



ADOPTED CHILDREN'S BEHAVIOR PROBLEMS: A REVIEW OF FIVE EXPLANATORY MODELS

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ABSTRACT. *Although the majority of adopted children are well-adjusted, adopted children evidence proportionately more behavior problems when compared to nonadopted children in both clinic and nonclinic populations. An extensive literature examining behavioral, diagnostic, and demographic characteristics of adopted children has provided several plausible explanations for the high rate of behavior problems among adopted children. In this review, the existing literature is organized into five explanatory models: (a) genetic or “biosocial” factors, (b) pathogenesis of the adoption process, (c) long-term effects of impaired preadoption childrearing, (d) referral bias in adoptive parents, and (e) impaired adoptive parent-adoptive relations. We conclude that evidence for each model is mixed at best. Especially noteworthy is the mixed results for genetic or biosocial studies and the relative absence of studies focused on identifying factors associated with disruptions in the adoptive parent-adoptive relationship. We propose that a psychosocial model to explain the high rate of behavior problems among adopted children is highly plausible and further suggest that it may be time for a new awareness and appreciation for the normative aspects of adoption. An overview of parenting and family characteristics associated with risk factors for antisocial behavior is provided as a guide for future research. © 1999 Elsevier Science Ltd*

MORE THAN a decade ago, Brodzinsky (1987) reviewed the existing literature and concluded that there was an increased risk for development of behavior problems among adopted children. More recently, Wierzbicki (1993) conducted a meta-analysis of 66 published studies that compared the psychological adjustment of adopted

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children and nonadopted children. He found a mean within-study effect size of .72, indicating that adopted children had higher levels of maladjustment than nonadopted children. The mean effect size for the representation of adopted children in clinic samples was even larger ($d = 1.38$).

The purpose of this article is to follow up on these findings by reviewing the empirical evidence for causes of the high rate of behavior problems in adopted children. To organize this review, we have categorized studies as addressing one or more of five explanatory models: (a) genetic or "biosocial" factors, (b) pathogenesis of the adoption process, (c) long-term effects of impaired preadoptive childrearing, (d) referral bias in adoptive parents, and (e) impaired parent-adoptee relations. Studies are reviewed for each model to determine whether there is empirical support to explain high rates of behavior problems in adoptees.

The studies reviewed for each model are presented in tables preceding discussion of the model in the text. The tables present basic information as to each study, including the age of the adopted sample, age at the time of the study, sample size, whether adoptees were extrafamilial or intrafamilial, key design features, and whether the study provided support for the model. Studies were considered to provide mixed support for the model if they reported contradictory or weak associations between adoptive status and behavior problems. Studies that provided evidence contrary to the model were classified as providing no support. Studies that showed a strong association between adoptive status and behavioral outcomes were classified as evidencing support for the model.

GENETIC AND BIOSOCIAL FACTORS

Studies using samples of adopted children comprise a substantial proportion of the behavioral genetic literature. This offers a unique opportunity to determine a genetic influence on the clinical finding of higher rates of behavior problems among adopted children and nonadopted children. We reviewed studies that examined criminality and other psychopathology in biological parents of adopted children, and studies that examined presumably inheritable characteristics such as Attention Deficit Disorder or difficult temperament in adopted children. These studies are presented in Table 1.

Criminality

Among the first studies to examine criminality in an adopted sample, Crowe (1972) compared the arrest and traffic records of 52 adults born to 41 female offenders (90% felons) who were adopted by nonfamily members to a control group of adult adoptees also adopted by nonfamily members. He found that the probands were arrested, convicted, and incarcerated more often than control subjects. No significant difference was found for traffic violations. In a follow-up study, Crowe (1974) interviewed and administered the MMPI to 46 of the 52 probands described above and compared them to 46 matched controls. Case histories were formulated for each adoptee, which were then blindly assigned a diagnosis according to *DSM-III* and ICD-8 classifications, and a rating on the Menninger Health Sickness Rating Scale (MHSRS). Significantly more antisocial personality diagnoses were given to the probands, although alcoholism, drug dependence, and personality disorders were equally prevalent in both groups. However, only 6 of the 46 subjects were diagnosed

as antisocial personality disorder. When the six antisocial subjects were excluded from analysis, no significant differences between probands and controls on the MMPI or the MHSRS was observed.

A more extensive evaluation was conducted by Bohman and Sigvardsson (1980) in a longitudinal study of 579 children at age 11 years and age 15 years who were registered for adoption from 1956–1957 and raised by adoptive, biological, or foster parents. They found no significant differences between adopted or foster children whose fathers demonstrated a history of criminal behavior or alcohol abuse and those whose fathers had no antisocial history. In the group of children adopted by biological relatives, male offspring of fathers with criminal or alcoholic behavior were no different from male offspring of nonabusing and noncriminal fathers, and girls were rated lower in aggression, psychomotor skills, and maturity if their fathers were identified as alcohol abusing or criminal. In addition, different patterns were revealed for adopted children with alcohol abusing or criminal mothers. These children were rated lower in psychomotor aptitude and peer relations, whereas those in biological families showed no significant differences in adjustment, and those in foster family settings were reported to be more withdrawn, had poorer concentration, and lower school motivation.

Similar contextual factors were found in studies of one population of 862 Swedish men adopted by nonrelatives before age 3 (Bohman, Cloninger, Sigvardsson, & von Knorring, 1982; Cloninger, Sigvardsson, Bohman, & von Knorring, 1982). Bohman et al. (1982) reported registered "petty criminality" in 12% of the 862 adopted men, 26% of the biological fathers, and none of the adoptive fathers. In comparison with adopted males whose biological father was neither alcoholic nor criminal, adopted sons were: (a) 1.6 times more likely to be registered for alcohol abuse if they had a biological parent who was alcoholic, (b) 1.9 times more likely to be criminal if either biological parent was registered only for criminality, and (c) 1.3 times more likely to be criminal if their biological parent was registered for alcohol abuse and criminality. The risk of criminality, but not alcohol abuse, was increased if the biological father was not alcoholic but was registered for petty nonviolent crimes and teenage alcohol abuse. The fathers with alcoholism and violent crimes had a higher risk of sons with alcohol abuse only.

However, risk of petty criminality in alcohol-abusing adoptees was correlated with the severity of their own alcoholism, not with their biological parent's criminal behavior. Criminality without alcohol abuse was characterized by petty property offenses, whereas alcohol-related crime tended to be more violent and highly repetitive with a greater number of offenses being committed. Unstable preadoptive placement (multiple temporary placements) was also associated with greater risk for petty criminality, and low social status was linked to alcohol-related criminality.

In another study of the same population of adult male adoptees, Cloninger et al. (1982) examined characteristics of the biological family and characteristics of the adoptive environment that were predictive of petty criminality. Predictive characteristics of the biological family were labeled congenital variables. Predictive characteristics of the adoptive environment were labeled postnatal variables. As compared to adoptees with neither congenital nor postnatal predictors of criminality, males with postnatal predictors had twice the risk of petty criminality. Those with congenital predictors had four times the risk, and males with both congenital and postnatal predictors had 14 times the risk of developing petty criminal behavior. Low social status alone was not sufficient to lead to criminality, but it increased the risk of such behavior if the adoptee's biological father was criminal or his biological mother or both

TABLE 1. Studies Evaluating the Genetic or Biosocial Model

Study	Age at Adoption	Age at Study	Sample Size ^a	Adopted Sample	Design	Support for Model
A. Criminality						
Crowe (1972)	NS	15–45 y	52	48 EFA, 4 IFA nonclinical	1a	Mixed
Crowe (1974)	NS	15–45 y	52	48 EFA, 4 IFA nonclinical	1a, 3	Mixed
Bohman & Sigvardsson (1980)	NS	11–15 y	579	EFA nonclinical	1na	No
Bohman et al. (1982)	0–3 y	23–43 y	862	EFA nonclinical	5	Mixed
Cloninger et al. (1982)	0–3 y	23–43 y	862	EFA nonclinical	5	Yes
Mednick et al. (1984)	25.3% at birth 50.6% < 1 y 24.1% > 1 y	15 y+	14,427	EFA nonclinical	5	Mixed
B. Attention Deficit Disorder						
Brodzinsky et al. (1987)	3 days–3.5 y	6–11 y	130 adopted, 130 nonadopted	NS nonclinical	1na, 3, 4	Mixed (boys only)
Rogeness et al. (1988)	$n = 36 < 1 y$ $n = 29 1–5 y+$	4–16 y	66 adopted, 697 nonadopted	NS clinical	1na	Mixed (boys only)
Morrison & Stewart (1973)	0–2.5 y	NS	35	EFA clinical	1na, 4	Yes
Cadore & Stewart (1991)	NS	18–40 y	283	EFA nonclinical	2, 4	Mixed
Dalby et al. (1982)	NS	3–23 y	NS	EFA clinical	1na, 5	Yes
Deutsch et al. (1982)	NS	6–13 y	NS	EFA clinical	1na	Yes
Deutsch (1989)	0–2 y	6–16	NS	EFA clinical	1na, 5	Mixed

C. Other psychopathology

Loehlin et al. (1982)	NS	3-18 y	469 adopted, 167 nonadopted	EFA nonclinical	Ina, 3	No
Eldred et al. (1976)	42% < 2 m 70% < 1 y	Mean = 32 y	216	EFA nonclinical	4, 5	No
Cunningham et al. (1975)	At birth	12-24 y	114	EFA nonclinical	1a, 4	Yes
Cadoret & Cain (1980)	At birth	n = 84 18 y+ n = 162 10-17 y	246	EFA nonclinical	1a, 4	Yes
von Knorring et al. (1983)	0-3 y	NS	115 adopted	EFA nonclinical	Ina, 1a	No

D. Difficult Temperament

Ripple (1968)	NS	7-10 y	160	EFA nonclinical	4	Mixed
Maurer et al. (1988)	NS	14-17 y	89 M, 73 F	EFA nonclinical	4, 5	Mixed
Coon et al. (1992)	Mean = 1 m	1-9 y	233 M, 241 F	NS nonclinical	Ina, 3	Mixed

^aNumber refers to size of adopted sample unless noted.

NS = not specified; y = year; m = month; EFA = extrafamilial adoptees; IFA = intrafamilial adoptees; 1a = adopted control group; 1na = nonadopted control group; 2 = raters blind to adoptive status; 3 = standardized measures; 4 = interviews; 5 = record review.

parents were alcoholic. The authors provided variability estimates as follows: Genes 59.3%, environment 19.1%, gene-environment correlation 7.2%, gene-environment interaction 14.4%.

Mednick, Gabrielli, and Hutchings (1984) examined the role of genetic factors in the etiology of criminal behavior among 14,427 adoptees by reviewing the criminal records of adoptive and biological parents and of adopted children. Court records revealed that adoptees and their biological parents had higher conviction rates and higher recidivism rates than adoptive parents, although 75% of adoptees with criminal biological parents received no convictions. If neither adoptive nor biological parents had criminal records, 13.5% of the adopted sons were convicted. If only the adoptive parent was convicted of a crime, 14.7% of the sons were convicted, whereas 20.0% of sons were convicted if only the biological parent had a court conviction. If both adoptive and biological parents were convicted criminals, 24.5% of the adopted sons were also convicts. Biological mother and adoptee convictions were more strongly correlated than that between biological fathers and adoptees, although the frequency of female convictions was too low to provide conclusive data.

Level of concordance for criminal convictions increased as the degree of relatedness among subjects increased. Specifically, unrelated male adoptees had a 8.5% concordance rate, whereas male half siblings had a 12.9% concordance rate and full male siblings had a 20% concordance rate. However, a reanalysis of these data indicated that these results held up only for property offending and not for violent offending (Brennan, Mednick, & Kandel, 1991), a result that was not predicted a priori (Cheyne, 1991).

Summary of criminality studies. These studies provided mixed support for a genetic explanation for behavior problems among adopted children. In support of the genetic model, several studies using large data sets have shown a substantial genetic loading for antisocial behavior by demonstrating higher associations for biological family history of antisocial behavior with adoptees behavior than for nonrelative adoptive family history. However, there is a lack of consensus regarding the specific behaviors related to biological family history and, because the onset of criminality is often specific to factors such as social environment, sex, age, or type of criminality, it is often difficult to distinguish these factors from genetic factors. Therefore, results in one study are often highly specific to factors not measured in other studies.

Several reviews of genetic influences on child behavior have noted the limited ability of adoption studies to distinguish genetic from environmental influences on antisocial behavior. One reason noted is that the primary measure of familial environment, adoptive family criminality, is quite low. This is not surprising given the scrutiny adoptive families undergo in order to have a child placed in their home. The effect, however, in regard to criminality is to artificially inflate the effect of biological parent criminality because the probability of predicting adoptive parent criminality is very low (Cheyne, 1991). A second reason noted is that many adoption agencies use selective placement by which they attempt to select families similar to the biological family. Because the extent to which selective placement is used is largely unknown to investigators, the result is to confound environmental and genetic influences (Lombroso, Pauls, & Leckman, 1994).

The third limitation of adoption studies for distinguishing genetic and environmental influences on antisocial behavior is the difficulty of accounting for complexity of environmental influences (see Baumrind, 1993; Wachs, 1983). For example, Mednick et al. (1984) ruled out the possibility that the adoptive parents' may have labeled

the adoptee as criminally inclined by noting that 63% of the biological parents were convicted after the adoption was completed, and that there was no difference between children with parents convicted before or after the adoption took place (conviction rates of 15.1% vs. 16.1% for males, 4% in both for females). However, Cheyne (1991) noted that the adoptive parents' knowledge of the biological parents' arrests and criminal behavior (outside of convictions) was not measured, thus labeling could not be ruled out as a confounding variable. That is, it cannot be ruled out that information regarding biological parents criminality could impact childrearing whenever received during an adopted child's upbringing.

Rutter and colleagues, in a review of genetic factors associated with childhood psychiatric disorders (Rutter et al., 1990), noted that the genetic influence on conduct problems as evidenced in adoption studies is stronger for the prediction of adult criminality than for juvenile offending. Furthermore, even for prediction of adult conduct problems, genetic influence was most pronounced when combined with environmental risk factors such as adverse adoptee home environment or multiple temporary placements or institutionalization (e.g., Cloninger et al., 1982; Crowe, 1974). In addition, because most childhood disruptive behavior does not persist into adulthood, Rutter et al. (1990) suggested that it is most likely that there are different predictors for the common, transitory childhood behavior problems as opposed to the more stable adult disorders (see Loeber, 1991). Thus, results from studies reviewed in this section are not informative regarding adopted children's high rate of behavior problems during childhood.

The overall conclusion, therefore, is that although there is strong consensus that some behavioral characteristics are inherited, there is less consensus regarding the heritability of specific behaviors. Furthermore, because the vast majority of adopted children are well adjusted in spite of possible pathologic biological family backgrounds (Wierzbicki, 1993), the cumulative effect of these studies as explanatory or the higher rates of behavior problems among adopted vs. nonadopted children is diminished.

Attention Deficit Hyperactivity Disorder¹ in Adopted Children

An example of the difficulty of determining a genetic explanation for high rates of behavior disorders in adopted children is the case of Attention Deficit Hyperactivity Disorder. Higher rates of concentration problems or hyperactivity symptoms has been noted for adopted children relative to nonadopted children. Brodzinsky, Radice, Huffman, and Merkler (1987) reanalyzed data from a prior study (Brodzinsky, Schechter, Braff, & Singer, 1984) to determine the prevalence of specific clinical symptoms in a school sample of 130 adopted children and 130 nonadopted children matched by age (6–11 years). They found that the adopted boys had higher rates of hyperactivity symptoms than the nonadopted boys. No differences were found for adopted girls relative to nonadopted girls. Similarly, in a study of children (ages 4–16 years) admitted to a psychiatric hospital, Rogness, Hoppe, Macedo, Fischer, and

¹The studies reviewed in this section use various diagnostic labels to describe the disorder referred to presently as attention deficit hyperactivity disorder. The various terms used are hyperactivity, attention deficit disorder, and attention deficit hyperactivity disorder. We retain the usage of the article reviewed in order not to confuse diagnostic differences across studies with methodological concerns noted in our review.

Harris (1988) identified 42 boys and 24 girls who had been adopted from a population of 546 boys and 217 girls. A review of psychiatric charts indicated that adopted boys had more problems with concentration and hyperactivity than did nonadopted boys. Adopted girls did not differ from nonadopted girls on these problems.

Morrison and Stewart (1973) performed structured interviews with the adoptive parents of 35 children diagnosed with ADD. The self-reported medical and psychiatric histories of the adoptive parents were then compared to previously obtained histories of unrelated biological parents of children diagnosed with ADD and of parents with nondisordered children. Results indicated that there was no evidence of disorder among the adoptive parents, in contrast to the sample of biological parents of ADD children who had high rates of hysteria, sociopathy, and alcoholism. They proposed that these results were consistent with a genetic mode of transmission of ADD.

Cadoret and Stewart (1991) found a positive and significant relationship between antisocial personality in biological parents of 283 male adoptees (ages 18–40 years) and ADHD in the adoptees. However, ADHD was not the only clinical outcome predicted by antisocial personality in biological parents. Antisocial personality in adoptees was also elevated, and aggression in adoptees also predicted ADHD in adoptees. Socioeconomic status of adopted families and psychiatric problems in adopted family members were significantly correlated with ADHD, aggression, and antisocial personality in adoptees, indicating the interaction of biological and psychosocial variables on the incidence of ADHD in offspring.

Incidence of ADHD among adopted children seen in pediatric clinics has also been studied. Dalby, Fox, and Haslam (1982) examined the proportion of nonrelative adoptees in 14 types of patients referred to pediatric specialty clinics in Alberta, Canada. Given a general population rate of 2.4% adoptees, only 2 of 14 disorders had significantly higher rates of adoptees: Hyperactivity (16.6%) and hemophilia (7.1%). Deutsch, Swanson, Bruell, and Cantwell (1982) examined the proportion of adoptees in consecutive referrals to ADD clinics and pediatric clinics in Orange County, California and Toronto Canada. Significantly higher rates of adopted children were observed in the ADD clinics (21% in Toronto and 13% in Orange County) relative to the pediatric clinics (2.3% in Toronto and 2% in Orange County). Rates of ADD in the pediatric clinics was similar to those found in the general community (2.5% in Toronto, 2% in Orange County). Based on conditional probabilities, the authors estimated that 23% of all adopted children would be expected to have ADD; a rate approximately seven times the average.

Deutsch et al. (1982) suggested a genetic hypothesis as explanatory for the higher rate of ADD in adopted children relative to nonadoptive children. However, there are several methodological concerns with these studies. First, ADD was the only behavioral disorder examined. Given the high comorbidity of ADD with other behavior disorders such as conduct disorder, depression, and anxiety (Biederman, Newcom, & Sprich, 1991), these results may indicate a general level of disruptive behavior in adoptees rather than a specific ADD diagnosis. Cadoret and Stewart (1991) also noted the complex interaction of ADHD with environmental factors of socioeconomic status as well as psychiatric problems in the adoptive family and suggested that ADHD "should be considered a syndrome that has a variety of correlated behaviors" (p. 73).

Second, there is no information provided in these studies regarding the decision rules used to determine the ADD diagnosis. However, examination of the methodology used in a prior study by Deutsch, Swanson, and Leach (reported in Deutsch, 1989) is informative. They sent parent and teacher ratings to a random sample of 500 adopted children in Toronto. Approximately half the questionnaires were returned

completed (48.2% return rate), resulting in 172 adopted subjects and 43 children living in the home and biologically related to the adopted parents. Three criteria for symptom presence was used. A "lax criteria" identified ADD symptoms if the informant indicated that it occurred "just a little," "pretty much," or "very much." A "moderate criteria" was used if symptoms were scored as "pretty much" or "very much." A "stringent criterion" was used if items were noted as "very much" only.

Results indicated that only mothers rated adoptees as having more ADD symptoms than biological offspring and only when using lax or moderate criteria. Fathers and teachers did not distinguish adopted children from nonadopted children using any criteria. In fact, using stringent criteria, incidence of ADD all but disappeared in the adopted sample. Mothers and fathers reported equivalent rates of 0.7% and teachers reported rates of 1.3% for adopted children. Reliance on mother reports in the absence of confirmation by teachers is especially problematic given that teacher perceptions are preferred over parent perceptions when there is a lack of concurrence across raters (Atkins & Pelham, 1991).

Summary of attention deficit disorder studies. Two reviews of genetic factors in child psychiatric disorders each noted the difficulty of determining a genetic basis for ADHD given the methodologic concerns noted above (Lombroso et al., 1994; Rutter et al., 1990). In addition, and more specific to this review, the methodological problems in studies with adopted samples raise questions about the conclusion that adopted children experience higher rates of ADD as compared to nonadoptive children. The alternative hypothesis is that these findings mask an already widespread finding of higher rates of behavior problems in adopted samples. The association of adoption with this specific disorder, and the genetic hypothesis that accompanies it, appears speculative upon closer examination of the data.

Psychopathology in Biological Parents of Adopted Children

Several authors have proposed that adoptees' behavior problems may relate to deviant biological family backgrounds. For example, Senior and Himadi (1985) suggested that adoptive parents "may be more likely to be young, impulsive, labile, ambivalent ... (and) antisocial" (p. 95). However, there was no support for a high rate of psychopathology in biological parents of adopted children in a well-controlled study of families ($n = 300$) each of which contained nonadopted ($n = 167$) and adopted ($n = 469$) children (Loehlin, Willerman, & Horn, 1982). In fact, children of biological mothers with elevated MMPI scores were better socialized and more dominant and emotionally stable than children with biological mothers with no elevated MMPI scores. As a group, adopted children were more extroverted and dominant, relative to their nonadopted step-siblings, whereas both groups were equally well-socialized and emotionally stable. Although the group mean for unwed biological mothers of the adopted children was elevated on three MMPI scales (Psychopathic Deviate, Schizophrenia, and Paranoia), little evidence of psychopathology was found in the women's individual social history files. The authors noted that only 14 of 334 women (4%) had any family history of psychiatric or mental disorders and those with positive family histories did not differ from the total unwed mother sample on the MMPI scales most often associated with inherited psychopathology (Psychopathic Deviate, Hypomania, Paranoia, Schizophrenia).

Adopted Children Born to Parents With Psychiatric Disorder

Four studies have examined the outcome of adopted children who were born to parents with known psychiatric histories. Eldred et al. (1976) examined extensive records for 216 nonfamilial adoptions in Denmark for the period of 1924 through 1947 from a pool of 5,500 children placed for adoption during those years. The identified subjects had a mean age of 32 years and included 96 males and 120 females. Three groups were identified: Subjects with a biological parent diagnosed as schizophrenic or manic-depressive ($N = 79$), subjects with a biological parent with no history of mental illness ($N = 99$), and subjects with an adoptive parent who was schizophrenic or manic-depressive ($N = 38$). Groups were compared on a wide range of variables selected from a social work history at the time of the adoption, a psychiatric interview at the time of the study, and a family history interview at the time of the study. Results indicated that there was no significant difference between the group with a biological parent with positive psychiatric status and the other groups on any dependent measure.

Cunningham, Cadoret, Loftus, and Edwards (1975) compared the psychiatric adjustment of "experimental adoptees" who were born of psychiatrically disturbed parents ($n = 59$) to the status of "control" adoptees born to parents with no known psychiatric history ($n = 54$). Both groups of adoptees were separated from biological parents at birth and subjects were matched for age of mother at birth and sex of adoptee. Incidence of psychiatric disturbance requiring professional intervention was greater among experimental adoptees than controls (37% to 14%), although the experimental adoptees showed only a nonsignificant trend for higher problem incidence when all behavior problems (mild, moderate, severe) were considered. The difference between the groups could not be attributed to physical health or mental health problems within the adopted families as such problems occurred in 10–15% of both control and experimental families and did not differ significantly across groups. The one environmental explanation that may have influenced the greater prevalence of severe disturbance among experimental adoptees was the age at placement; the experimental group was placed with adoptive parents at a later age ($\chi^2 = 6.74$, $df = 1$, $p < .01$).

Cadoret and Cain (1980) compared the adjustment outcomes of 190 adoptees with one or two biological parents noted to have a psychiatric condition (or behaviors indicative of a psychiatric condition) to a control group of adoptees whose biological parents did not evidence psychiatric problems. Evidence of psychiatric status was based on records obtained from the adoption agencies, court, and hospital records. The groups were matched for age, sex, age of biological mother, and time spent in temporary care before adoptive placement. A multiple regression analysis showed that two biological predictors (antisocial behavior and alcoholism) and two environmental predictors (adoptive family member psychiatric illness, and time spent in an institution before permanent placement) were significantly associated with adoptees' antisocial symptoms (scores ranging from 0–10). A significant sex-by-environment predictor interaction term revealed that boys were more likely to have higher antisocial scores than girls, but only if an adoptive family member had psychiatric problems or if the adoptive parents were separated or divorced.

von Knorring, Cloninger, Bohman, and Sigvardsson (1983) examined the psychiatric profiles of both adoptive and biological parents of 115 adoptees with affective disorders or substance abuse histories as compared to a control group of adoptees with no psychiatric illness. Adopted subjects were matched for demographic and social variables. Adoptees with affective disorders or substance abuse issues were five times

more likely to have an adoptive father with a psychiatric or substance abuse problem as compared to matched controls (8.7% to 1.7%). Incidence of mental illness among adoptive mothers was not significantly different for the two groups.

Summary of parent psychopathology studies. There is little support for the hypothesis of a high rate of psychopathology in parents who place their child for adoption. However, children born to parents with known psychiatric disorder are at higher risk for psychiatric symptoms especially when psychiatric symptoms are prevalent also in the adoptive family.

Difficult Temperament in Adopted Children

Maladjusted adoptees do not appear to fit a specific temperament type, although all children with difficult temperaments appear to be at greater risk for social and emotional problems (Goldsmith & Campos, 1982). In an early study, Ripple (1968) reviewed the preadoptive evaluations of 160 children and interviewed the adoptive parents when the children were between 7 and 10 years of age. She found that adoptees who evidenced behavior disturbances before the adoption (restlessness, irritability, hyperactivity, and excessive crying) received higher ratings of problematic behavior by adoptive parents at follow-up. However, other preadoption temperament characteristics (irregularities in sleeping or eating, lethargy, and lack of responsiveness) were not associated with later adjustment.

In a study of children adopted at birth, Maurer, Cadoret, and Cain (1988) performed a cluster analysis with temperament data on 162 children ages 14–17 years. Membership in the “difficult” temperament group, as defined by Thomas and Chess (1977), predicted later childhood behavior disorder in both males and females. Of the adoptees in the “difficult” group, 69.6% had clinical diagnoses (e.g., conduct disorder, hyperkinesis, adjustment reaction), compared to 30.7% in the “slow-to-warm-up” group and 19% in the “easy” group. Interestingly, analysis of biological and adoptive parent psychiatric diagnoses revealed that none of the biological factors was predictive of membership in “difficult” or “slow-to-warm-up” groups. In contrast, having an adoptive parent with a psychiatric condition predicted difficult temperament in male adoptees, suggesting a “diathesis-stress” interaction model to explain the onset of behavior problems (Rende & Plomin, 1992).

Coon, Carey, Corley, and Fulker (1992) replicated these results on a sample of 474 adopted children with similar results to Maurer et al. (1988). Adoptive parent responses on the Carey Temperament Survey and parent and teacher responses on the activity scale of the Colorado Childhood Temperament Inventory indicated that difficult temperament was a strong predictor of later conduct disorder but it was not significantly associated with parental characteristics. However, the adoptive parents of conduct disordered boys retrospectively reported more childhood conduct problems and instability in their own home environments (parents' time in foster homes or their parents' alcoholism and/or emotional problems) than the adoptive parents of boys in the good conduct group. Thus, adoptive parents' prior history may influence adoptees' conduct problems, presumably through parents' sensitivity to problems (due to their own negative experiences) or by the use of inadequate parenting strategies.

Summary of temperament studies. A large literature has established that aspects of children's temperament are stable over time and that a difficult early temperament is

predictive of behavioral difficulties in later childhood. Although there is no evidence that adopted children as a group have a more difficult temperament than nonadopted children, there is tentative support that adopted children's higher rates of behavior problems may result from a poor "goodness of fit." This is derived from studies that suggested that adopted parents with a psychiatric history or difficult childhood experiences may find it more difficult to manage children with difficult temperaments.

Summary of Genetic or Biosocial Factors

Evidence for genetic factors in adopted children's behavior problems is mixed. Assumptions about heritability of personality and behavior are often perpetuated in the absence of empirical evidence and inadequate biographical information on biological relatives of adoptees. As Jackson (1993) notes, assumptions that promote a genetic mode of transmission for behavior problems contribute to a pessimistic attitude toward interventions designed to alleviate problematic behavior. As most reviews of behavioral genetics note (e.g., Lombroso et al., 1994; D. Plomin, 1989; Rutter et al., 1990), the most parsimonious explanation for the onset of child behavior problems is a genotype-environment interactional model in which environmental factors activate predisposing genotypes into expressed phenotypes. However, as noted earlier, a full examination of genetic and environmental influences on adopted children's behavior remains elusive, in part due to the need for more complete information of the adoptive home environment and family relationships.

PATHOGENESIS OF THE ADOPTION PROCESS

The pathogenic model explains maladjustment among adoptees as a function of psychological stress stemming from the child's adoptive status. According to this model, the adoption process is one of great loss for the child, for the biological parents, and for the adoptive parents who often have ongoing conflicts related to infertility. Adoption presumably incurs grief, anger, fear of abandonment, longing for the biological family, and identity and attachment problems in the adoptee. As a result, the adopted child is considered more psychologically vulnerable and at-risk for emotional and behavioral difficulties than nonadopted children (Brodzinsky, 1987). Table 2 presents studies examining the pathogenic explanatory model.

Depression or Grief Among Adopted Children

Depression among adopted children appears to be related to environmental stressors rather than to factors associated with depression. For example, depression in adoptees does not appear to be related to a history of affective disorder in biological parents. Cadoret, O'Gorman, Heywood, and Troughton (1985) interviewed 48 adults (ages 18–40 years) diagnosed with major depression who were adopted at birth and raised by nonrelatives. Depression was positively and significantly correlated with several environmental variables occurring prior to age 18, such as death of an adoptive parent or mental illness in the custodial adoptive family but not with biological family history of depression.

Several authors have suggested that adoptees may experience grief as a result of their rejection by their birth family, and that adoptees, particularly during adolescence, may suffer from heightened identity conflicts as a result of their membership

in two distinct family groups (Brodzinsky, 1987; Sorosky, Baran, & Pannor, 1975). However, the few studies that have examined this directly have found no evidence for high rates of depressive symptoms or identity problems in adopted children.

Brodzinsky et al. (1987) reanalyzed data from a prior study (Brodzinsky, Schechter, et al., 1984) to determine prevalence of specific clinical symptoms in a school sample of 130 adopted children and 130 nonadopted children matched by age (6–11 years). They found higher rates of depression only in the adopted girls relative to the nonadopted girls. In contrast, Rogeness et al. (1988) examined the charts of 546 boys and 217 girls ages 4–16 years admitted to a psychiatric hospital of whom 42 boys and 24 girls were adopted. They found that nonadopted children had more frequent diagnoses of major depression and separation anxiety disorders than adopted children, whereas adoptees evidenced more “impaired relatedness” on a *DSM-III* checklist, more frequently received personality disorder diagnoses (confined mostly to the adopted girls), and had more concentration symptoms and hyperactivity symptoms (mostly boys). However, these studies did not address factors other than adoptive status as explanatory for onset of depressive symptoms.

Hodges and Tizard (1989b) followed 42 children who were raised in institutions until 2 years of age or older and were then adopted or returned to a biological parent in adolescence. Relative to controls, they found high rates of depression and antisocial behavior only in adopted children who were returned to their biological families. Children who remained in adopted families did not differ from controls on either depressive or antisocial behaviors.

Summary of depression or grief studies. There is no evidence that adoption is causally related to depression and, in fact, little or no support that adopted children have higher rates of depression or grief than nonadopted children. Existing studies suggest that rather than causing depression through a “pathogenic” adoption process, adoption may protect against onset of depression presumably through involvement in a supportive, nurturing environment.

Preoccupation With Adoption

The assertion that adopted children experience greater psychological stress as a result of their adoptive status is central to the pathogenic causal model, although few studies have examined this directly. Schechter, Carlson, Simmons, and Work (1964) observed that 45% of adopted psychiatric inpatients ($n = 155$) had fantasies about their biological parents and that such fantasies increased with age and led to the child's searching for the family of origin in early adulthood. However, no specific definition of “fantasies” was given, and no causal relationship between fantasies and psychiatric problems was demonstrated. Similarly, Brodzinsky, Singer, and Braff's (1984) anecdotal review of interviews with adopted children ($n = 100$) suggested that fantasies regarding biological parents may be more prevalent as knowledge of adoption increases. However, this was not explored empirically, and no association with behavior problems and type of fantasy was demonstrated.

The hypothesis that fantasies regarding the biological family may contribute to the adoptee's maladjustment was assessed by Eldred et al. (1976). They found that adult adoptees who retrospectively reported fantasies about their biological parents (19 of 216 subjects, 8.8%) “generally had poorer relationships with their adoptive parents and were more likely to report a negative reaction to the disclosure of the adoption than did those who claimed never to have wondered or speculated about them” (p.

TABLE 2. Studies Evaluating the Pathogenic Model

Study	Age at Adoption	Age at Study	Sample Size ^a	Adopted Sample	Design	Support for Model
A. Depression						
Cadore et al. (1985)	Birth	18–40 y	48	EFA nonclinical	4	No
Brodzinsky et al. (1987)	3 days–3.5 y	6–11 y	130 adopted, 130 nonadopted	NS nonclinical	1na, 3, 4	Yes (girls only)
Rogeness et al. (1988)	$n = 36 < 1$ y $n = 19$ 1–5 y $n = 10$ 5 y+	4–16 y	66 adopted, 697 nonadopted	NS clinical	1na	No
Hodges & Tizard (1989b)	$n = 32$ 2 y+ $n = 10$ 4.5 y+	8 and 16 y	42 adopted, 42 nonadopted	NS nonclinical	1na, 1a, 3, 4	No
B. Preoccupation with Adoption						
Schechter et al. (1964)	NS	10 m–55 y	155	NS clinical	4	Mixed
Brodzinsky, Singer, et al. (1984)	<2.5 y	4–13 y	100 adopted, 100 nonadopted	NS nonclinical	1na, 4	Mixed
Eldred et al. (1976)	42% < 2 m 70% < 1 y	Mean = 32 y	216	EFA nonclinical	4, 5	No
Mikawa & Boston (1968)	NS	9–12 y	20 adopted, 20 nonadopted	EFA nonclinical	1na, 3	No

C. Acceptance of Adoptive Status

Brodzinsky, Singer, et al. (1984)	<2.5 y	4-13 y	100 adopted, 100 nonadopted	NS nonclinical	1na, 4	No
Singer et al. (1982)	<2.5 y	6-13 y	80 adopted, 80 nonadopted	NS nonclinical	1na, 4	No
Smith & Brodzinsky (1994)	<2 y	6-17 y	85	EFA nonclinical	3	Mixed

D. Insecure Attachment

Ternay et al. (1985)	NS	Mean M = 11.7 y Mean F = 11.3 y	45 adopted, 44 nonadopted, 44 mixed	NS nonclinical	1na, 3	No
Rende et al. (1992)	NS	35 m-139 m	57 adopted, 67 nonadopted	EFA nonclinical	4	No
R. Plomin & Defries (1983)	NS	1 y and 2 y	152 adopted	NS nonclinical	3, 4	Mixed
Marquis & Detweiler (1985)	89% < 5 weeks 95% < 12 weeks 95% < 1 y	13-21 y	46 adopted, 121 nonadopted	NS nonclinical	1na, 3	No

^aNumber refers to size of adopted sample unless noted.

NS = not specified; y = year; m = month; EFA = extrafamilial adoptees; IFA = intrafamilial adoptees; 1a = adopted control group; 1na = nonadopted control group; 2 = raters blind to adoptive status; 3 = standardized measures; 4 = interviews; 5 = record review.

286). However, it is not clear whether poor relationships may have led to fantasizing about biological families or whether fantasizing about biological families may have impaired the adoptive relationship (or both). Furthermore, 62% of subjects reported never having thought or wondered about their biological parents and 28% who reported thinking about their biological parents did not report any specific fantasies. Interestingly, adoptees who had either a biological or adoptive parent diagnosed as manic-depressive or schizophrenic were more likely to report thinking about their biological parents than adoptees whose biological parent had no history of mental illness.

In the only study to use standardized measures to assess fantasies in adopted children, Mikawa and Boston (1968) compared 20 adopted and 20 nonadopted children's responses on the Michigan Picture Test and the Rosenzweig Picture Frustration Test to assess affect toward interpersonal relationships. Results indicated no significant differences between the two groups.

Summary of preoccupation with adoption studies. There is no evidence that adopted children are preoccupied with their adoptive status. Furthermore, whether those adoptees experiencing behavior problems were having fantasies about their biological parents, what their particular fantasies are, and how those fantasies differed from "normal" childhood fantasies or those of well-adjusted adoptees remains unclear. In addition, there is no evidence that these fantasies or any other indication of adoptee's preoccupation with thoughts of their biological family placed adopted children at risk for maladjustment.

Acceptance of Adoptive Status

Another factor that has been presumed to be related to increased stress in adopted children is the extent to which they accept their adoptive status. The fact that some adoptees begin to demonstrate adjustment problems at 5 to 7 years of age (Brodzinsky et al., 1987; Rosenthal & Groze, 1991), is commonly attributed to the adopted child's increased recognition of adoption status (e.g., Verhulst, Althaus, & Versluis-Den Bieman, 1992). However, to date, there is no evidence that adopted children's understanding of adoption is related to behavioral difficulties.

Brodzinsky, Singer, and Braff (1984) assessed 4- to 13-year-old children's ($n = 100$ adopted children and 100 nonadopted children) understanding of adoption with open-ended interview and Q-sort procedures designed to evaluate the children's perception of adoptive family relationships and the appropriateness of various motives for adoption. Only children who clearly distinguished between adoption and birth as paths to parenthood were included in the study. Results indicated clear developmental trends in children's understanding of adoptive family relationships and the motivational basis for adoption and similar levels of knowledge about adoption for adopted and nonadopted children. In an earlier study, Singer, Brodzinsky, and Braff (1982) administered a 32-item adoption belief scale to 160 children between the ages of 6 and 13 years. They found that nonadopted children had a more negative view of adoption than adoptees until age 10–11, when no differences between adopted and nonadopted children were found.

Recently, Smith and Brodzinsky (1994) examined nonreferred adopted children's experiences of adoption-related psychological stress. Eighty-five adopted children ages 6 to 17 years of age who were placed with middle-class adoptive families during infancy were given two self-report measures to assess their appraisal of the adoption experience. On one scale, children indicated the extent to which various emotion ad-

jectives (e.g., happy, sad, loved, confused) described their current feelings about being adopted. Children reported how often (0 = *never*, 3 = *very often*) they experienced intrusive thoughts and avoidance associated with their adoptive status on the Thoughts and Feelings Scale (e.g., "I thought about being adopted or about my birth parents even though I didn't plan to"). Adoption-related coping was assessed with a second self-report measure that categorized children's coping strategies into four main types: assistance seeking, cognitive-behavioral problem-solving, cognitive avoidance, and behavioral avoidance.

The authors found that most adopted children experienced at least low levels of "intrusive thoughts" and negative or ambivalent affect related to their adoption experience. Ambivalence about being adopted increased with age, whereas the frequency of adoption-related intrusive thoughts and feelings declined over time. No age differences were found for adoption-related coping, although coping strategies varied with adoption-related stress. Children who were more negative or ambivalent about their adoption experience relied more frequently on avoidant coping strategies, and children who experienced more intrusive thoughts and feelings about adoption were more likely to engage in cognitive-behavioral problem-solving or assistance seeking strategies, presumably to gain more control over stressful events related to their adoption. Intrusive thought was also positively correlated with negative affect about adoption and avoidant coping techniques. No sex differences were found for adoption-related coping or intrusive thought, although girls rated adoption more positively and experienced less ambivalence about their adoptive status than boys.

Summary of acceptance of adoption status studies. Studies that have addressed acceptance of adoption indicated that most adopted children view adoption favorably, but that many occasionally experience stress associated with their family status. How much of the variance in adoptees' behavior problems can be accounted for by adoption-related psychological stress is unknown. Additional studies are needed to assess the sources of stress, its relationship to behavioral problems, and the clinical interventions needed to alleviate the stress or to improve the coping skills of maladjusted adoptees.

Insecure Attachment

Adopted children's high rates of behavior problems may be related to insecure attachments with their adopted parent in part due to the disruption of the biological parent-child relationship (Brodzinsky, 1987; Lewis, Balla, Lewis, & Gore, 1975). Although not studied directly, several studies have examined the quality of adoptive family relationships.

Ternay, Wilborn, and Day, (1985) compared 44 biological families, 45 adopted families, and 44 mixed families (i.e., families with both biological and adopted children) on the Child-Parent Relationship Scale administered to the parent and eldest child, ranging from 4th through 8th grade. They found no significant differences between children in biological or adoptive families on happiness and satisfaction with family relationships, including a "feeling of belonging." Similar scores were recorded by biological and adoptive parents, the latter being equally satisfied with their biological and adopted children.

There is, in fact, evidence that adoptive mothers may actually be more responsive to their adopted children, which may result in closer attachments. Rende, Lomkowski, Stocker, Fulker, and Plomin (1992) compared interactions of 67 mothers with two biological children to interactions of 57 mothers with an adopted child and a biologi-

cal. They observed parent-child triads in 6 videotaped play sessions and found that adoptive mothers displayed significantly more responsiveness and attention to younger siblings than did nonadoptive mothers.

R. Plomin and Defries (1983) studied the genetic and environmental influences on cognitive development in a sample of 152 adoptees in the Colorado Adoption Project. They found a negative correlation between observations of the adequacy of the adoptive homes and the biological parents' IQ scores, suggesting that adoptive parents were more responsive to adoptees whose biological parents had lower IQs. This may indicate that adoptive parents are more responsive to adoptees they view as being more disadvantaged, which may result in differential attachment patterns which in turn may influence behavior. However, Marquis and Detweiler's (1985) analysis of 121 nonadopted and 46 adopted children's attributions revealed that adopted children perceived their adoptive parents as more nurturing, comforting, predictable, and protectively concerned and helpful than nonadopted children view their own parents.

Summary of insecure attachment studies. There is no evidence that adopted children as a group are less securely attached to their adoptive parents than are nonadopted children. As a group, mothers of adopted children appear more responsive and nurturing than mothers of nonadopted children. Therefore, it is unlikely that insecure attachment plays a significant role in the increase of behavior problems found among adopted children. As noted in a later section, more research is needed to expand our understanding of adoptive parent-adoptee relationships and the perception of these relationships as related to the adoptee's misbehavior. Nevertheless, the fact that most adoptees are well-adjusted and most adoptive parents are satisfied with their adoptions indicates clearly that adoption per se does not lead to attachment difficulties.

IMPAIRED PREADOPTIVE CHILDREARING

Children adopted when older, generally after 3 years of age, evidence increased behavior problems (Verhulst et al., 1992). Children over 5 years of age are frequently classified as "hard to adopt" or "unadoptable" due to the perception that preadoptive histories of abuse, neglect, or multiple placements negatively impact the child's future adjustment (Bohman et al., 1982; Crowe, 1974). There is some evidence that children's negative preadoptive experiences influence behavioral outcome, independent of age at adoption. These studies are reviewed in Table 3.

Kadushin (1967) generated two measures of parental satisfaction from interviews with 91 adoptive parents who adopted children of 5 years of age or older. The first measure was a ratio of satisfactions to dissatisfactions regarding the child's personality, the child's achievements, the parent-child relationship, the occupation of parenthood, the relationship between the child and other adoptive family members, and the ability to resolve adoption issues. The second measure was a composite score reflecting the adoptive parents' overall satisfaction with the adoptive experience. Substantial agreement was found among adoptive parents, interviewers, and independent raters in their rating of overall satisfaction (61% were identical), and where differences existed parents were generally more optimistic in their overall satisfaction ratings than interviewers or raters.

On composite scores of adoptive family satisfaction, 59% of adoptive parents were extremely satisfied and 19% felt the adoption was more satisfying than dissatisfying. The ratio of satisfactions to dissatisfactions indicated that 73% of the adoptions were successful, 18% unsuccessful, and 9% were considered intermediate (1:1 satisfaction

TABLE 3. Studies Evaluating the Impaired Preadoptive Childrearing Model

Study	Age at Adoption	Age at Study	Sample Size ^a	Adopted Sample	Design	Support for Model
Kadushin (1967)	5 y or older	5–12 y	91	NS nonclinical	4	No
Weiss (1984)	NS	12–19 y	140 adopted, 140 nonadopted	EFA clinical	1na, 5	Yes
Bohman & Sigvardsson (1980)	NS	11 and 15 y	579	NS nonclinical	1na	Mixed
Hodges & Tizard (1989a)	<i>n</i> = 32 2.0 y+ <i>n</i> = 10 4.5 y+	16 y	42	NS nonclinical	1na, 1a, 3, 4	Mixed
Berry & Barth (1989)	3–15 y	NS	85	NS nonclinical	3, 4	Yes
Verhulst et al., (1992)	NS	10–15 y	2,148	NS nonclinical	5	Yes

^aNumber refers to size of adopted sample unless noted.

NS = not specified; y = year; m = month; EFA = extrafamilial adoptees; IFA = intrafamilial adoptees; 1a = adopted control group; 1na = nonadopted control group; 2 = raters blind to adoptive status; 3 = standardized measures; 4 = interviews; 5 = record review.

to dissatisfaction ratio). Kadushin (1967) noted that these findings reflected the same “success rate” of children adopted when younger.

Bohman and Sigvardsson (1980), in their longitudinal study of 579 children raised by adoptive, biological, or foster parents, reported no significant long-term effects of early institutional care on the adjustment of 15-year-old children who had been adopted after institutionalization. In contrast, significant problems were found for teenagers raised by biological or foster parents after being registered for adoption as infants. However, at the 11-year follow-up, all the children who had been institutionalized developed more symptoms of maladjustment in comparison to matched controls, indicating that early institutional experiences may have long-term behavioral consequences for adopted children.

Mixed evidence for the Impaired Childrearing model was provided by Hodges and Tizard (1989a). The authors conducted a longitudinal study of 42 children raised in institutions until at least 2 years of age who were then adopted, placed in foster care, or restored to a biological parent. When probands were 16 years of age, both the teenager and the custodial parent were interviewed independently regarding the teenager's behavioral adjustment in family, peer, and school domains. Two combined problem scores were generated for each subject via ratings of interview responses. Parent and adolescent problem scores indicated that adoptees were likely to have more social and emotional problems at age 16 than a nonadopted control group matched for age, sex, and family composition (i.e., one vs. two parent families). Adopted children had more problems than controls but fewer problems and disruptions than children who had remained in residential care or had been placed with their biological or foster families.

However, on Rutter's Child Scale A-2, consisting of 31 items rated by the parent concerning the child's health problems, habits, and behavior, the group of children

who had been returned to their biological or foster families had higher mean problem scores and higher antisocial scores than the adopted group, although neither group's scores exceeded the scores of matched comparisons. Results from Rutter's B scale completed by teachers also indicated that the group that was returned to their biological or foster families had significantly higher mean problem scores and antisocial scores than the adopted group. The entire sample of ex-institutional adoptees scored higher than their matched controls on the total problem subscale, the neurotic subscale, and on the antisocial subscale.

Berry and Barth (1989) evaluated 85 children adopted at age 3 or greater on the Child Behavior Checklist completed by adoptive parents. Results indicated that high externalizing scores predicted adoption instability. In a study of 2,148 international adoptees, early neglect, abuse, and the number of changes in care taking environments predicted later maladjustment, whereas age of placement held independent of adverse preadoption experiences was not predictive of adjustment problems (Verhulst et al., 1992). In fact, this study suggested that adoption may prevent maladjustment for many children who are at risk as a result of their previously experienced abuse or neglect, and disrupted care giving.

Summary of Impaired Preadoptive Childrearing Studies

Wierzbicki's (1993) recent meta-analysis of 66 published studies comparing adoptees and nonadoptees confirmed Kadushin's (1967) finding that age of adoption was not related to differences in adjustment between adopted and nonadopted children. It appears that type of care giving environment into which a child is placed is a determining factor for the severity of maladjustment, not merely the removal from an institution and replacement into a family setting. Therefore, these studies indicate that, as expected, disruptive preadoption experiences, such as institutionalization, can have a detrimental effect on the behavioral adjustment of adoptees.

REFERRAL BIAS

Adopted children have a proportionately high rate of referral to both inpatient and outpatient psychiatric facilities. For example, Kim, Davenport, Joseph, Zrull, and Woolford (1988) surveyed the proportion of intrafamilial and extrafamilial adoptions in the general population, in a psychiatric inpatient program ($n = 147$ adolescents and 112 children), and in the juvenile court system ($n = 3,280$ juvenile offenders). Results indicated a lower rating of intrafamilial adoptions in the psychiatric program and in the juvenile court system, relative to the general population but a higher rate of extrafamilial adoptions in the psychiatric program but not in the juvenile court system.

There are three hypotheses for the differential referral rate: (a) lower threshold for referral among adoptive parents, (b) adoptive parents higher SES and greater comfort with social service agencies, and (c) adoptive parents' greater concern about family cohesion and lower tolerance for misbehavior. These studies are reviewed in Table 4.

Lower Threshold for Referral

Adopted children do not present any more serious psychiatric symptoms when seen in child psychiatry clinics suggesting a referral bias. Offord, Aponte, and Cross (1969)

TABLE 4. Studies Evaluating the Referral Bias Model

Study	Age at Adoption	Age at Study	Sample Size ^a	Adopted Sample	Design	Support for Model
A. Threshold for Referral						
Kim et al. (1992)	NS	7–21 y 89% 12–17 y	43 adopted, 3,280 nonadopted	32 EFA, 11 IFA nonclinical	1na	Mixed
Offord et al. (1969)	NS	5.2–16.8 y	25 adopted, 25 nonadopted	EFA clinical	1na, 2,5	No
Warren (1992)	NS	12–17 y	145 adopted, 3,553 nonadopted	NS nonclinical	4	Yes
Weiss (1985)	NS	12–19 y	47 adopted, 93 nonadopted	NS clinical	5	Yes
Lipman et al. (1993)	Birth	4–16 y	104 adopted, 3,190 nonadopted	EFA nonclinical	5	Yes
B. Socioeconomic Status						
Lipman et al. (1992)	NS	4–16 y	104 adopted, 3,190 nonadopted	EFA nonclinical	5	No
Warren (1992)	NS	12–17 y	145 adopted, 3,553 nonadopted	NS nonclinical	5	No
C. Concern With Family Cohesion/Greater Sensitivity						
Ternay et al. (1985)	NS	Mean M = 11.7 y Mean F = 11.3 y	45 adopted, 44 nonadopted, 44 mixed	NS nonclinical	1na, 3	No
Lewis et al. (1975)	2 y+	NS	7 adopted, 255 nonadopted	NS clinical	5	Mixed

^aNumber refers to size of adopted sample unless noted.

NS = not specified; y = year; m = month; EFA = extrafamilial adoptees; IFA = intrafamilial adoptees; 1a = adopted control group; 1na = nonadopted control group; 2 = raters blind to adoptive status; 3 = standardized measures; 4 = interviews; 5 = record review.

found that extrafamilial adopted children referred to a child psychiatry clinic ($n = 25$) had similar presenting symptomatology as compared to children living with their biological parents ($n = 25$). The only exception to this was for serious antisocial behavior which was more prevalent in the adoption group. However, presence and severity of antisocial behavior was related to the age of adoption; the later the age of adoption the greater the frequency and severity of antisocial behavior. As noted above, extrafamilial adoptees are not more prone to be referred to the juvenile court system or to commit more serious offenses than nonadopted children (Kim et al., 1988). A follow-up study of adjudicated delinquents found no differences between

adopted juveniles ($n = 43$) and nonadopted juveniles ($n = 3,280$) on type of offense committed and disposition by the court (Kim, Zrull, Davenport, & Weaver, 1992).

Warren (1992) examined epidemiological data of a national sample of 3,698 adolescents, of whom 145 were adopted. She found that adopted adolescents were referred for psychiatric treatment more often than nonadopted adolescents, but only when fewer than four problems were identified, regardless of problem severity. Weiss (1985) examined hospital charts of 47 adopted and 93 nonadopted adolescents (ages 12–19 years) in a psychiatric hospital to compare symptomatology and diagnoses. Relative to nonadopted adolescents, adopted adolescents were younger on admission and were admitted with less severe symptomatology (i.e., higher rates of adjustment disorder, lower rates of psychotic disorder). Lipman, Offord, Boyle, and Racine (1993) examined follow-up data from the Ontario Child Health Study of a community sample of 3,294 children (ages 4–16) of whom 104 were adopted. Results indicated that adoptive status was predictive of psychiatric disorder 4 years later but not of educational failure or of substance use.

Summary of lower threshold for referral. These findings suggest that the proportionately high psychiatric referral rate among adoptees is not attributable to severity of their behavior problems and is supportive of a referral bias among adoptive parents.

Socioeconomic Status of Adoptive Families

There is no evidence that the socioeconomic status of adoptive families is related to the higher referral rates among adoptees. Lipman, Offord, Racine, and Boyle (1992) examined data from the Ontario Child Health Study on families of 3,243 children (ages 4–16 years), 104 of whom were adopted. They found that adoptive mothers were significantly older than nonadoptive mothers but otherwise there were no other significant differences between parents. Warren (1992), in the study noted above, found that parents with less education referred their children for mental health services less often than parents with more education, but adopted children were still referred more frequently when adoptive parent education was controlled.

Greater Concern for Family Cohesion and Sensitivity to Behavior Problems

Several researchers have suggested that adoptive parents may be more concerned with cohesive family relationships than parents with biological offspring (e.g., Lewis et al., 1975). However, these hypotheses have yet to be tested empirically and what evidence is available is inconclusive. For example, Ternay et al. (1985), in their evaluation of 44 biological families, 45 adopted families, and 44 mixed families (i.e., families with both biological and adopted children), found that perceptions of parent-child relationships of 4th through 8th grade children were not significantly different for adoptive and biological parents on the Child-Parent Relationship Scale, although the issue of family cohesion was not specifically measured.

Similarly, there is no direct evidence that adoptive parents are less tolerant of behavior problems or are more likely to “give up” on their adopted children when problems arise. However, one study did find evidence that adopted children referred to juvenile court were treated more harshly by the court and by their adopted parents (Lewis et al., 1975). The authors identified 7 adopted children from the 262 referred to the court in a two year period. They gathered information about number and severity of delinquency offenses, court clinic diagnoses, age at adoption, divorce or sep-

aration, and criminal and psychiatric histories of legal parents and siblings as related to their court dispositions. Results indicated that adopted juveniles received harsher dispositions, even though nonadopted juvenile delinquents often faced more serious charges, and the adoptees were more likely to be removed from their homes, often at their parents' request.

In regard to the adoptive parents, 5 of the 7 parents appeared to be "blatantly rejecting" (p. 143) of the adoptee once they reached juvenile court. More specifically, these adoptive parents were more likely to request their child's placement in a correctional institution and to refuse to come to the court clinic to aid in therapeutic dispositions. Two adoptive families even attempted to nullify their longstanding adoptions. Further examination of the factors that may have related to the differences in parental attitudes indicated that in nonadoptive families relative to adopted families there were higher rates of delinquent behavior of other children in the home, high rates of other psychiatric diagnoses in addition to delinquency, and high rates of divorce or separation. This may suggest that the nonadoptive families had a greater tolerance for disruptive behavior than did the adoptive families.

Summary of referral bias studies. There is evidence that adoptive parents may seek mental health services more often for less severe problems than do nonadoptive parents. Higher referral rates occur even after controlling for SES and education of adoptive parents. In one study, adopted children were treated more harshly by juvenile court for less serious offenses and adopted parents were observed to be harsher towards their children and less cooperative with the court. Additional research is needed to examine the extent to which these findings generalize to less extreme situations. For example, although there is mixed evidence that adoptive parents' are more sensitive to behavior problems, it appears more likely that the situation noted by Lewis et al. (1975) may have represented an "end of the line" recognition (by the court as well as the parents) of the need for out of home placement.

ADOPTIVE PARENT-ADOPTEE RELATIONSHIPS

Lewis et al. (1975) suggested that adopted children's behavior problems may be exacerbated by poor adoptive parent-adoptee relationship. As reviewed previously, there is little evidence for insecure attachment in adoptive parent-adoptee relations, although there is evidence that adopted children's problems may be exacerbated by impaired adopted parent-child relations. For example, Weiss (1984) compared medical records of 140 adopted and 140 nonadopted adolescent psychiatric inpatients. As hypothesized, she found that parent-child conflict was noted more frequently as an event precipitating the hospitalization for adopted youth relative to nonadopted youth. In addition, mental health staff appeared to respond differently to the adopted parents. For example, adopted parents were more often denied access to their child during planned visitations, and they were more frequently referred to parent support groups than were parents of nonadopted inpatients, suggesting that staff perceived greater impairment in the adoptive parent-child relationship.

The reciprocal relation of family factors and child behavior problems is well known (e.g., Dumas, 1989). However, what is less well understood is the extent to which adoption poses an additional risk for impaired parent-child relations. Three hypotheses for factors that may interfere with adoptive parent-child relations are: (a) adoptive parents' overinvolvement with the adoptee, (b) adoptive parents' high expectations

TABLE 5. Studies Evaluating the Adoptive Parent-Adoptee Relationship Model

Study	Age at Adoption	Age at Study	Sample Size ^a	Adopted Sample	Design	Support for Model
A. Adoptive Parent Overinvolvement						
Goldberg & Wolkind (1992)	NS	0-18 y	24 adopted, 24 nonadopted	NS clinical	1na, 5	Mixed (girls only)
Golombok et al. (1995)	Birth	4-8 y	55 adopted, 41 IVF, 45 DI, 43 nonadopted	EFA nonclinical	1na, 2, 3, 4	No
Berry & Barth (1996)	NS	0-13	1,008	NS nonclinical	3, 4	No
B. Expectations for Child Achievement						
Dumaret (1985)	<7 m	9-12 y	102	EFA IFA nonclinical	1na, 2, 3	Mixed
Coon et al. (1992)	Mean = 1 m	1-3 y	474	EFA nonclinical	1a, 3	Yes
Verhulst et al. (1990)	23.9% 0-6 m 6.6% 73 m+	10-15 y	1,036 M, 1,112 F	EFA nonclinical	3, 4	Mixed
Duyne (1988)	Birth-3 y	Late adolescence	87	EFA nonclinical	5	Yes
Ripple (1968)	NS	7-10 y	50	EFA nonclinical	5	No
C. Premature Termination of Disclosure						
Ripple (1968)	NS	7-10 y	50	EFA nonclinical	5	Mixed
Eldred et al. (1976)	42% < 2 m 70% < 1 y	Mean = 32 y	216	EFA nonclinical	4, 5	Mixed
Brodzinsky, Singer, et al. (1984)	<2.5 y	4-13 y	100 adopted, 100 nonadopted	NS nonclinical	1na, 4	Mixed

^aNumber refers to size of adopted sample unless noted.

NS = not specified; y = year; m = month; EFA = extrafamilial adoptees; IFA = intrafamilial adoptees; 1a = adopted control group; 1na = nonadopted control group; 2 = raters blind to adoptive status; 3 = standardized measures; 4 = interviews; 5 = record review.

for their child's achievement, and (c) premature termination of the disclosure process. These studies are reviewed in Table 5.

Adoptive Parents' Overinvolvement With the Adoptee

Over 40 years ago, Raleigh (1954) proposed that adoptive mothers of emotionally disturbed 5- to 10-year-old boys were more inconsistent with their discipline than non-adoptive mothers. Adoptive mothers were reported to be "more overprotective and anxious and less overtly rejecting of their children" than their nonadoptive counterparts (cited in Weiss, 1984, p. 78). Goldberg and Wolkind (1992) performed a case note study for 24 adopted and 24 nonadopted female psychiatric inpatients to investigate the excesses of conduct disorder among the female adoptees. They found significant differences between the adopted and nonadopted females in recorded family relations. The adopted females' parents were more likely to be described as "overinvolved" (29% vs. 4%) and inadequate or inconsistent parenting was more frequently mentioned in the adopted girls' records (71% vs. 29%).

However, the most extensive evaluation of quality of parenting among adoptive parents was undertaken by Golombok, Cook, Bish, and Murray (1995). They compared quality of parenting and socioemotional development of children ages 4 to 8 years in four groups: Families created by in vitro fertilization (IVF, $n = 41$), donor insemination (DI, $n = 45$), adoption at birth ($n = 55$), and biological conception and rearing ($n = 43$). Quality of parenting was assessed by rating standardized interviews with mothers on warmth, emotional involvement, mother-child interaction, and father-child interaction. Results indicated superior quality of parenting in IVF, DI, or adoption families relative to biological families. Adoptive mothers and mothers with a child conceived by IVF or DI showed greater emotional involvement than mothers with a biological child. IVF mothers showed the highest amount of expressed warmth, followed by adoptive mothers and DI mothers who did not differ from one another. Mothers and fathers with adopted, IVF, or DI children showed higher amounts of interaction than biological parents.

Surprisingly, despite such group differences, no significant differences were found among children of the four family types on questionnaire measures of emotional and behavioral problems. In addition, no significant between-group differences were found on children's scores on the Separation Anxiety Test, the Family Relations Test, or the Pictorial Scale of Perceived Competence and Social Acceptance. The authors concluded that "genetic ties may be less important for family functioning than a strong desire for parenthood" (Golombok et al., 1995, p. 296). In support of this, Berry and Barth (1996) evaluated satisfaction levels of 1,008 adoptive parents. Results indicated high levels of satisfaction among adoptive parents regardless of source of adoption (private agency, public agency, attorney) and age of child at adoption.

Adoptive Parents' High Achievement Expectations

Adoptive parents may have different expectations for child behavior than nonadoptive parents which may account for behavioral difficulties in adopted children. Dumaret (1985) examined IQ, academic performance, and teacher ratings of behavior of 102 children, ages 9 to 12 years old, born to low-SES families and raised in one of three settings: Adoption by higher SES family, raised by biological family, raised in institution or foster home. Results indicated that the adopted group had higher IQs and less academic failures than the other groups. Adoptive parents were described on

teacher questionnaires as “anxious about school results” and as paying “a lot of attention to their children’s schoolwork” (Dumaret, 1985, p. 572). The authors hypothesized that adoptive parents’ greater emphasis on scholastic competition may be a function of higher social class.

Coon et al. (1992) assessed the home environment of adoptees ($n = 474$) in the Colorado Adoption Project with a 5-point response version of the Family Environment Scale administered to parents when the children were 1 and 3 years of age. They found that adoptive parents of children with behavioral difficulties were significantly more achievement oriented than adoptive parents of well behaved children.

Similarly, Verhulst, Althaus, and Versluis-Den Bieman (1990) explained the better academic performance and greater social competence of adopted children in lower SES adoptive homes versus higher SES homes in terms of the less demanding expectations of lower SES parents. They concluded that “chronic feelings of not being able to satisfy parental standards may be an important stress factor in the adopted child’s development” (p. 103). However, Duyme (1988) found that adoptive parents social class was directly related to fewer repeated grades in school. He examined the school records of 87 children adopted at birth and raised in three different social classes. He found a significant negative correlation ($r = -.37$) between adoptive fathers social class and grade repetition in adoptees.

The hypothesis that adopted children are overly concerned with satisfying parental expectations was examined indirectly in Ripple’s (1968) study of 50 adoptive families. Follow-up interviews rated the adoptive parents’ satisfaction with the adoptee’s behavior at home, in school, and in the community. They found that 70% of all adoptees met parental expectations “to a high degree” (p. 483) regardless of the children’s status in four adjustment categories ranging from “serious emotional or behavioral problems” to “normal.” Although 67 of 75 children in the normal group (89.3%) met parental expectations to a high degree, the relationship between child behavior and parental expectations was not as predictable among children with adjustment problems. Thirty-three of the 47 children (70.2%) with some problems and 12 of the 38 children (31.6%) with serious problems were also satisfying parental expectations to a high degree.

Ripple did find an association between parental affect, parental expectations, and adopted children’s adjustment. Seventy per cent of children who met parental expectations and whose parents displayed highly positive affect toward them were classified in the “normal” group. Only 30% of children were placed in the “normal” group if parental affect or expectations were less than optimal. Only 2 of 29 (6.9%) children were classified as normal if parental affect toward the child was ambivalent and the child met parental expectations to a low or moderate degree.

Premature Termination of Disclosure Process

Adoptive parents’ tendency to communicate to the adoptee that adoptive status is a taboo subject may provoke a negative response in the adoptee (Krischner & Nagel, 1988). Although there are no studies that have examined this hypothesis directly, there is indirect evidence that parental attitudes towards disclosure may impact adopted children’s behavioral status. Ripple (1968) found that adoptive parents’ ambivalence about disclosure, but not whether the adopted child was told about his/her adopted status, was related to children’s adjustment. Nine of 11 (81.8%) children in families whose parents expressed ambivalent attitudes towards disclosure evidenced behavioral difficulties at 7–10 years of age.

Eldred et al. (1976) reported that 40% of their sample of 216 Danish adoptees reacted to disclosure of their adoptive status with negative reactions such as shock, upset, dissatisfaction with the adoptive parents or unhappiness at not having been told earlier. However, only 7% of the adoptees reported that their adoptive parents used their adoptive status to reject or punish them and in only 7 cases, the adoptive parents revealed the adoption when they were angry with the adopted child.

There is evidence that some adoptive parents may overestimate their adopted child's understanding of adoption. Brodzinsky, Singer, and Braff (1984) reported that 75% of 200 adoptive parents accurately predicted their child's level of knowledge regarding his/her adoptive status. However, of those parents with incorrect predictions, 78% overestimated their child's knowledge. The authors suggested that such an overestimation may result in early termination of the disclosure process, which may in turn result in adjustment problems.

Summary of Adoptive Parent Adoptee Relations Studies

Adoptive parents and children appear to have largely positive relationships, and there is no direct evidence indicating that higher rates of children's behavior problems are related to impaired relations with their adopted parents. Adoptive parents' show high quality of parenting and high satisfaction with parenting. There is some evidence that expectations and affect of adoptive parents may impact adoptee adjustment. However, these findings would be more definitive if parental expectations and satisfaction were measured objectively, rather than relying on subjective ratings and if parental expectations were examined in adopted and nonadopted families. Mental health staff often rate adoptive parent-child relationships more negatively than nonadoptive families, one of the tendencies that Nickman and Lewis (1994) note often "make things worse" (p. 753).

SUMMARY AND RECOMMENDATIONS

Many studies have focused on the behavior and mental status of the adoptee or the adoptive parent as separate potential causes for the adoptee's behavior problems. A bi-directional relationship between the behavior of the adoptee and that of the parent was suggested more than 30 years ago (Mikawa & Boston, 1968) but has eluded empirical verification. More recently, Brodzinsky (1987) has proposed a psychosocial perspective whereby adoption presents a unique set of psychosocial tasks for families. He proposed that families' ability to master these tasks successfully would predict successful outcomes for adopted children. More than a decade later, and despite a considerable empirical literature, our review indicates that this model has yet to be tested adequately.

This review further suggests that a psychosocial model as explanatory for the high rate of behavior problems among adopted children is highly plausible and that it may be time for a new awareness and appreciation for the normative aspects of adoption. Although results of genetic studies indicate that antisocial behavior may be transmitted biologically for a subset of adopted children, evidence is less conclusive when specific types of behavior problems are examined. Similarly, mental health clinic-based studies evidence higher rates of referrals and higher proportion of adopted children on psychiatric inpatient units. However, these data may be explained by the greater tendency of adoptive parents to seek mental health services. In fact, studies in non-

clinic populations have found lower rates of behavior problems in adopted children relative to children in biological families (e.g., Golombok et al., 1995). At the very least, the interactionist perspective is a heuristic that may point the way to more focused studies on the exceptional relationship issues that may arise in families with adopted children.

Beyond the adoption literature, empirical support for the interaction between child attributes, parenting practices, and family relationship characteristics on the development and maintenance of childhood disruptive behavior disorders has grown substantially over the last two decades. For example, parental discipline practices and supervision skills have been linked to the emergence of childhood aggression (Loeber & Stouthamer Loeber, 1987). Patterson's research (Patterson, 1982; Patterson, Reid, & Dishion, 1992) focuses on the links between the development of serious antisocial behavior and harsh parental interactional style. Critical parenting factors, such as low levels of encouragement and praise, absence of daily involvement between parent and child, and a limited repertoire of parental problem solving abilities has also been linked with children's disruptive behavior. Related family relationship characteristics, such as family cohesion, the emotional closeness felt among family members, has been found highly predictive of childhood antisocial behavior (e.g., Florsheim, Tolan, & Gorman-Smith, 1996; Harrison, Wilson, Pine, Chan, & Euriel, 1990).

In addition to those family factors mentioned above, style of family organization, family communication, and intra familial support have also been cited as associated with childhood disruptive behavior (Loeber & Stouthamer Loeber, 1987; Tolan, Guerra, & Kendall, 1995). These studies have shown that family beliefs about the importance of the family, the purpose of the family, and the responsibility and loyalty expected of family members have predicted risk levels of aggression. In day-to-day life, these beliefs are thought to influence motivation and meaning attached to behavior among family members. There are also strong indications that deviant family beliefs might influence emergence of childhood behavior problems. For example, a review of prediction studies identified a father's engagement in delinquency as significantly related to the child's level of behavioral difficulties (Loeber & Dishion, 1983).

These findings could have two implications for determining the etiology of behavioral difficulties in adoptive children and perhaps, more importantly, helping children and their families alleviate these problems. First, further exploration is needed to determine whether the same parenting and family processes identified in the aggression and delinquency literatures operate in adoptive families whose children are experiencing behavioral difficulties. In fact, there is no reason to expect that adoptive families would be immune from the same parental and family difficulties that have been identified in previous studies. What is as yet unexamined empirically is whether adoptive parents and children are at greater risk for these relationship difficulties and whether the high rate of behavior problems is related directly to these factors (Brodzinsky). The family processes that shape a child's life on a daily bases might prove to be an important focus for future investigations.

More specifically, future studies need to compare parental and family processes of biological and adoptive families whose children are evidencing behavioral difficulties. If indeed, similarities are discovered, research should identify specific child, parent and family characteristics that influence the development of these processes. For example, adoptive and biological parents might differ in their expectations for parenting or for children's behavior.

Second, specifying family interactional processes that maintain childhood behavior difficulties can provide the basis for interventions directed to these problems. In-

creasingly, interventions designed to increase parenting skills and strengthen specific relational qualities of families have demonstrated efficacy (e.g., Alexander, Barton, Schiavo, & Parsons, 1976; Henggeler, Melton, & Smith, 1992; Tolan et al., 1995; Webster-Stratton, 1990). Focusing research on adoption families on the need to ameliorate the difficulties experienced by adopted children and parents is necessary given the evidence that at least some proportion of adoptive children experience disruptive behavior disorders.

Barr (1991) reviewed the social construction of adoption from the 1920s to the present. She traces the large scale changes in the way society views adoption from the social work tradition of providing positive alternative homes for impoverished children, to the mental testing movement that sought to measure the putative positive changes associated with adoption on mental functioning, to the psychoanalytic movement that focused on the need for adoption of infants to avoid putative permanent damage to children's psyches. Add to this a current movement toward increasing openness of the adoption process, where adoptive families and biological parents are often in frequent contact throughout the child's upbringing. It is noticeable that the research community has seemed oblivious to many of these changes. As Nickman and Lewis (1994) note, such lack of awareness of important issues related to adoption and the use of outdated or untested clinical assumptions about adoption by mental health professionals often provides more harm than relief to parents seeking services for their children.

A common criticism of the literature identifying underlying family mechanisms that support childhood disruptive behavior is that few studies focus on the family strengths and processes that support prosocial behavior in children (Garmezy & Masten, 1986). Within the field of adoption research, the same criticism might be applied. As others have noted (Brodzinsky, 1987; Nickman & Lewis, 1994), little has been done to identify the mechanisms by which the majority of adoptees demonstrate good adjustment and positive developmental outcomes. Examining the family processes that underlie these successes is critical if we are to understand how to reduce the incidence of behavioral difficulties that adopted children exhibit. An awareness of what is special or unique to families with adopted children can offer support and understanding to children and parents without invoking poorly operationalized pathology models that lack empirical support.

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