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CONTEXTUAL MODERATORS OF THE RELATIONSHIP BETWEEN FATHER ALCOHOL PROBLEMS AND CHILD BEHAVIOR PROBLEMS IN A HIGH-RISK POPULATION

By

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ABSTRACT

CONTEXTUAL MODERATORS OF THE RELATIONSHIP BETWEEN FATHER ALCOHOL PROBLEMS AND CHILD BEHAVIOR PROBLEMS IN A HIGH-RISK POPULATION

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This study sought to identify a relationship between levels of father alcohol difficulty and child behavior problems in a population-based sample of 172 young Caucasian families with preschool-aged sons. In addition, contextual measures of parent psychopathology and quality of the family environment were examined for their potential moderating effects of this relationship.

The expected relationship between severity of father alcohol-related difficulty and child behavior problems was demonstrated, and a moderation effect was also observed whereby the interaction of parent psychopathology with father alcohol problems accounted for the variance of child difficulties. Further analyses showed that high levels of parent psychopathology lessened the effect of father alcohol problems on child behavior.

It was concluded that this moderation may exist because high levels of psychopathology subsume and/or mediate the individual effects of alcohol problems, and create a pervasive atmosphere of family chaos and difficulty whose direct cause can not be isolated.

This work is lovingly dedicated to the Lambert/Haber/Moses clan, and to the memory of its matriarch, Elizabeth Solomon Lambert.

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INTRODUCTION

Current research on the children of alcoholic parents suggests that they are at increased risk for a wide variety of educational and behavioral problems during childhood (West & Prinz, 1987), and for alcoholism and a variety of other behavioral difficulties when they reach adulthood (Vaillant, 1983; Zucker & Noll, 1982). Some of the most commonly reported problems in these offspring are aggressiveness, hyperactivity, conduct disorder, and school problems, which have in turn been found to predict alcoholism in adulthood (Stewart & Wilcox, 1985). However, no study has found evidence of these difficulties in more than half of its subjects. This fact has caused other researchers to question how it is that so many children of alcoholics appear resilient to the effects of living in an alcoholic home.

A number of personal, familial, and environmental characteristics have been suggested as protective of children in high-risk families in general (Rutter, 1987), and of alcoholic families in particular (Werner, 1986). However, only the most recent research (Seilhamer & Jacob, 1990) has investigated the ways in which these characteristics develop, how they relate to one another and to the risks associated with the alcoholic family environment, and how they might operate and interact in preventing so many children of alcoholics from developing behavioral and emotional difficulties.

This study examines the relationships among paternal alcohol problems, contextual protective and risk factors, and childhood behavior problems in a group of 172 families. Some of the families have a father

with an alcohol diagnosis, and some do not. All of the families have at least one male child between the ages of three and six. The study examines whether or not the level of paternal alcohol involvement predicts child behavior problems even during the preschool years, and then investigates the ways in which contextual factors might interact with paternal alcohol problems to moderate its effect on child behavior. This study contributes to the Children of Alcoholics literature in two ways: it demonstrates that even preschool children of alcoholics are at risk for maladaptive outcomes, and identifies contextual variables that may alter the relationship between the two.

REVIEW OF THE LITERATURE

It has long been observed that alcoholism tends to "run in families," that many alcoholics have themselves had alcoholic parents, and that the children of alcoholics are more likely than their peers to become alcoholics in adolescence or adulthood. Additionally, it appears that certain childhood behavior problems, such as hyperactivity, aggressiveness, and conduct disorder, are particularly common among both the children of alcoholics and children who will later become alcoholics themselves (Burk & Sher, 1986; Dinwiddie & Reich, 1991; Giglio & Kaufman, 1990). Sher (1991), in his review of the literature relating childhood behavior problems with adult alcoholism, noted that this relationship holds for both diagnosed conduct disorder and specific conduct problems such as lying, stealing, fighting, truancy, school behavior problems, and police contacts. Further, it has also become apparent that behavioral difficulties that predict later alcoholism often emerge as early as the preschool years (Zucker & Fitzgerald, 1991).

What is not yet clearly understood are the patterns of biopsychosocial process by which the familial transmission of alcoholism occurs (Zucker & Gomberg, 1986). Much research has been conducted in order to explore the effects of genetics, environment, and family interaction, but the interplay of these effects is unclear and has only recently begun to receive considerable attention in the research literature (Cloninger, Bohman, & Sigvardson, 1981; Zucker & Gomberg, 1989).

What is clear, however, is that the children of alcoholics are at risk for a variety of developmental, social and behavioral problems. Indeed, Tharinger & Koranek (1988) describe the effects of parental alcoholism as tantamount to child maltreatment: "Parental alcoholism equals psychological maltreatment of children. It promotes unhealthy patterns of parent-child interactions and family relations, negatively affects children's development, especially emotional and interpersonal development, and leaves the child at risk for psychological disorders in childhood, adolescence, and adulthood." Thus being the child of an alcoholic predisposes one to difficulty throughout one's life, and perhaps even to intergenerational chains of difficulty. This is the main reason that studying children of alcoholics, beginning at a young age, is so important. Understanding the pathways by which these difficulties are transmitted, and learning to intervene to prevent them, is of great social consequence.

I. Early Evidence of High Risk for Specific Kinds of Difficulty

There have been many disparate findings concerning the range of psychopathologic outcomes to which the offspring of alcoholics are vulnerable. The results of most studies fall at some point on a continuum that begins with Chafetz, Blane, & Hill's (1971) findings that children of divorced, alcoholic parents are no more likely than the children of divorced, nonalcoholic parents, to appear withdrawn and rebellious, develop trouble in school, come to the attention of the courts, and otherwise show more disturbed social and psychological behavior than matched controls with married, nonalcoholic parents. At the other end of this continuum, Fine, Yudin, Holmes, and Heinemann (1976) showed that, based on the Devereux Child Behavior Rating Scale, children of alcoholics were significantly more likely than matched comparison children to manifest such severe outcomes as pathologic use of senses and emotional detachment, which often occur in psychotic children. These outcomes appeared in addition to the more commonly reported findings of inadequate need for independence, social aggression, stuttering, unreasonable fears, bedwetting beyond the age of six, tantrums, excessive fighting, and chronic somatic complaints.

The results that fall between these two endpoints include four main areas of trouble: emotional and behavioral problems, disturbed social relations, and school problems. The kinds of emotional problems described in the literature on children of alcoholics are generally what Achenbach (1978) would refer to as internalizing problems. Children of alcoholics have often been referred to as quiet and withdrawn (Brown, 1986; Elkin, 1984), having a poor self-concept (Beardslee, Son, & Vaillant, 1986; Brown, 1986), or depressed (Brown, 1986; Ellwood, 1980; Rolf, Johnson, Israel, Baldwin, & Chandra, 1988; Woodside, 1988). Somewhat less commonly reported are somatic problems such as headaches, stomach aches, tics, and respiratory problems (Ellwood, 1980; Woodside,

1988), and vegetative difficulties such as eating and sleeping disorders (Woodside, 1988).

Those researchers who study cross sections of children of different ages (i.e., Woodside, 1988), have noticed a developmental shift in symptomatology wherein vegetative problems occur in infancy, somatic problems in middle childhood, and affective disturbance such as depression, anxiety, or phobias, in adolescence. In addition to these developmental shifts, there also appear to be some gender differences in symptomatology. Although Rolf et. al. (1988) reported that both male and female COAs aged 6-16 look more depressed than comparison children on a variety of measures, Steinhausen, Gobel, and Nestler (1984) noticed a different phenomenon. Among their sample, only the daughters of alcoholics were found to suffer from emotional problems, particularly depression, while the sons were more likely to exhibit conduct problems. This might be related to Zucker's (1987) description of the Four Alcoholisms, in which women are more likely to become "negative affect" alcoholics, while men are more often "antisocial" alcoholics. Thus, the findings of Steinhausen et. al. (1984) may imply that sex differences in the behavior of COAs may parallel sex differences in the behavior of adult alcoholics.

Behavior problems in the children of alcoholics were reported about as frequently as were emotional problems. These generally appear as externalizing behaviors (Achenbach, 1978) such as substance use, conduct problems, and antisocial behavior. As one might expect, the behavior problems of COAs tend to become more serious as the children grow older. In West & Prinz's (1987) review of the literature, they found a number of reports of attention-deficit disorder in young COAs, and this association was also reported by Brown (1986), El-Guebaly & Offord (1977), and Earls, Reich, Jung, & Cloninger (1988). The latter group also found elevated levels of oppositional personality disorder and conduct disorder in school-aged COAs as compared to controls, and

noted that this difference was more pronounced in children of two alcoholic parents than children of only one alcoholic. In older children, Elkin (1984) reported truancy and "vigorous testing of parental rules" in junior high-schoolers, and drug use, delinquency, and alcoholism in their high school-aged counterparts. Similarly, Woodside (1988) reported high levels of marijuana, hashish, amphetamine, cocaine, and alcohol use in adolescent COAs. Also among adolescents, Rimmer (1982, as cited by West & Prinz, 1987) reported high rates of antisocial behaviors such as lying, cheating, stealing, playing with matches, fighting, truancy, and discipline problems, and McCord's (1988) study of adult COAs revealed that juvenile delinquency was closely tied to parental alcoholism. In a review of a number of retrospective studies, Stewart & Wilcox (1985) identified significant antisociality, such as aggression, bullying, rebellion, hostility, and disobedience, in the childhood and adolescent histories of adult alcoholics.

Some longitudinal studies have followed COAs for a number of years, and revealed patterns in which emotional problems are evident in early childhood, and are gradually replaced by emerging behavioral problems as the children grow older. For example, Werner's (1986) longitudinal study noted a switch from somatic complaints and school difficulties at age 10 to serious delinquency at age 18. Similarly, Beardslee, Son, & Vaillant (1986) discovered a significant association between exposure to alcoholism in childhood, and time in jail, sociopathy, and diagnosable alcoholism in adulthood. Burk & Sher (1986) described a variety of both emotional and behavioral problems in COAs across three developmental periods. These included attention deficit disorder, conduct disorder, daydreaming, poor delay of gratification, and problems expressing feelings and trusting others in during the school years; antisocial behavior, conduct disorder, alcohol abuse, and sociopathy during adolescence; alcoholism and antisocial behavior in adulthood. Similarly, Feldman, Stiffman, & Jung's (1987) review of the

literature revealed a variety of emotional and behavioral problems that spanned developmental epochs. These included speech problems, fears, tantrums, and bedwetting in young children, and school trouble, truancy, problems in identity formation, and interpersonal difficulties, in older children and adolescents.

Problems in early cognitive functioning and later school performance appear to pose equally serious difficulties for the children of alcoholics, although they have been explored less extensively in the literature than emotional and behavioral problems. In a study of preschool COAs, Noll & Zucker (1983) discovered poor fine motor coordination, poor completion of adaptive tasks, and low levels of language and personal-social development as measured on the Yale Developmental Inventory. Ellwood (1980) reported an elevated incidence of learning disability in COAs. Similarly, Burk & Sher (1988) identified neuropsychological deficits, perceptual-motor problems, memory deficits, problems with language processing, auditory and visual attention, reading comprehension, abstraction, and problem solving, and deficits in information processing, in a COA population. Whipple, Parker, & Noble (1988) also identified difficulties in visual-motor performance and memory.

Measured intelligence and related school performance have also been compared in COA and control groups. Rydelius (1984) found that a significant portion of his sample of 7-9 year-old sons of alcoholics were unable to keep up in school despite normal measured intelligence. They fell behind because of restlessness, hyperactivity, and lack of concentration. One third of the COAs studied by Werner (1986) were sufficiently intellectually impaired to require remedial education. Erwin, Little, Streissguth, & Beck (1984) noted impairments on tests of intelligence, cognitive development, and academic achievement in COAs. Even when all other demographic variables were controlled, the COAs did more poorly on Verbal, Performance, and Full-Scale IQ as measured by the

WISC-R, although the means for both groups were still within the average range. Johnson & Rolf (1988), on the other hand, found no significant differences in Verbal, Performance, or Full-Scale IQ scores on the WISC-R, and no significant differences in reading, spelling, or arithmetic scores on the Wide Range Achievement Test. However, Johnson & Rolf's (1988) subjects did score significantly lower than controls on the self-concept scales of the Project Competence Interview and the Harter Perceived Competence Scale for Children. That is, COAs and controls had equal performance but unequal perceptions of competence. Thus, the COAs showed a greater discrepancy between their actual abilities and their perceived abilities.

In summary, the existing literature indicates that the children of alcoholics are at increased risk, beginning at a young age, for a wide variety of emotional, behavioral, social, and cognitive difficulties that may also predispose them to alcoholism in adulthood. As described above, a number of studies have delineated a developmental pattern of COA symptomatology that may be traced through vegetative symptoms in early childhood, school trouble and emotional and behavior problems in middle childhood, and antisocial, substance, and interpersonal problems in adolescence. In that many of these represent failures to meet developmental milestones, one can begin to see the seriousness of the COA problem. However, despite the apparent breadth and depth of information on the risk for psychopathology in the children of alcoholics, the existing body of literature contains methodological inconsistencies which limit the conclusiveness and generalizability of the findings.

II. Review and General Issues in the Literature

A significant amount of inconsistency in the literature on children of alcoholics stems from the wide variety of subject pools used in the research (see Watters & Theimer, 1978). "Children of alcoholics" is a term that has been applied loosely: some studies look at school-aged children only, others restrict themselves to preschoolers or adolescents, others are limited to adult offspring, but still others do not discriminate at all and subject "children" of a wide variety of age groups to the same data collection and analysis. Other problems with subject groups have included small sample sizes and inconsistent use of control groups (see Watters & Theimer, 1978). Some studies do not employ control groups at all, others use one "alcoholic" group and one "nonalcoholic" comparison group, and still others add a third group in which the parents of the index children suffer from some form of psychopathology (usually a personality or mood disorder) other than alcoholism.

There have also been inconsistent inclusion criteria for the alcoholic subjects (see Watters & Theimer, 1978). Many studies rely on self-report or interview measures to ascertain whether subjects meet DSM-III-R or Feighner criteria for alcoholism, while others recruit their subjects via police records of arrests related to drunken behavior or through the rolls of treatment programs. The latter two techniques may cause severity bias, and this becomes particularly problematic when one attempts to compare the results of such studies with those in which the subjects needn't even be diagnosable alcoholics, but merely "problem drinkers." It is not surprising that the children of severe alcoholics who have criminal records would exhibit more difficulties than those of "heavy drinkers" who do not necessarily meet the criteria for a diagnosis or alcoholism, or have a history of antisocial behavior.

Finally, very little of the research on children of alcoholics is

conducted longitudinally. Instead, many researchers have used cross-sectional designs, or have relied upon the retrospective self-reports of adult alcoholics. It is necessary to conduct methodologically sound longitudinal studies that track the development of children of alcoholic and comparison parents from early childhood through adulthood. The current research is part of a larger body of data from the Michigan State University Longitudinal Study, whose aim is to answer these needs.

Despite the obvious shortcomings of the existing data on COAs, some consistent patterns of findings have emerged. Perhaps the most interesting is that recent research reviewed by Zucker & Noll (1987) has shown that only 25-40% of COAs become alcohol abusers in adulthood or exhibit social or behavioral disturbances during childhood. That leaves up to 75%, the vast majority of these children, who apparently do not exhibit any measurable psychopathology at the time that they are studied (see Werner, 1986), and who do not grow up to become alcoholics themselves. Surprisingly few studies have investigated this interesting fact. Since it is expected that children of alcoholics are at risk for developing psychopathology, many researchers have ignored the "healthy" children, and have failed to investigate the factors that protect them from the adverse conditions in their alcoholic homes. Only in the past three decades has there been keen interest in the resilient offspring of parents with various types of psychopathology. The current need is for researchers to longitudinally study the processes of risk, protection, and their interaction, and to determine the adult outcomes of childhood vulnerability and resilience.

III. THE CONCEPT OF RESILIENCE

Given that so much research suggests that children of alcoholics are at risk for a broad spectrum of difficulties as a result of their being raised in an alcoholic home, then we must question why it is that fewer than half of all COAs appear vulnerable to the development of psychopathology. What processes are at work in some alcoholic families that protect the children and contribute to their positive and adaptive outcomes? How do these children become resilient in the face of their adverse circumstances? Although not a direct focus of the current study, it seems important to provide the reader with some background in the classical resilience literature to provide a historical basis for the ideas discussed.

Rutter (1979, 1985, 1987) has extensively studied the development of children at risk for psychopathology. His main thesis is that resilience constitutes a transactional phenomenon involving characteristics of both the child and the environment, and is not merely the opposite of vulnerability. Many "protective" characteristics of the child and the environment are completely ineffectual until they are called upon to interact with an environmental stressor. The result of this interaction is that the effect of the stressful environment upon the child is ameliorated. Thus no individual protective factor acts alone in making a child resilient. The child's positive characteristics and other variables act in concert with the environmental stress to produce adaptive outcomes. This mechanism has been referred to as a "steeling" or "inoculation" effect, in which small doses of stress, in combination with moderating contextual factors, protect the child from the effects of further stress (Garmezy, Masten, Nordstrom, & Ferrarese, 1979; Rutter, 1985, 1987). It is a theoretically appealing notion, but has yet to be demonstrated in the empirical literature.

In his 1987 work, Rutter outlined four types of mechanisms that, he hypothesized, moderate environmental risk and contribute to positive

child outcomes. These four were called reduction of risk impact, alteration of exposure, reduction of negative chain reactions, and self-esteem and self-efficacy. Within each category, he described a variety of individual child characteristics, opportunities, and positive aspects of the environment that ameliorate the effects of having a dysfunctional parent, and help the child to function competently despite his or her disadvantages. Thus it is increasingly clear that resilience is not merely a trait of the child, but rather the result of a favorable net balance between a number of positive and negative factors.

The first of Rutter's four categories of moderator variables involves reduction of risk impact. One of the ways in which this may be accomplished is by changing the meaning of the risk variable. By repeated "controlled exposure" to the dysfunctional parent, a positive relationship may be built that is protective to the child. Second, the impact of risk may be reduced by altering the child's exposure to the risk situation. By structuring the environment and working on solving other problems in the home, family members can help to reduce the amount of risk to which the child is exposed. Rutter (1979, 1985) has found that family problems have a cumulative effect upon children's outcomes, so by minimizing the number of problems, family members are also helping to minimize the child's vulnerability.

The third of Rutter's (1987) categories of moderators is reduction of negative chain reactions. This involves the continuing effects of protective characteristics like those described above, and interruption of negative patterns in the family. Such an interruption might entail changes in patterns of child care so that the child is increasingly removed from the dysfunctional parent and exposed instead to the "healthier" parent or other relatives. In this instance we see the importance of an extensive social support network for high-risk families. Children benefit from interactions with positive role models both within and beyond the extended family (Anthony, 1974; Rutter,

1979).

Finally, vulnerable children benefit from self esteem and self efficacy, which may be fostered in a number of ways. Secure attachments to, and harmonious relationships with, the healthy parent and with peers, help to build these qualities, as do specific accomplishments. Children gain self-efficacy through social success, domestic responsibility, success in school as well as non-academic pursuits, and positive problem solving. Also boosting self esteem are the successful negotiation of turning points, such as starting school, joining a club or team, or taking up a hobby.

Rutter identified other methods of altering risk that also reside within the child. One important variable here is gender. In several papers Rutter has reported that boys tend to be far more severely affected by family discord and parental psychopathology than girls. In the same studies, he discovered that temperamentally difficult children are also more vulnerable because they are more often scapegoated in family conflict than their temperamentally "easier" siblings. Another child characteristic that alters exposure to the dysfunctional parent is ability to physically or emotionally distance oneself from the stressors. Thus a child who spends a great deal of time away from the home with friends or pursuing activities is less involved with the parent and is thereby less affected by him or her. Thus children who are successful with their peers are able to both alter their exposure to the risk variable, and foster their self-efficacy and self-esteem. Provence (1974) also reported that children who are active motorically, socially, in play, verbally, and intellectually, are less vulnerable to stress than less active children. A child who is able to retreat from unpleasant situations and into his or her imagination is similarly protected. Anthony (1987), in describing a number of famous writers and artists with family histories of psychopathology, related that these individuals were protected by their ability to rely on their

imaginations or absorb themselves in creative pursuits. Again, children who are involved in activities outside the home, or are able to psychologically retreat, alter their exposure to the alcoholic parent, and build their self-efficacy and self-esteem. Also, by increasing their exposure to teachers, coaches, and other adults outside the family, children involved in activities are able to reduce the impact of the risk variable.

In summary, the main individual characteristics that moderate vulnerability in children at risk are gender, temperament, intelligence, activity, creativity, and self esteem. These are fostered and potentiated by positive family and environmental factors such as secure attachments and good relationships with the healthy parent, relatives, and friends, and by the provision of opportunities for the child to gain a sense of competence and self-efficacy.

While Rutter was concerned primarily with individual characteristics of the child at risk and his or her relationships with the "ill" parent, a number of other researchers have focused on environmental, or contextual variables that may serve to moderate outcome in children at risk. Werner (1984) reported that children at risk often benefit from having positive, nurturant relationships with adults other than the parent with a psychological disorder. These adults may be the other parent, a relative not living at home, a neighbor or the parent of a friend, or, often a teacher. Werner pointed out that resilient children often are successful at school or in extracurricular activities. Even if they are not exceptionally talented, they are able to use their abilities to the fullest, and attract the positive attention of teachers, coaches, and others. Environmental protectors identified by Stiffman, Jung, & Feldman (1986) include supportive peer groups, accessible social services for the child and the family, parental SES, and parental marital satisfaction.

The current trend in the literature on resilience is to view risk

and protection in a transactional model, in which environmental risk factors interact with both personal and environmental protective factors, and the resultant net balance between risk and protection is what predicts child outcome. The transactional theories of Sameroff & Seifer (1983) suggest that both risk and protection operate via a diathesis-stress model. Parental psychopathology affects children most severely when environmental risk factors, such as low SES, single parenthood, and negative childrearing attitudes, are also present (Barocas, Seifer, & Sameroff, 1985; Sameroff & Seifer, 1983). Similarly, Sameroff & Seifer (1983) posited that children naturally have "self-righting" tendencies, but that they must be supported by a nurturant environment in order to effectively protect the child from risk.

Ann Masten and her Project Competence colleagues at the University of Minnesota (Masten, 1989; Masten, Morrison, Pellegrini, & Tellegen, 1990), also view resilience as a positive net balance between risk and protective factors, or challenges and resources. According to Masten (1989), a simple model of adaptation would include the nature of the challenge, the resources available to meet the challenge, and factors that moderate either the nature of the challenge or the availability of resources. Stated another way, in order to be considered "protective," a resource must demonstrate its ability to moderate the relationship between stress exposure (the challenge), and child outcome (Masten et al, 1990).

These complex transactional theories of risk and protection are nicely summed up by Stiffman et al (1986), who explain that "children are likely to develop behavioral problems when they have low coping skills in relation to their net environmental stressors and protectors. Conversely, children are likely to avoid developing behavior problems if they have high coping skills in relation to their net environmental stressors or protectors." (p. 204)

IV. MODERATORS OF RISK IN THE CHILDREN OF ALCOHOLICS

A number of studies in the recent literature have begun to study contextual variables that act to buffer or potentiate the effects of parental alcoholism on childhood outcome, and many have tested transactional models similar to those described in the previous section, that investigate relationships between parental alcoholism, other parental difficulties, environmental factors, and child characteristics. This begins to answer another great inconsistency in the COA literature: the frequent failure to control for other aspects of the family environment. It is important to be able to discriminate the effects of parental alcoholism from the effects of contextual variables such as poverty, low educational attainment, divorce, separation, or illegitimate birth, or other disorders in the parents. This problem was elucidated by Robins, West, Ratcliff, & Herjanic (1978), whose finding that the children of alcoholic fathers are more truant and less likely to graduate from high school, was confounded by the facts that a significant number of the index children's parents had criminal records, had failed to complete high school, and/or had conceived the children out of wedlock or separated soon after their birth. Robins et al (1978) noted that their results were just as likely due to the parents' personal histories as to their alcoholism.

Indeed, according to Rogosch, Chassin, & Sher (1990), " at present, the search for factors that mediate and moderate risk for alcoholism and other adverse outcomes among offspring of alcoholics is one of the most active and important areas of contemporary alcoholism research."

For example, in their recent review of the COA literature, Tharinger & Koranek (1988) asserted that "the effects of parental alcoholism on children's development are mediated by aspects of the alcoholic's alcoholism: by the characteristics of the child, the alcoholic parent, the non-alcoholic parent, and the siblings; by the

quality of the dyadic family relationships, family functioning, and family development; by the presence of chronic and acute stressors in the family over time; by the influences of interventions attempted; AND, MOST IMPORTANTLY, BY THE TRANSACTIONAL INTERCHANGE AMONG ALL OF THESE FACTORS," (emphasis added). The specific components of these factors are similar to the moderator variables described by Rutter (1987). They are more completely explicated in the Tharinger & Koranek (1988) paper (pp. 172-173).

Similarly, Roosa, Beals, Sandler, & Pillow (1990) hypothesized and tested a model in which the effect of parental alcoholism on the child is mediated or moderated by its effect on stressful and positive experiences in the child's environment. This model argues that parental alcoholism is a distal risk factor that does not act directly on the child. Instead it first shapes the child's environment (proximal factors), which in turn predicts the child's outcome. Through a very complicated set of analyses, Roosa et al did show a mediational model in which "the impact of parental alcoholism is transmitted to children through the amount of positive and negative life events." However, these results emerged only cross-sectionally; the researchers' longitudinal data did not support the same conclusions.

This idea of proximal family factors mediating or moderating the effects of parental alcoholism on child outcome was earlier presented by Wilson & Orford (1978, as cited by Feldman et al, 1987). Few of the children participating in Wilson & Orford's study reported that parental drinking was the most important problem in their families. Instead, "marital conflict, violence, parental hospitalization, and maladaptive parent-child relationships were of greater concern."

Steinglass and his colleagues (Steinglass, Bennett, Wolin, & Reiss, 1987; Bennett, Wolin, & Reiss, 1988), have extensively studied the effects of family functioning and ritual behavior on the incidence of the intergenerational transmission of alcoholism. These researchers

have found that acceptance or rejection of intoxication when family rituals are being carried out is important to the transmission of alcoholism. Families that reject the alcoholic parent and exclude him from family rituals tend to be less likely to have passed alcoholism on to the next generation. A related finding was reported by McCord (1988), who found that the mother's esteem for the alcoholic father predicts alcoholism in sons. Among sons of alcoholics, 73% of the 15 whose mothers showed high esteem for the fathers became alcoholics, as compared to 38% of the 45 sons whose mothers denigrated the fathers. These three studies thus suggest that sons are less likely to emulate their alcoholic fathers if other family members demonstrate that alcoholism is unacceptable, and this phenomenon would certainly fit the bill for Rutter's (1987) "alteration of the meaning of the risk variable." In transactional terms, it would appear that the risk inherent in having an alcoholic father was moderated by the other family variables.

Similarly, Berlin & Davis (1989) posited that preschool COAs are "at risk for breakthroughs of the 'protective shield' provided by adequate parenting which fosters the development of earliest experiences of competence and mastery," because parental alcoholism so frequently causes marital conflict, separation, divorce, or desertion. Thus Berlin & Davis' theory is that children are affected by the family climate induced by parental alcoholism, rather than by having an alcoholic parent per se. Specifically, the variables that Berlin & Davis believed to moderate the relationship between parental alcoholism and child outcome were the balance of power between the alcoholic and "well" parents; the degree of family individuation/cohesion; the degree to which the alcoholic parent "dominates interactions, galvanizes attention, and generates reactive and repetitive scenarios;" the family's ability to adapt to changes and maintain family rituals; the balance of family mythology and reality, and the affective climate in

the family. In addition to these proximal family variables, Berlin & Davis also identified the family's SES, the child's age and birth order, and the presence or absence of family violence, as moderators. Clearly, many of the moderators identified by Berlin & Davis are reminiscent of the findings of Steinglass et al.

In her longitudinal, population-based study on the island of Kauai, Hawaii, Werner (1986) identified the individual traits of affectionate temperament, good communication skills in reading and writing, at least average intelligence, achievement orientation, responsible attitude, positive self-concept, and internal locus of control at ages 1, 2, and 10 as being protective of COAs at age 18. Protective family factors noted by Werner included plenty of attention from the primary caregiver in infancy, no additional births in the family during the first two years of life, and absence of severe conflict during the first two years of life. Gender also played a role in determining vulnerability or resilience among Werner's subjects. Of the 59% of COAs who had not developed learning or behavior problems by the age of 18, 72% were female. By contrast, 70% of the remaining COAs who did have difficulties were male. In addition, children with alcoholic fathers were equally distributed among the vulnerable and resilient groups, while only one resilient child had an alcoholic mother. Most of the children of alcoholic mothers, and especially those whose mothers drank while pregnant, had serious problems by age 18. Thus, one implication of Werner's is that being female and having a male alcoholic parent are more protective than being male and having a female alcoholic parent. The higher incidence of vulnerability in sons may be due to the fact that there were more alcoholic fathers than mothers in the study. Since there were more fathers, and since children tend to identify more closely with same-sex parents, it is understandable that sons would emulate their fathers' dysfunctional behavior and therefore have more behavior problems than girls. In addition, the increased risk

associated with having an alcoholic mother may be explained by the possibility of fetal alcohol syndrome. This possibility is magnified by the fact that children whose mothers were actively alcoholic during pregnancy were at significantly high risk for problems in behavior and learning. Again, in this study, outcome was determined by an interaction between parental alcoholism, environmental risk and protective factors, and individual characteristics of the children.

Werner's (1986) finding that the sex of the alcoholic parent has differential effects upon child outcome points to a further problem in integrating the literature on children of alcoholic parents: the inconsistency with which alcoholic parents are chosen for study (see also West & Prinz, 1987). Only a very few papers have focused on families in which only the mother is alcoholic, but, conversely, a great many have focused only on alcoholic fathers, often without ascertaining whether the mother might also be an alcoholic. This can be a very serious problem. The few studies that have looked at children whose mothers or both parents are alcoholics have found that those children are more seriously affected than those whose fathers alone are alcoholics; further, the results of studies that focus only on fathers may be confounded by a unique effect of maternal alcoholism: fetal alcohol syndrome (Steinhausen, Gobel, & Nestler, 1984). Researchers interested in the children of alcoholic fathers must be sure that the mothers are not also alcoholics, or at least that they were not during pregnancy. It is important to separate the effects of parental alcoholism per se from medical difficulties resulting from fetal alcohol syndrome. Finally, the fact that children are usually cared for primarily by their mothers, and therefore receive the greatest exposure to her and any difficulties that she may have, may in itself be a source of increased risk. Indeed, Werner (1986) found that sufficient maternal attention was a <u>protective</u> factor in her sample; it may be conversely assumed that the decreased attention afforded by an alcoholic mother

could become a risk factor.

In their review of the literature on moderators of the effects of parental alcoholism, Seilhamer & Jacob (1990) identified a number of individual child characteristics (sex, age, IQ, temperament, and genetic propensity); family characteristics (sex and psychological status of nonalcoholic parent, duration and intensity of drinking, and treatment experience); and contextual variables (peer influences, supportive social institutions, and informal social resources).

Another important source of moderation of the risk inherent in alcoholic families is comorbid psychopathology in the alcoholic parent and/or his spouse. Although secondary diagnoses are not necessarily alcohol-specific, it is likely that different constellations of maladaptive parental behaviors might predispose children to different kinds of outcomes. For example, Drake & Vaillant (1988), in their review of the literature on maladaptive outcome in children of alcoholics, pointed out that much of the poor outcome could be influenced by poverty, poor nutrition, parental psychopathology, and other problems.

West & Prinz (1987) identified multiple risk factors in their review of the COA literature. These included the severity of the alcoholic parent's alcoholism, psychopathology in both parents, extent of family disorganization, socioeconomic status, family size, the child's relationship with the alcoholic parent, parental antisocial behavior, and availability of alternative sources of support. In particular, their review revealed that families of children with externalizing disorders are likely to have parents with both alcoholism and antisocial personality disorder.

Earls, Reich, Jung, & Cloninger (1988) studied psychopathology in children whose parents were diagnosed with alcoholism, antisocial behavior, or neither. Of the parents with antisocial personality, most were fathers who were also diagnosed with alcoholism, and half of them

also had alcoholic wives. The researchers found that "externalizing" behavioral problems such as attention deficit disorder, oppositional-defiant disorder, and conduct disorder, were three times as common in children of antisocial/alcoholic parents, as in children of comparison parents. This relationship did not exist for "internalizing" disorders such as anxiety and depression. The effects were worst for children with two alcoholic parents.

Jacob, Seilhamer, & Rushe (1989) reviewed Child Behavior Checklist profiles of children of alcoholic, depressed, and control families and found that children of alcoholics had the most problems, but only slightly more than children of depressed parents. They then examined the COA data more closely and found that, within that group, child impairment was associated with higher levels of alcohol-related problems such as social, occupational, and marital disturbance, and higher levels of comorbid parental psychopathology. They concluded that their findings "underscore the importance of examining how the interplay of social stressors associated with alcohol abuse, parental psychiatric status, and mother's ability to mediate negative effects, impacts upon child outcome" (Jacob, Seilhamer, & Rushe, 1989).

Similarly, Johnson, Sher, & Rolf (1991) found that COAs are most likely to develop behavior problems when their family environments also include comorbid parental psychopathology and adverse rearing conditions, and Pihl & Peterson (1991) described strong links between parental alcoholism and antisocial behavior, child conduct problems, and later adult alcoholism and antisocial behavior.

Rubio-Stipec, Bird, Canino, Bravo, & Alegria (1991) studied a community sample in Puerto Rico and found that the family environments of alcoholic families showed greater adversity than the environments of comparison families. Parental alcoholism in addition to environmental adversity increased the risk for child maladjustment as measured by the CBCL. Rubio-Stipec et. al. (1991) also found that the COAs in their

study evidenced increased internalizing behaviors, but not externalizing behaviors. This surprising finding seemed to be due to the fact that most COAs also had mothers diagnosable with depression.

In addition to the personal, interpersonal, and familial characteristics described thus far, another factor in the prediction of positive child outcomes concerns treatment and relapse. Tharinger & Koranek (1988) replicated the findings of Moos & Billings (1982) that children of recovered alcoholics function as well as control children and are less depressed than controls. They also found that children of relapsed alcoholics evidenced more symptoms of emotional disturbance, especially depression and anxiety, than did children of recovered alcoholics or controls. This finding is reminiscent of Rutter's (1987) "reduction of negative chain reactions."

Thus it is clear from the above review that the mechanisms of vulnerability and resilience, and the interactions of risk and protection in the children of alcoholics, are in many ways similar to those of children at risk for other types of psychopathology. What remain to be understood are the ways in which these mechanisms develop, and the specific processes by which risk and protective factors interact with paternal alcoholism to produce positive or negative outcome in their offspring.

STATEMENT OF THE PROBLEM

Based on the previous literature review, it is clear that a wide variety of parental characteristics and contextual factors may serve to increase or decrease (moderate) the risk of behavioral or developmental problems in the children of alcoholics. However, the generalizability of these findings has been hampered by methodological flaws within individual studies, and by definitional or procedural inconsistencies between studies. In addition, little work has been done to determine whether and how combinations of contextual risk and/or protective factors may moderate the relationship between parental alcoholism and behavior problems in preschool-aged COAs.

The present research specifically focuses on this issue of combined and moderated effects. Within the limitations of an at-the-moment retrospective and cross-sectional data set, it first examines whether preschool aged children in high-risk families are at risk for maladaptive outcomes, and then examines the extent to which contextual factors may moderate the relationship between paternal alcohol problems (risk) and maladaptive child behavior (outcome) . The study's findings are important in that they identify these mechanisms in very young children, and are potentially highly generalizable given that they describe a set of families whose fathers comprise a population-based sample of men with diagnosable alcoholism and a demographically-matched set of men who do not meet diagnostic criteria for substance abuse, but may be considered "high-risk" on the basis of demographic criteria and/or other psychopathology. Thus the risk of severity bias inherent in the use of treatment-based samples is reduced.

For this study, behavioral problems were chosen as the child

outcome measure because they are studied most frequently in the existing literature, and because they are important in this type of longitudinal research given that many types of behavior problems are known to be related to both parental alcoholism, and later alcoholism in the child. Two groups of potential moderator variables were also chosen on the basis of their frequent appearance in the literature: a group of variables measuring parental psychopathology beyond paternal alcoholism, and a group measuring the quality of the home environment. Because the group of parent psychopathology variables represents negative adaptation and the group of family environment variables measures positive characteristics, they will be referred to as the RISK, and PROTECTIVE factors, respectively. This research investigates how these groups of variables combine with one another, and interact with the independent variable (degree of paternal alcohol problems) to moderate its effect on child behavior problems.

HYPOTHESES

Specific hypotheses are as follows:

1. There will be a significant positive relationship between father alcohol problems and child behavior problems.
2. There will be positive relationships among the putative parental risk variables.
3. These risk variables will correlate positively with child behavior problems.
4. There will be positive relationships among putative parental and contextual protective variables.
5. These protective variables will correlate negatively with child behavior problems.
6. The statistical interaction of contextual variables with paternal alcohol problems will moderate the main effect of parental alcohol problems on child behavior problems in the following ways: Father alcohol problems will be more predictive of child behavior problems as the level of risk variables increases, and less predictive as the level of protective variables increases.

METHOD

SUBJECTS

The subjects in this study are 172 families who are participants in the Michigan State University Longitudinal Study (Zucker, 1987; Zucker, Fitzgerald, & Noll, 1986). 142 of these families were selected for the study on the basis of the fathers' having been convicted of drunk driving in the Mid-Michigan area, and having had a blood alcohol level at or above .15% (indicating a high level of tolerance) at the time of their arrest (or .12% if the current arrest is at least the second alcohol-related arrest). Fathers in this Risk group also must meet the requirements set out by Feighner et. al. (1972) for a diagnosis of probable or definite alcoholism. This diagnosis is established via administration of the Short Michigan Alcohol Screening Test (Selzer, 1985), and is later verified via administration of the Diagnostic Interview Schedule, Version III (DIS: Robins et. al., 1985). Other inclusion criteria are that the family must have a male child between the ages of 3.0 and 6.0 at the time of initial contact, and that the parents must be living together and with the child at that time.

The remaining 30 families are members of the study's contrast sample. These families were recruited through door-to-door canvassing of the census tracts in which the alcoholic families reside. These families are chosen on the basis of demographic proximity to a risk family, and the age of the target child in a contrast family must be within 6 months of the age of the neighborhood alcoholic family's target child. These families are also screened for the presence of parental alcoholism or other drug abuse/dependence. A sizable proportion of

potential contrast families fail to meet the criteria for being non-alcoholic or non-drug-involved. When this is discovered after the beginning of data collection, the families continue with the project but are placed in a separate group (as they may be qualitatively different from the families in which the father is a convicted drunk driver).

It is important to note that while the families who remain in the contrast sample show no evidence of parental alcoholism, many show a variety of other problems, as one might expect as a result of the community-based recruitment procedures. These problems often include other parental psychopathology and/or chronic poverty, and their presence in the comparison group speaks for a continuum of difficulty among both high-risk and control families in the study sample. In fact, plots of the distribution characteristics of all variables indicates that the assumption of a continuum of severity is an appropriate one.

PROCEDURE

Each participating family provides information through questionnaires, direct observation sessions, and interviews (Zucker, Noll, & Fitzgerald, 1986). The data are collected during the course of an eight-session contact schedule which includes 18 hours of contact with project personnel. The majority of the data collection takes place in the family's home. The family comes to the university once for videotaping of a structured interaction task, and once for the child to participate in a one-to-one interaction with a project staff member. Data are collected by a trained team of graduate and undergraduate students who are blind to the family's level of risk status. Each of these families will participate in this data-collection procedure once every three years until the target child reaches adulthood. Families receive financial compensation for their participation. Currently the amount of compensation is $250 for each wave of data collection.

MEASURES

For the present study, the main independent variable is a measure of the degree of alcohol-related problems experienced by the fathers. In addition, two groups of potential moderators of the effects of paternal alcohol problems were chosen for examination. These are the **quality of the family environment**, as measured by family socioeconomic status and parental intelligence, and **parental psychopathology**, as measured by maternal alcohol problems, parental antisocial behavior, and parental depression. Because all of the included measures are scaled so that high scores on the home environment scales indicate positive adaptation and high scores on the psychopathology scales indicate negative adaptation, the two groups will henceforth be referred to as PROTECTIVE and RISK variables, respectively. The dependent variable, child outcome is measured by a count of total behavior problems. (See Figure 1). The specific measures used in this study are as follows:

I. INDEPENDENT VARIABLE

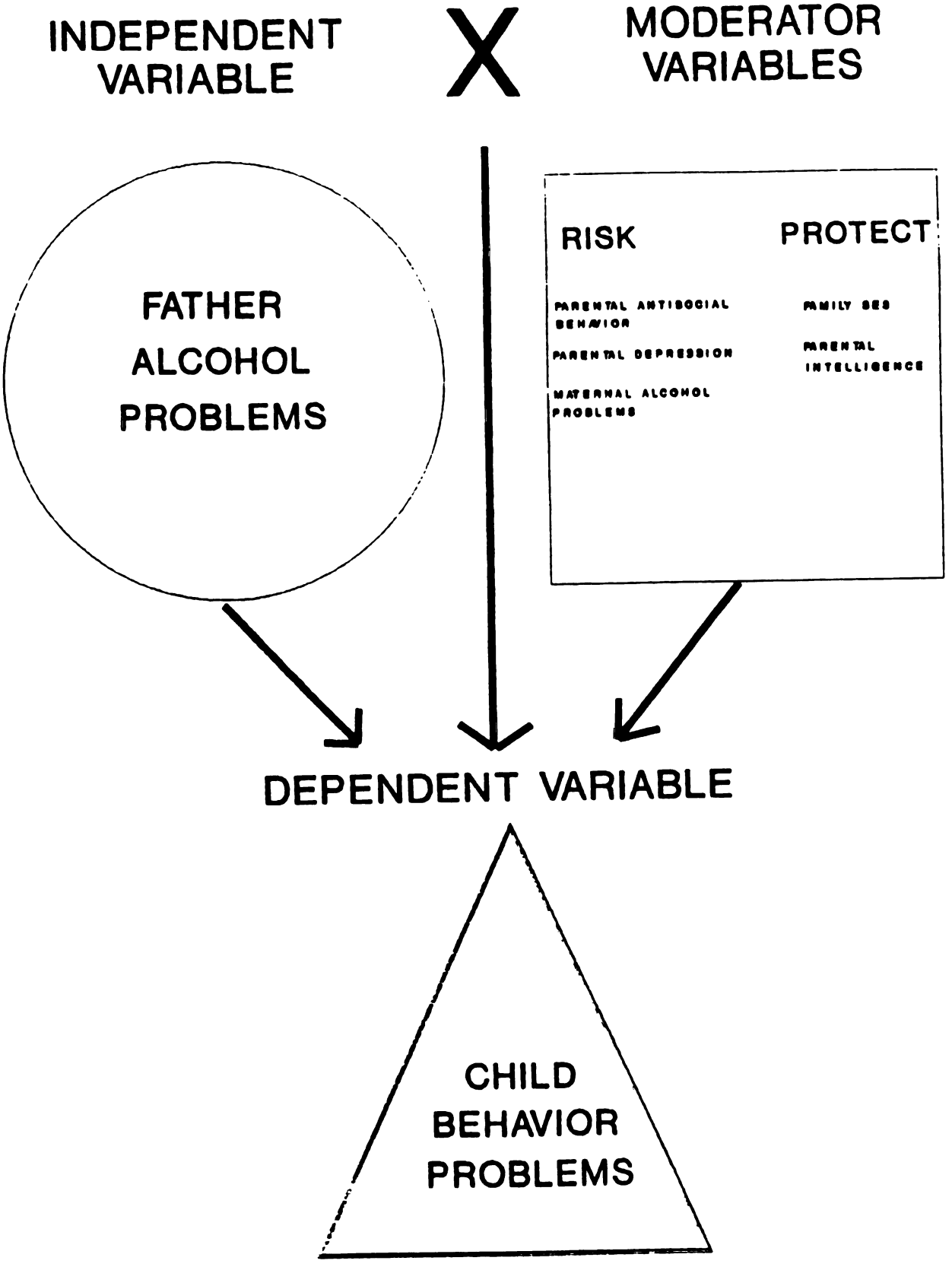
A. Measuring the degree of paternal alcohol problems

The fathers' lifetime history of difficulties with alcohol is measured via the Lifetime Alcohol Problem Score (LAPS; Zucker, 1990), which incorporates information on the primacy (onset), variety, and life invasiveness of problems associated with drinking based upon data from two different interview measures. LAPS consists of three component subscores: (a) the primacy component, which is the squared inverse of the age at which the respondent reported first drinking enough to get drunk; (b) the variety component, which is the number of areas in which drinking problems are reported, adjusted for current age; and (c) the life percent component, which is the interval between the earliest and most recent drinking problems, again adjusted for current age. Scores are standardized separately for males and females within the project sample. This measure is unrelated to current alcohol consumption in

problem drinking samples, and has been shown to be a valid indicator of differences in long-term severity of drinking difficulty in a wide variety of areas (Zucker, 1991).

Figure 1

Hypothesized Relationships Among the Variables



II. POTENTIAL MODERATORS

A. Risk variables

1. Measuring maternal alcohol problems

Maternal alcohol problems are measured using the same instrument used to measure paternal difficulties, the LAPS (Zucker, 1991, see above).

2. Measuring parental antisocial behavior

The parents' antisocial behavior is assessed using the Antisocial Behavior Checklist (Zucker & Noll, 1980). This instrument is a 46-item inventory that measures the frequency of the respondent's participation in a variety of delinquent, criminal, and antisocial activities in childhood and adulthood. This inventory is administered to both parents. A series of reliability and validity studies with samples ranging from male and female college students to male and female state prison inmates has shown that the instrument has adequate test-retest reliability (.91 over four weeks), and internal consistency (coefficient alpha = .93) (Zucker & Noll, 1980). It has also been shown to differentiate between groups with major histories of antisocial behavior (inmates), versus individuals with minor offenses in district court, versus university students (Noll & Zucker, 1980).

3. Measuring parental depression

Parental depression is measured through self-report using the Short Form of the Beck Depression Inventory (BDI; Beck & Beck, 1972). This is a 13-item self-report questionnaire asks respondents to indicate to what extent they are experiencing a variety of depressive symptoms, i.e., disturbances in appetite, sleep habits, mood, etc., on the day of the interview. Scores on the short form of the BDI have been found to correlate between .89 and .97 (Beck, Steer, & Garbin, 1988) with the long form, whose mean coefficient alpha has been measured at .81 for nonpsychiatric samples.

B. Protective variables

1. Measuring parental intelligence

Parental intelligence is estimated using portions of the Wechsler Adult Intelligence Scale, Revised (WAIS-R; Wechsler, 1981). Verbal and Performance Iqs are estimated using scores on the Information and Digit Symbol subtests, respectively. The Information subtest, which assesses mental alertness, verbal skill, and general knowledge, is reliable and correlates strongly (r=.83) with Full Scale IQ. The Digit Symbol subtest, which assesses motor persistence, attention, visual-motor coordination, and response speed, has adequate reliability and is highly correlated (r=.61) with Full Scale IQ. Each WAIS-R subtest scale is multiplied by a constant to obtain prorated estimates of IQ (Fitzgerald, Sullivan, Ham, Zucker, Bruckel, Schneider, & Noll, 1992).

2. Measuring families' socioeconomic status

Socioeconomic status is measured using the Revised Duncan Socioeconomic Index (TSEI2, Stevens & Featherman, 1981), an index of occupational attainment of both parents and their families of origin. This measure was chosen based on work by sociologists suggesting that occupation-based measures represent a more contemporary indicator of SES (as opposed to measures based solely on income), that is sensitive to changes in occupational attainment (Featherman & Hauser, 1977; Mueller & Parcel, 1981; Nock & Rossi, 1979). Family SES is defined in this study as the father's SES when his is higher than the mother's, or the average of the mother's and the father's when hers is higher.

The above two variables were chosen as indices of the quality of the social environment by virtue of their own influence, as well as their substantial correlation with the Home Observation for Measurement of the Environment (HOME; Caldwell & Bradley, 1984), which was used with a subgroup of the families in this study. Through direct observations and parent interviews, the HOME measures the quality of the cognitive, social, and emotional stimulation available to the child (Caldwell &

Bradley, 1984). Inter-rater reliability for the HOME among MSU Family Project Staff has been measured at .99 (Noll, Zucker, Fitzgerald, & Curtis, in press). Unfortunately, the HOME protocol was used with too few families for it to be included as a criterion variable in the current study. However, its moderately high correlations with mothers' and fathers' IQ scores and family socioeconomic status (r=.44, .28, and .40, respectively, p<.01), among a subset of 74 families included in the current study, suggest that the variables used here are suitable for use as indices of the quality of the home environment.

III. DEPENDENT VARIABLE

A. Measuring child behavior problems

For the purposes of this study, conduct problems are considered a measure of negative adaptive functioning in the sons. Such problems are identified using the Child Behavior Checklist (CBCL;Achenbach, 1982). The CBCL is a 113-item questionnaire in which parents rate how well a variety of statements describe their child's behavior in the past six months. Based on these parent reports, the CBCL yields standardized scores on eight narrow band subscales and two broad band subscales (i.e., externalizing and internalizing behavior problems), as well as information on social competence. In the normative studies with this instrument (Achenbach, 1982), profile stability on the CBCL averages .72 across 6 months. Test-retest reliability has been measured at .80; interrater reliability=.79 (Achenbach & Edelbrock, 1983). This study uses the Total Behavior Problems Score, which incorporates both internalizing and externalizing behaviors. Although the CBCL is completed by both parents, only the mothers' data are used in the current study, because of most mothers' greater contact with their preschool-aged children, as compared to the fathers.

RESULTS

Missing Data and Outliers

Before beginning analyses, all variable files were screened for missing data and outliers. Missing data were estimated via regression analyses on the available data. No more than five percent of the values were estimated in this manner for any of the variables. Outliers were defined as nonadjacent values falling outside a normal curve superimposed upon the frequency distribution histogram for each variable. Each outlying value was assigned a value adjacent to the closest non-outlying value while maintaining the rank order of subjects on each variable. No more than two outliers were transformed in this way for any variable.

Demographic Characteristics

Table 1 presents the sociodemographic characteristics of the Risk families used in this study. For the purposes of this table, Family Income is based on a 1-10 scale in which a score of 1 represents income under $4,000; 2=$4,000-$7,000; 3=$7,001-$10,000; 4=$10,001-$13,000; 5=$13,001-$16,000; 6=$16,001-$20,000; 7=$20,001-$30,000; 8=$30,001-$50,000; 9=$50,000-$75,000, and 10=Over $75,000. The mean of 31.59 represents a clerical job such as a secretary. Occupations in our sample ranged from Unemployed (0.00) to Veterinarian (86.6).

Descriptive Statistics

Table 2 displays descriptive statistics for the independent and dependent variables. These are grouped into three categories: protective variables (family socioeconomic status [SES], and mother and father intelligence [MIQ & FIQ]; risk variables (mother and father alcohol problems [MLAPS & FLAPS], mother and father antisocial behavior

[MASB & FASB], and mother and father depression [MBDI & FBDI]; and child outcome (mother's report of child behavior problems [TBPS]).

Table 3 provides information regarding alcohol-related diagnoses among the parents in the study sample. Project staff screened the data files of all of the parents in the sample, and used DSM III-R (American Psychiatric Association, 1987) criteria to assign diagnoses of abuse, dependence-mild, dependence-moderate, or dependence-severe. None of the fathers from comparison families received any alcohol-related diagnoses; of the 142 remaining families, 15% were diagnosed with alcohol abuse, 16% with dependence-mild, 36% with dependence-moderate, and 33% with dependence-severe. Of the mothers in the sample, 61% received no diagnosis, while 13% were diagnosed with abuse, 9% with dependence-mild, 12% with dependence-moderate, and 5% with dependence-severe.

Because of the broad range of alcohol problems and other psychopathology in the parents, as well as the strategy by which contrast families were recruited from the same neighborhoods in which the risk families reside, these subjects may be considered as a single population with continuous degrees of difficulty, as opposed to discrete risk and contrast groups; all analyses were conducted on that basis.

Correlations between risk and protective factors

Table 4 depicts the correlations among the parental risk variables, and between risk variables and child outcome. With the exception of one nonsignificant relationship between maternal depression and paternal antisocial behavior, all of the risk variables demonstrate significant correlations with each of the others, and all correlate significantly with the child outcome variable (mother's report of behavior problems). The vast majority of these relationships are significant; this indicates considerable cohesion among the group of risk variables. Table 5 depicts the correlations among the protective variables, and between protective variables and child outcome. Again, the majority of the correlations among protective variables are highly

significant, and all but maternal intelligence (MIQ) correlate significantly with the outcome variable. Table 6 depicts the correlations between the risk and protective variables. With the exception of one relationship, all of these correlations are in the expected (negative) direction, and most are statistically significant, although generally of low order.

Table 1

Sociodemographic Characteristics of the Sample (N=172)

	M	SD
Mother Age (years)	29.79	4.54
Father Age (years)	31.98	5.13
Family SES[a]	31.59	14.53
Mother Education (years)	12.89	1.98
Father Education (years)	12.90	1.98
Years Married	8.27	4.00
Family Income (dollars)	18,388	4,466
Child Age (years)	4.47	1.06

[a]Duncan TSEI2 (Stevens & Featherman, 1981)

Table 2

Descriptive Statistics for Parental Risk and Protective Variables, and Child Behavior Problems Among the Families (N=172)

	M	SD
Parental Protective Factors		
Family SES (FYSES)[a]	31.59	14.53
Mother IQ (MIQ)[b]	96.85	12.63
Father IQ (FIQ)[b]	92.98	12.65
Parental Risk Variables		
Mother Alcohol Problems (MLAPS)[c]	9.91	1.93
Father Alcohol Problems (FLAPS)[c]	10.02	2.35
Mother Antisocial Behavior (MASB)[d]	12.18	7.87
Father Antisocial Behavior (FASB)[d]	21.09	14.44
Mother Depression (MBDI)[e]	4.49	3.66
Father Depression (FBDI)[e]	3.80	2.99
Child Characteristics		
Child Behavior Problems (TBPS)[f]	27.47	23.47

[a]Duncan TSEI2 (Stevens & Featherman, 1981)
[b]Mother and Father IQs
[c]Mother and Father Lifetime Alcohol Problem Score
[d]Mother and Father Antisocial Behavior - Total
[e]Mother and Father Beck Depression Inventory
[f]Achenbach Total Behavior Problem Score, Mother's Report

Table 3

Descriptive Statistics Pertaining to Parental Alcohol Diagnoses in the Study Sample (N=172 fathers and 172 mothers)

	n	% of sample	% of subjects receiving dx
		FATHERS	
No Diagnosis	30	18	--
Abuse	21	12	15
Dependence-Mild	23	13	16
Dependence-Moderate	51	30	36
Dependence-Severe	47	27	33
		MOTHERS	
No Diagnosis	105	61	--
Abuse	23	13	34
Dependence-Mild	16	9	24
Dependence-Moderate	20	12	30
Dependence-Severe	8	5	12

Note: Diagnoses based on DSM III-R criteria

Table 4

Correlations (Pearson R) Among Risk Variables and with Child Behavior Problems (N=172)

	MLAPS[a]	FLAPS[a]	MASB[b]	FASB[b]	MBDI[c]	FBDI[c]	TBPS[d]
MLAPS	----	.24**	.52**	.16**	.17*	.29**	.30**
FLAPS		----	.30**	.62**	.25*	.34**	.41**
MASB			----	.30**	.35**	.22**	.35**
FASB				----	.15	.35**	.29**
MBDI					----	.41**	.32**
FBDI						----	.37**
TBPS							----

*p<.05, **p,.01, two-tailed

[a]Mother and Father Lifetime Alcohol Problem Score
[b]Mother and Father Antisocial Behaviors - Total
[c]Mother and Father Beck Depression Inventory
[d]Achenbach Total Behavior Problem Score, Mother's Report

Table 5

Correlations (Pearson R) Among Protective Variables and with Child Behavior Problems(N=172)

	FYSES[a]	MIQ[b]	FIQ[b]	TBPS[c]
FYSES	----	.40**	.47**	-.25**
MIQ		----	.50**	-.13
FIQ			----	-.34**
TBPS				----

*p<.05, **p<.01, two-tailed.

[a]Family Socioeconomic Status
[b]Mother and Father Total IQ Scores
[c]Achenbach Total Behavior Problem Score, Mother's Report

Table 6

Correlations (Pearson R) Between Risk and Protective Variables (N=172)

	FYSES[a]	MIQ[b]	FIQ[b]
MLAPS[c]	-.08	-.03	-.04
FLAPS[c]	-.29**	-.03	.22**
MASB[d]	-.36**	-.18*	-.26**
FASB[d]	-.38**	-.15*	-.22**
MBDI[e]	-.16*	-.13	-.20**
FBDI[e]	-.20**	-.31**	-.25*

*p<.05, **p<.01, two tailed

[a]Family Socioeconomic Status
[b]Mother and Father Total IQ Score
[c]Mother and Father Lifetime Alcohol Problem Score
[d]Mother and Father Antisocial Behavior Score - Total
[e]Mother and Father Beck Depression Inventory

Exploratory Factor Analysis

Following the above analyses, an exploratory factor analysis was conducted to ascertain whether the risk and protective variables would comprise coherent factors. Maximum Likelihood extraction was used to find the factor solution which would best fit the observed correlations, and, similarly, Oblimin rotation was chosen because it does not impose the condition of orthogonality upon the factor solution, and thus is most tolerant of intercorrelations among and between the component variables (Kim & Mueller, 1978). Because of the high degree of intercorrelation shown above, it was clear that the combination of Maximum Likelihood extraction and Oblimin rotation would be best suited to this data set, and most likely to yield a coherent factor structure. The solution that yielded the most clearly interpretable and cohesive pattern matrix was a 2-factor solution. The first factor (PROTECT) included all of the putative protective variables (family SES, and maternal and paternal intelligence); the second (RISK) included all of the hypothesized risk variables (maternal alcohol problems, and maternal and paternal antisocial behavior and depression). Table 7 gives the eigenvalues and percent-variances accounted for by each factor, and Table 8 summarizes the pattern matrix, which includes each variable's loadings on both factors, after Oblimin rotation. This solution was till preferable even though Factor 2 produced an eigenvalue of less than unity, because the solution fit so well with theoretical expectations. Table 9 presents the intercorrelations among the new factors, and between each factor and the outcome variable (child behavior problems). As shown in Table 7, these two factors accounted for over 38% of the variance of the dependent variable (child behavior problems).

Table 7

Exploratory Factor Analysis of Risk and Protective Variables, (Oblimin Rotation) (N=172)

	Eigen-Value	% Var. Acct. for	Cum. % Var.
Factor 1 (RISK)	2.53	28.1	28.1
Factor 2 (PROTECT)	.90	10.1	38.1

Table 8

Factor Analysis of Risk and Protective Variables:

Factor Loadings for Two-factor Solution (Oblimin Rotation) (N=172)

Variable	1 RISK	2 PROTECT
FYSES[a]	-.26	**.49**
MIQ[b]	-.13	**.78**
FIQ[b]	-.08	**.66**
MLAPS[c]	**.36**	.03
MASB[d]	**.40**	-.19
MBDI[e]	**.29**	-.15
FLAPS[c]	**.88**	.17
FASB[d]	**.73**	.01
FBDI[e]	**.39**	-.22

Note: Items used to define the factors are shown in bold type.
[a]Family Socioeconomic Status
[b]Mother and Father IQ
[c]Mother and Father Lifetime Alcohol Problem Score
[d]Mother and Father Antisocial Behavior Score
[e]Mother and Father Beck Depression Inventory

Table 9

Correlations Between the Factors, and Between Each Factor and the Outcome Variable (N=172)

	FLAPS[a]	RISK	PROTECT	TBPS[b]
FLAPS	----	.54**	-.23**	.41**
RISK		----	-.38**	.49**
PROTECT			----	-.30**
TBPS				----

*p<.05, **p<.01, two-tailed.
[a]Father Lifetime Alcohol Problems Score
[b]Achenbach Total Behavior Problems Score, Mother's Report

Hierarchical Multiple Regression Analysis

Based on the factor analysis described above, composite measures representing the two factors were constructed for entry into a series of hierarchical multiple regression analyses. Z-scores for the variables that loaded most highly on Factors 1 and 2 were summed to create respective regression variables entitled RISK and PROTECT. Initially a regression was conducted to examine the main effects of father alcohol problems (FLAPS), the risk variable (RISK), and the protective variable (PROTECT), on child behavior problems. The results of this regression are shown in Table 10. They indicate that the independent variable (FLAPS), and both putative moderator variables (RISK and PROTECT), all accounted significantly for the variance in child behavior problems. The most salient predictor was father alcohol problems (FLAPS).

Next, to demonstrate whether either or both composite variables would moderate the relationship between paternal alcohol problems (FLAPS) and child behavior problems, two regression analyses were performed. First, a two-step regression was conducted to test the moderating effect of the composite variable representing family environment. The main effects of father alcohol problems and family environment were entered in Step 1, followed by an interaction term representing the interaction between the two in Step 2. As shown in Table 11, there were significant main effects of both paternal alcohol problems and family environment on child behavior. The interaction term, however, did not account for any additional variance of the outcome measure beyond that accounted for by the main effects.

A second two-step regression was performed to test the moderating effect of parent psychopathology by entering father alcohol problems and parent psychopathology in Step 1 and the interaction between the two in Step 2. As shown in Table 11, section b, these results indicate that parent psychopathology moderates the effect of father alcohol problems on child behavior, because the interaction term was significant ($p<.05$).

Two more regression analyses were performed to explore the nature of the interaction shown in Table 11. Subjects were divided into high and low parent-psychopathology subgroups (median split) and the effect of father alcohol problems on child behavior problems was examined separately for the high and low psychopathology groups (after Rogosch, Chassin, & Sher, 1990). For subjects in the low-psychopathology group, paternal alcohol problems exerted a significant effect on child behavior problems (beta=.46, $p<.00$) above and beyond the effect of parental psychopathology (see Table 12, section a). However, for subjects who were high in parent psychopathology, there was no significant effect of paternal alcohol problems on child behavior (beta=-.002) above and beyond the effect of parent psychopathology (see Table 12, section b).

Descriptive statistics and correlation coefficients were obtained following this regression in order to further explain the interaction described in Table 12, section a. According to these statistics, the variances of both parent psychopathology and child behavior problems are far greater in the high-psychopathology group than in the low-psychopathology group, while the variance of father alcohol problems remains almost constant. This may help to explain why, in the high-psychopathology group, psychopathology accounts for a significant amount of the variance in child behavior problems, while father alcohol problems does not (see Table 13). In addition, the correlation matrices shown in Table 14 reveal that father alcohol problems correlates highly with parental psychopathology in the high-psychopathology group but not the low-psychopathology group, and with child behavior problems in the low-psychopathology group, but not in the high-psychopathology group.

Table 10

Summary Tables for the Hierarchical Multiple Regression Analysis Predicting Child Behavior Problems (N=172): The Main Effects of Paternal Alcohol Problems (FLAPS), Parent Psychopathology (RISK), and Family Environment (PROTECT) on Child Outcome (TBPS)

Predictor	Beta-In	R^2/Ch	Adj. R^2	F/Ch
Father Alcohol Problems	.41	.17	.16	34.12**
Family Environment	.22	.05	.20	9.79**
Parental Psychopathology	.34	.07	.27	17.02**

*Note: The tabled values are for Betas after Step 3.

*$p<.05$, **$p<.01$, two-tailed.

Table 11

Regressions Predicting Child Behavior Problems from Paternal Alcohol Problems, Family Protective Factors, Parent Psychopathology, and their Interactions (N=172)

Predictor	Beta-In	R^2/Ch	Adj. R^2	F/Ch
a:Main Effects of Family Environment and Father Alcohol Problems, and Their Interaction				
Family Environment	-.30			
Father Alcohol Problems	.36			
Total Main Effects		.21	.20	22.84**
2-Way Interaction	.23	.00	.20	.71
b: Main Effects of Parent Psychopathology and Father Alcohol Problems, and their Interaction				
Parent Psychopathology	.49			
Father Alcohol Problems	.20			
Total Main Effects		.27	.26	31.60**
2-Way Interaction	-.73	.02	.28	5.63**

Note: The tabled values are for betas after Step 2.

*p<.05, **p<.01, two-tailed.

Table 12

Parent Psychopathology (RISK) as a Moderator of Paternal Alcohol Problems (N=172)

Predictor	Beta-In	R^2/Ch	Adj. R^2	F/Ch
a: Regression Predicting Child Behavior Problems from Paternal Alcohol Problems when Parent Psychopathology is Below Median (n=86)				
Parent Psychopathology	.37	.14	.13	13.61**
Father Alcohol Problems	.46	.21	.33	26.09**
b: Regression Predicting Child Behavior Problems from Paternal Alcohol Problems when Parent Psychopathology is Above Median (n=86)				
Parent Psychopathology	.30	.09	.08	8.16**
Father Alcohol Problems	.00	.07	.00	.00

Note: The tabled values are for betas after Step 2.

*p<.05, **p<.01, two-tailed.

Table 13

Descriptive Statistics for the Regression Variables in High- and Low-Psychopathology (RISK) Groups (N=172)

	Low-RISK		High-RISK		
Variable	Mean	S.D.	Mean	S.D.	t-Value[a]
Father Alcohol Problems					
	8.95	2.17	11.09	2.02	6.68**
Parent Psychopathology					
	-2.62	1.24	2.63	2.50	17.51**
Child Behavior Problems					
	18.11	16.81	36.82	25.49	5.68**

[a]Pooled Variance Estimate

*$p<.05$, **$p<.01$, two-tailed.

Table 14

Intercorrelations Between Regression Variables in High- and Low-Psychopathology Groups (N=172)

	FLAPS[a]	RISK[b]	TBPS[c]
	a: High Psychopathology (n=86)		
FLAPS	----	42**	.12
RISK	----	----	.30**
TBPS	----	----	----
	b:Low Psychopathology (n=86)		
FLAPS	----	.19	.52**
RISK	----	----	.37**
TBPS	----	----	----

*p<.05, **p<.01, two-tailed.

[a]Father's Lifetime Alcohol Problem Score
[b]Parental Psychopathology
[c]Achenbach Total Behavior Problem Score, Mother's Report

DISCUSSION

Characteristics of the sample

Parents in this study were working-class Caucasians who were predominantly young (mean age=30), largely high-school educated, and had been married an average of about 8 years. The children all ranged in age from 3.0 to 6.0 years. Thus the generalizability of the above findings is limited to similar young Caucasian families, and is constrained by the study's currently cross-sectional design. Nonetheless, because of the broad range of alcohol problems and other psychopathology in the parents, as well as the larger study's recruitment strategy, these subjects may be considered to be highly representative of a population at heightened risk.

Psychopathology within the sample

The means for the parental risk variables indicate that the average father in this study falls within the clinical range for alcohol problems and antisocial behavior, but not for depression. This finding is consistent with the literature on antisocial alcoholism (Zucker, 1987). This group of alcoholics is characterized by more unlawful and/or destructive acts than other alcoholics, and often has a history of conduct disorder or attention deficit disorder as children (Pihl & Peterson, 1991). They are considered the most damaged group of alcoholics, with the most psychological comorbidity and the earliest onset, and are thought to exert the greatest negative effects upon their families.

The finding that the fathers in this study tend to be diagnosable with both alcoholism and antisocial behavior, is not surprising given

the larger study's recruitment procedures. A substantial subset of these subjects are recruited through the courts' rolls of drunk driving convictions, and persons who are convicted of drunk driving are likely to have engaged in other antisocial activities as well.

Effects of Paternal Alcohol Problems on Child Behavior

One of the most important findings of this study is that paternal alcohol problems significantly predicted behavior problems in children as young as the preschool years. It should be noted that this pattern was not found by Fitzgerald et. al. (1992) in an earlier set of analyses on the MSU study. These researchers tested for a relationship between father alcohol problems and child behavior problems in participating families with three-year-old children only, and found no such relationship. One possible explanation for the difference is that the older children included in the current study simply have more contact with their fathers than three-year-olds, who spend more time alone with their mothers. On these grounds the discrepant findings are an outcome of this difference, but the shift is still noteworthy and needs to be understood more clearly. In any event, the finding that <u>any</u> preschoolers' behavior is affected by parent alcohol problems, is particularly interesting from the standpoint of developmental theories of alcoholism (e.g., Pihl & Peterson, 1991; Zucker & Fitzgerald, 1991), which state that children of alcoholics, who themselves have conduct problems, are likely to develop antisocial personality disorder and/or alcoholism as adults. Identifying the beginnings of this process in children this young has important implications for both intervention and further research.

Correlations among the contextual variables

All of the hypotheses regarding interrelationships among the contextual variables were well supported. Two cohesive clusters emerged

from the correlation matrices, and were supported by the ensuing factor analysis. These factors, characterized as Risk and Protective clusters, were comprised of individual variables that correlated significantly (and in the expected directions) with child behavior problems, and themselves correlated significantly with one another and with child behavior, and predicted child outcome in the regression analyses. This indicates that mothers in high-SES families, in which both parents were intelligent and had few psychological difficulties, tended to report fewer behavior problems on the part of their sons. This finding replicates the results of numerous other studies that have found positive relationships between parent and child difficulties, and negative relationships between family SES and child difficulty.

Main effects of the independent and contextual variables

As expected, paternal alcohol problems (FLAPS) and both contextual variables (RISK AND PROTECT), all had significant main effects upon child outcome (TBPS). Of the three, father alcohol problems accounted for the most variance in child behavior problems, and the risk and protective factors contributed approximately equally. This finding is important as it demonstrates that, even as early as the preschool years, father alcohol problems have a more salient effect on child behavior than family environment or other parent psychopathology. Again, it is interesting that similar findings were not reported in Fitzgerald et. al.'s (1992) study of families with three-year-old sons. This is a strong argument for early intervention with the children of alcoholic parents.

Interactions between contextual variables and paternal alcohol problems

The interaction terms in the regression analyses were used to determine whether either or both of the contextual variables could be shown to moderate the relationship between paternal alcohol problems and child behavioral problems. A moderator is a variable that affects the direction and/or strength of the relation between a...predictor variable

and a...criterion variable (Baron & Kenny, 1986). In terms more specific to COA research, a moderator...attenuates or magnifies the relation between parental alcoholism and offspring adjustment (Sher, 1991a). In this study, the interaction terms were used to discern whether family environment (the protective factor) would attenuate the relationship between fathers' level of alcohol problems and child behavior difficulties, and, conversely, whether other parent psychopathology (the risk factor) would potentiate this relationship.

The two-way interactions between the contextual variables (RISK and PROTECT) and the independent variable (FLAPS) yielded interesting but unanticipated results. Although it had been expected that family environment would act as a moderator such that the effect of father alcohol problems would be decreased in the presence of high scores on the protective factor, no such relationship was found. The interaction between family environment and father alcohol problems did not contribute to the prediction of child outcome beyond the variables' main effects. This indicates that, even in the presence of higher family socioeconomic status and parental intelligence, father alcohol problems still predict child behavior problems. Thus it may be concluded that it is difficult to insulate young children from the effects of father alcohol problems.

However, as expected, the interaction of father alcohol problems with other parent psychopathology was significant. These results indicated that father alcohol problems had greater predictive value with respect to child behavior problems in the presence of low parent psychopathology, as opposed to psychopathology scores above the sample median. This was the opposite of the predicted result, in which father alcohol problems were expected to be more predictive when there was a high degree of other psychopathology. In other words, it had been predicted that the effects of father alcohol problems would be potentiated by the presence of other parent psychopathology so that the

combined risk factors would act in synergy to predict an even greater degree of child difficulty. Instead, it was observed that father alcohol problems were a less effective predictor of child behavior problems when other psychopathology was present.

In retrospect, and on the basis of other evidence from the larger study, it appears likely that families troubled by a great deal of psychopathology are characterized by family discord and chaos so pervasive that no discrete cause may be distinguished. Thus, the presence of additional psychopathology subsumes or mediates the effect of paternal alcohol problems, and reduces any additional impact on child behavior. Although contrary to the expected synergistic effects of father alcohol problems and other parent psychopathology, this idea is consistent with Sher's (1991a) observation that parental deviance "may be a more important determinant of (child) psychopathology than any underlying genetic diathesis specific to alcoholism." It also fits well with Earls, Reich, Jung, & Cloninger's (1988) findings that fathers with antisocial personality disorder also tend to be severe alcoholics and to have alcoholic wives, and that the families with the most childhood conduct problems are those with an antisocial/alcoholic father and an alcoholic mother. In addition, the fact that the parent psychopathology variable includes a component involving mother alcohol problems, brings up a point raised by Werner (1986), who found that school-aged children were most vulnerable to behavior problems when their mothers were alcoholic. In each of these instances, the current results are consistent with the literature: children whose fathers have alcohol problems are especially prone to trouble when maternal alcohol problems and other parental psychopathology coexist with paternal alcoholism. When these conditions coexist, they may be more predictive of child outcome than the paternal alcohol difficulty itself.

The supplementary statistics shown in Tables 13 and 14 also support the idea that, in the high-psychopathology group, other

psychopathology subsumes or mediates the effects of paternal alcohol problems upon child outcome. In the shift from low- to high-psychopathology, the correlation between psychopathology and alcohol problems becomes highly significant, while the relationship between alcohol problems and child behavior problems disappears and that between psychopathology and behavior problems remains approximately constant. This is apparently the mechanism reflected in the loss of a significant main effect of father alcohol problems on child behavior in the high-psychopathology group. The results indicate that, in high-psychopathology families, alcohol problems and other psychopathology become even more highly intertwined, and act together to predict child behavior problems. In such families, paternal alcohol trouble may become merely one of many family difficulties, or it may appear less salient because it is mediated by the other psychopathology. That is, father alcohol problems may contribute to the development of psychopathology (especially depression) on the part of the mother, and this may in turn be the overt cause of child difficulty. A similar finding from this same data set was also reported by Fitzgerald et. al. (1992), who found that alcohol problems, as well as other types of psychopathology, play a significant role in family functioning and child rearing, and that maternal psychopathology plays an especially important role in child adaptation. In fact, these researchers observed that maternal psychopathology was the most salient predictor of child difficulty in the study sample, and these results were supported by the earlier findings of Jacob & Leonard (1986), and Moos & Billings (1982).

Future Directions

The interesting results of this study, as well as the richness of the literature on which it is based, lend themselves to a wealth of future research. First, it will be interesting to further investigate the differences between these findings and those of Fitzgerald et. al.

(1992). Discrete analyses may be conducted specifically with four-, five-, and six- year-olds to further pinpoint the age at which father alcohol problems become most salient in the prediction of child behavior problems. In addition, a second aspect of this discrepancy may be studied. Similar to the findings of Fitzgerald et. al. (1992), these data indicate some of that the mothers' characteristics, both "risk" and "protective," are more highly related to child behavior than fathers'. It will be important in later work to tease apart mothers' and fathers' effects, and to examine whether different patterns of prediction and moderation are found. For example, it may be possible to identify a shift from mothers' to fathers' characteristics being more salient. Also, mothers' protective characteristics alone may be found to attenuate the relationship between father alcohol problems and child behavior problems, while father characteristics, and both parents' taken together, do not.

Second, it will also be useful to investigate additional potential moderators in future studies. For example, it will be interesting to examine the possible moderating effects of child variables such as intelligence, temperament, adaptive behavior, and social competence, as well as contextual variables such as social support, and relationship variables such as marital satisfaction and attachment. These areas were not included in this study of family environment and parental psychopathology, but they appear frequently in the literature and should be explored in this data set. In fact, according to the findings of Lytton (1990), it is imperative that these variables, as well as the reciprocal effects of parenting style and child characteristics, be studied in order to obtain a complete picture of the transactional etiology of child conduct disorder.

Finally, and most importantly, it is crucial that these families continue to be tracked, so as to establish whether the current findings will predict the children's status at later ages. Some evidence of

developmental shift is already suggested by the discrepancy between these findings and those of Fitzgerald et. al. (1992). In subsequent waves of data collection, it may be determined whether the quality of the home environment becomes more "protective" as children grow older, and whether the presence of high levels of comorbid psychopathology will continue to outweigh (or mediate) paternal alcoholism as a risk factor for child behavior problems. Only with forthcoming, later-wave data will it be possible to test for mediation by studying the causal pathways between father alcohol problems, family protective factors, parent psychopathology, and child behavior. Other ways to follow this sample longitudinally will be to examine the behavior profiles at Time 2 (ages 6-9) of children identified as having high or low problems at present, or to study how children identified as having trouble at Time 1 fare in school and with peers as they grow older. Of course, the ultimate goal is to observe how patterns identified in this wave, when the children are preschool-aged, relate to the presence or absence of alcohol problems, and other life difficulties, when they reach adulthood.

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