too young for his/her age
0 1 2 2. Allergy (describe): _____
_____
0 1 2 3. Argues a lot
0 1 2 4. Asthma
0 1 2 5. Behaves like opposite sex
0 1 2 6. Bowel movements outside toilet
0 1 2 7. Bragging, boasting
0 1 2 8. Can't concentrate, can't pay attention for long
0 1 2 9. Can't get his/her mind off certain thoughts; obsessions (describe): _____
_____
0 1 2 10. Can't sit still, restless, or hyperactive
0 1 2 11. Clings to adults or too dependent
0 1 2 12. Complains of loneliness
0 1 2 13. Confused or seems to be in a fog
0 1 2 14. Cries a lot
0 1 2 15. Cruel to animals
0 1 2 16. Cruelty, bullying, or meanness to others
0 1 2 17. Day-dreams or gets lost in his/her thoughts
0 1 2 18. Deliberately harms self or attempts suicide
0 1 2 19. Demands a lot of attention
0 1 2 20. Destroys his/her own things
0 1 2 21. Destroys things belonging to his/her family or others
0 1 2 22. Disobedient at home
0 1 2 23. Disobedient at school
0 1 2 24. Doesn't eat well
0 1 2 25. Doesn't get along with other kids
0 1 2 26. Doesn't seem to feel guilty after misbehaving
0 1 2 27. Easily jealous
0 1 2 28. Eats or drinks things that are not food—*don't* include sweets (describe): _____
_____
0 1 2 29. Fears certain animals, situations, or places, other than school (describe): _____
_____
0 1 2 30. Fears going to school
0 1 2 31. Fears he/she might think or do something bad
0 1 2 32. Feels he/she has to be perfect
0 1 2 33. Feels or complains that no one loves him/her
0 1 2 34. Feels others are out to get him/her
0 1 2 35. Feels worthless or inferior
0 1 2 36. Gets hurt a lot, accident-prone
0 1 2 37. Gets in many fights
0 1 2 38. Gets teased a lot
0 1 2 39. Hangs around with others who get in trouble
0 1 2 40. Hears sounds or voices that aren't there (describe): _____
_____
0 1 2 41. Impulsive or acts without thinking
0 1 2 42. Would rather be alone than with others
0 1 2 43. Lying or cheating
0 1 2 44. Bites fingernails
0 1 2 45. Nervous, highstrung, or tense
0 1 2 46. Nervous movements or twitching (describe):
_____
_____
0 1 2 47. Nightmares
0 1 2 48. Not liked by other kids
0 1 2 49. Constipated, doesn't move bowels
0 1 2 50. Too fearful or anxious
0 1 2 51. Feels dizzy
0 1 2 52. Feels too guilty
0 1 2 53. Overeating
0 1 2 54. Overtired
0 1 2 55. Overweight
56. Physical problems without known medical cause:
0 1 2 a. Aches or pains (*not* headaches)
0 1 2 b. Headaches
0 1 2 c. Nausea, feels sick
0 1 2 d. Problems with eyes (describe): _____
_____
0 1 2 e. Rashes or other skin problems
0 1 2 f. Stomachaches or cramps
0 1 2 g. Vomiting, throwing up
0 1 2 h. Other (describe): _____
_____

Please see other side

0 = Not True (as far as you know) 1 = Somewhat or Sometimes True 2 = Very True or Often True

0 1 2 57. Physically attacks people
0 1 2 58. Picks nose, skin, or other parts of body (describe): _____
_____
0 1 2 59. Plays with own sex parts in public
0 1 2 60. Plays with own sex parts too much
0 1 2 61. Poor school work
0 1 2 62. Poorly coordinated or clumsy
0 1 2 63. Prefers being with older kids
0 1 2 64. Prefers being with younger kids
0 1 2 65. Refuses to talk
0 1 2 66. Repeats certain acts over and over; compulsions (describe): _____
_____
0 1 2 67. Runs away from home
0 1 2 68. Screams a lot
0 1 2 69. Secretive, keeps things to self
0 1 2 70. Sees things that aren't there (describe):
_____
_____
0 1 2 71. Self-conscious or easily embarrassed
0 1 2 72. Sets fires
0 1 2 73. Sexual problems (describe): _____
_____
_____
0 1 2 74. Showing off or clowning
0 1 2 75. Shy or timid
0 1 2 76. Sleeps less than most kids
0 1 2 77. Sleeps more than most kids during day and/or night (describe): _____
_____
0 1 2 78. Smears or plays with bowel movements
0 1 2 79. Speech problem (describe): _____
_____
0 1 2 80. Stares blankly
0 1 2 81. Steals at home
0 1 2 82. Steals outside the home
0 1 2 83. Stores up things he/she doesn't need (describe): _____
_____
0 1 2 84. Strange behavior (describe): _____
_____
0 1 2 85. Strange ideas (describe): _____
_____
0 1 2 86. Stubborn, sullen, or irritable
0 1 2 87. Sudden changes in mood or feelings
0 1 2 88. Sulks a lot
0 1 2 89. Suspicious
0 1 2 90. Swearing or obscene language
0 1 2 91. Talks about killing self
0 1 2 92. Talks or walks in sleep (describe): _____
_____
0 1 2 93. Talks too much
0 1 2 94. Teases a lot
0 1 2 95. Temper tantrums or hot temper
0 1 2 96. Thinks about sex too much
0 1 2 97. Threatens people
0 1 2 98. Thumb-sucking
0 1 2 99. Too concerned with neatness or cleanliness
0 1 2 100. Trouble sleeping (describe): _____
_____
0 1 2 101. Truancy, skips school
0 1 2 102. Underactive, slow moving, or lacks energy
0 1 2 103. Unhappy, sad, or depressed
0 1 2 104. Unusually loud
0 1 2 105. Uses alcohol or drugs for nonmedical purposes (describe): _____
_____
0 1 2 106. Vandalism
0 1 2 107. Wets self during the day
0 1 2 108. Wets the bed
0 1 2 109. Whining
0 1 2 110. Wishes to be of opposite sex
0 1 2 111. Withdrawn, doesn't get involved with others
0 1 2 112. Worries
113. Please write in any problems your child has that were not listed above:
0 1 2 _____
0 1 2 _____
0 1 2 _____

PLEASE BE SURE YOU HAVE ANSWERED ALL ITEMS.

UNDERLINE ANY YOU ARE CONCERNED ABOUT.

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