A Study of Problem Behaviors in 10- to 15-Year-Old Biologically Related and Unrelated International Adoptees

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Genetic and environmental influences on problem behaviors were studied in a sample of international adoptees. Parental ratings of children's problem behaviors were obtained with the Child Behavior Checklist (CBCL). The sample (mean age, 12.4 years) comprised a group of biological siblings (111 pairs), a group of nonbiological siblings (221 pairs), and a group of singletons (94). Nonshared environmental influences were most important for problem behaviors studied in this paper. Genetic influences were substantial for Externalizing behaviors but unimportant for Internalizing behaviors. For the CBCL total problem score, Attention Problems, and Externalizing behaviors, the results of the present study were in agreement with findings from twin studies. The lack of genetic influences on Internalizing behaviors contrasts with results from twin studies. For the total problem score, the Externalizing grouping, Delinquent Behavior, and Aggressive Behavior, variances for singletons were significantly smaller than for siblings. Model fit indices indicated that these differences in variances are better attributed to smaller effects of factors associated with sibship size than to active influences of siblings on each other. Significant sex differences were found for 8 of the 10 scales. The larger variances for boys on the Externalizing grouping and Aggressive Behavior could be explained by genetic influences.

KEY WORDS: Child/adolescent behavior problems; Child Behavior Checklist; behavior genetics; sibling effects; sex differences.

INTRODUCTION

In both psychiatry and genetics there is an increasing interest in the study of genetic factors underlying problem behaviors in children (Rutter et al., 1990a,b). Behavioral/emotional problems in children and adolescents generally involve quantitative variations of behavior that most children display to some degree, rather than discrete categories that are either present or absent. It is likely that for these continuous variations the effects of many genes are involved (McGuffin and Gottesman, 1985), and most genetic studies have therefore employed the methods of quantitative genetic theory. This approach has proven to be a powerful tool for disentangling genetic and environmental influences, and its application in the area of child psychopathology has led to a broader recognition for that children's problem behaviors genetic as well as environmental factors may be involved.

In the area of child psychopathology most of the findings are twin study inferences about genetic and environmental effects. There are, however, a number of possible limitations associated with the classical twin study. For example, twin samples show higher rates of congenital anomalies (Rutter and Redshaw, 1991), and parental expectations that
MZ twins will develop along similar lines could spuriously inflate estimates of genetic influences. Thus, the generalization of findings to the general population may be limited, and estimates of genetic and environmental influences biased. The implication of this is that different types of samples should be employed. Although all inferences about genetic and environmental influences may suffer from limitations, they are not necessarily the same for all samples (Rutter et al., 1990a).

A second possible limitation concerns the model used for data analysis. In the classical twin study, sibling resemblance is viewed as caused by the "passive" sharing of genes and environments. A number of authors have suggested that this passive view may be too simplistic (Carey, 1986; Dunn, 1983; Eaves, 1976; Patterson, 1982). For instance, by imitating each others behaviors, siblings may become more alike. The probable importance of these sibling interactions have been noted in the area of juvenile delinquency (Rowe, 1983; Shields, 1977), and evidence for such influences in adult delinquency (Carey, 1992) and boys' Externalizing behaviors has recently been found (Neale and Cardon, 1992). Furthermore, Rutter et al. (1970, pp. 222-223) reported associations between sibship size and a variety of problem behaviors in children. These associations do not necessarily refer to active influences from siblings on each other. It also seems reasonable to suppose that as the number of children in the family increases, there is a decrease in the amount of time parents spend with any child (Patterson, 1982, p. 22), or that children benefit from offering and receiving comfort from siblings (Dunn and McGuire, 1992). Sibship size could therefore simply be a harmful or beneficial factor by itself. In either case, in a genetic design it is important to examine whether siblings interact in an active way or if sibship size represents an aspect of a shared environment from which children are passive recipients. With an appropriate or too simplistic model, erroneous conclusions about the relative importance of genetic and environmental influences are obtained.

The sample in the present study consisted of international adoptees and comprised groups of biologically related and unrelated sibling pairs. These groups enabled us to study genetic and environmental influences on problem behaviors. A group of adopted biological siblings is rather unique. In most sibling adoption designs, the difference in the resemblance of adopted children and biological children of adoptive parents versus the resemblance of the nonadopted biological siblings is used to study genetic influences. Thus, adopted children are usually compared with controls who are raised by their biological parents, while in our study both groups are raised by adoptive parents.

For a number of childhood behavior problems such as anxiety, depression, or aggressive behaviors no adoption study has been reported yet. The adoption sample in the present study therefore provided an opportunity for a comparison with twin study inferences about genetic and environmental effects on problem behaviors in children. If the same results are obtained, conclusions are more likely to be valid.

In addition to the groups of sibling pairs, there was a group of adoptees who grew up as singletons. Such a group of singletons can be contrasted with groups of siblings to study the influence of multiple children within one family.

METHOD

Assessment Instrument

Parental ratings of children’s problem behaviors were obtained with the Child Behavior Checklist (CBCL; Achenbach, 1991). The CBCL consists of 120 items, which describe a broad range of problems of concern to parents and clinicians. Parents are requested to circle a 0 if the problem is not true of a child, a 1 if the item is somewhat or sometimes true, and a 2 if it is very true or often true.

A confirmatory factory analysis was used to study the applicability of the eight constructs in the sample of international adoptees (van den Oord, 1993). Results supported the validity of the constructs. However, in the sample of international