

Adoption and the effect on children's development

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Abstract

Adoption, whether formal or informal, has always been a superior method of assuring survival for children whose parents are unwilling or unable to care for them. However, adoption can also affect child development in profound ways. Data collected over the past three decades support adoption as a superior means of promoting normal development in children permanently separated from birth parents. Out of calamity and loss, children recover and progress to become functionally and emotionally competent adults. For children suffering severe neglect or abuse in early life, an adoptive family is a remarkable environment for healing emotional and physical trauma and reversing developmental deficits. © 2002 Elsevier Science Ireland Ltd. All rights reserved.

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1. Introduction

Since the first human birth, loss of parental nurture and protection through death or abandonment placed a child's survival in immediate jeopardy. Though our religious and literary heritage is replete with stories of children abandoned or orphaned who survived to achieve greatness (e.g., Moses and Muhammad) or reunification with birth parents (e.g., Figaro with Marcellina and Bartolo) [1], this was certainly not the most common outcome of childhood "exposure." In his exhaustive study of child abandonment in Western Europe from late antiquity to the Renaissance, John Boswell reminds us that only through *The Kindness of Strangers* (the book's title) was death prevented or slavery, life-long obligatory servitude or child prostitution avoided [2]. Standing in stark contrast to other

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options throughout history, ascension of an abandoned child to a position indistinguishable from a birth child within a family through formal or informal adoption was the superior mode of ensuring survival and well-being in a hostile world.

Much has changed for children in terms of basic human rights, legal standing, age of independence, nutrition and health care in the 150 years since the passage of the Massachusetts statute “An Act to Provide for the Adoption of Children,” the foundation for all subsequent American and British child-centered adoption legislation [3]. Life-saving options aside from adoption now exist for caring for abandoned children. Millions currently reside within orphanage and foster-care settings worldwide. In difficult economic or political times, these social institutions can ensure survival of children lacking parents. However, examination of data on adoption outcomes, particularly for children from the most at-risk environments, alters the discussion from one promoting child survival to one which examines the differential effects of care environments on child well-being. In spite of arguments against adoption in favor of family preservation at all costs, or because of purported psychic trauma to the birth parent or adopted child [4], data collected over the past three decades continue to support adoption as a superior means of promoting normal development in children permanently separated from birth parents. For children suffering severe neglect or abuse in early life or exposure to illicit drugs in utero, an adoptive family is a remarkable environment for healing emotional and physical trauma and reversing developmental deficits.

2. Definitions and methodological challenges

Determining the “effect” of adoption, which for the purposes of this discussion is defined as a permanent, legal placement of a child within an unrelated family, implies that there are appropriate comparison groups from which to draw definitive conclusions. However, children are not placed in an adoptive family as participants in a carefully controlled research study, but rather as a result of misfortune. Discussion of the effects of adoption on development finds the cold analytical light of science attempting to illuminate the outcome of what is perhaps the most poignant human tragedy—severance of the bond between birth family and child. As John Steinbeck writes in *East of Eden*, “The greatest terror a child can have is that he is not loved, and rejection is the hell he fears” [5]. While biologic and social risk factors may differ between children, adoption always involves the emotional trauma of loss for the child and birth parents. Loss may also be an element of the equation for the receiving family, who may view adoption as a less favored solution to a problem of infertility.

Not only is it difficult to “control” for loss of family and the accompanying grief, adoptive families are viewed differently, and by some as inherently inferior to birth families. A recent comprehensive U.S. survey on adoption-related issues confirmed that 90% of those surveyed viewed adoption positively, but also found that half said adoption “is not quite as good as having one’s own child” and 25% said it is sometimes harder to love a child who is “not your own flesh and blood” [6].

Blood relationships are the principal focus of social legitimacy, emotional support, and cultural and religious traditions worldwide. This justifiable focus on the importance of

each child's heritage is succinctly articulated in the United Nations Convention on the Rights of the Child [7].

2.1. Article 7

(1) The child shall be registered immediately after birth and shall have the right from birth to a name, the right to acquire a nationality and, as far as possible, the right to know and be cared for by his or her parents.

2.2. Article 82

1. States Parties undertake to respect the right of the child to preserve his or her identity, including nationality, name and family relations as recognized by law without unlawful interference.
2. Where a child is illegally deprived of some or all of the elements of his or her identity, States Parties shall provide appropriate assistance and protection, with a view to speedily reestablishing his or her identity.

Unfortunately, the focus on the primacy of the biologic family often marks a child with the blemish of illegitimacy and also makes it difficult for many to understand how a child could be adequately cared for by anyone other than a birth parent or relative. This view helps perpetuate notions that adoptive parents have ulterior motives for seeking to adopt an unrelated child. Particularly in the realm of international placement, charges are made, though never substantiated, that parents adopt for the purposes of organ donation, sexual exploitation or economic servitude. Simple examination of how the media sometimes pathologizes adopted children, adoptive families and adoption agencies illustrates the burden borne by all involved in providing care to what, for some, are “unnatural” children [8].

While the aforementioned factors place an adopted child “at risk,” other aspects of placement may provide a significant advantage over non-adopted comparison groups. Most children experience a dramatic improvement in their living situation and socio-economic status when they enter adoptive homes [9]. Adoptive parents are often highly educated and virtually all are carefully screened to assure proper motivation and economic and relationship stability. This is a profound reversal of fortune for children coming from unsound and often abusive families who cope with poverty, undernutrition, poor medical care, mental illness and chemical dependency. Consequently, trying to separate the developmental effects of living in an adoptive vs. an economically and socially advantaged family is difficult if not impossible.

While the circumstances surrounding adoption preclude a carefully controlled, randomized study of its effect on children's development, the intent of measuring outcome is not to demonstrate that adoptive homes are superior alternatives to birth families. Ultimately, for those children whose parents are unwilling or unable to provide for them, we seek documentation that an adoptive family is comparable to a birth family in its ability to create an environment that produces competent adults who can celebrate the joys and overcome the adversities of life. While outcomes in many adoptive situations have been

examined, this discussion will focus on the effect of adoption on children's development in three areas:

- Change in developmental trajectory in children jeopardized by early childhood institutionalization.
- Observed vs. expected outcomes in children exposed to illicit drugs during the prenatal period.
- Outcome of infants placed for adoption during infancy.

Herein, the term "development" is not limited to the elements of gross and fine motor, social and language abilities on which we generally focus during early childhood. For example, knowing that a child has appropriate aptitudes in the preschool period is inadequate if, later in adolescence or early adulthood, life unravels as a result of emotional distress, lack of social awareness or subtle cognitive disabilities. Since the overall goal of either birth or adoptive parenting is to promote the transition from dependent infant to independent adult, this discussion will also focus on physical development and the attainment of cognitive, emotional and social skills that help achieve this goal.

3. Effect of adoption on the development of post-institutionalized children

The foundling home/orphanage is an institution that arose in Italy in the early thirteenth century [10]. While these centers were effective in "tidying up" the problem of abandoned infants by hiding their plight from public view, they were dismal failures in terms of assuring the survival of children. Well into the modern era, placement of an infant in an orphanage was equivalent to a death sentence. Mortality rates exceeded 90% during the first year of life into the mid-nineteenth and early twentieth century in major European and American cities. While the negative effects of environmental and social deprivation on infants had been recognized for some time, deviations from normal development in institutionalized children could not be carefully studied until survival through infancy was assured. Consequently, it was not until the late 1930s and early 1940s that investigators reported on developmental delays and suppressed growth and immune functioning within congregate care settings for infants. Through the next three decades, investigators documented an increasingly wider array of problems in children institutionalized during infancy including: delays in emotional, motor, social, speech and physical development; interruption of normal adult-child bonding cycles; and severe behavior, emotional and learning difficulties [11,12].

Near the time orphanages were closing in preference to foster care, Tizzard, Rees and Hodges [13–17] initiated a comprehensive longitudinal study of the outcome of institutionalized children placed at various ages in foster or adoptive care or reunited with their birth families. Their studies not only showed that adoption could reverse some of the deficits associated with early childhood institutionalization, but also pointed out that adopted children were generally doing as well if not better than those children restored to their birth families.

Reexamination of the effects of deprivation within institutional care settings was forced when the system of orphanages in Eastern Europe was revealed in the early 1990s. In contrast to institutions in Western Europe studied by Tizzard et al., those in Eastern Europe imposed a far greater degree of privation on infants and young children. Following liberalization of the Romanian adoption laws in August of 1990, thousands of Western Europeans and North Americans traveled to Romania with hopes of adopting one or more of these children [18]. Observing these institutionalized children who were profoundly neglected during early life provided a unique opportunity to document changes following placement within adoptive homes. A number of investigators have focused on these children. However, two well-designed epidemiological studies, one from the United Kingdom utilizing a stratified, random sample adopted prior to 42 months [19–24] and one from British Columbia, which examined all the orphanage-reared Romanian children adopted by families in the Province [25], provide the best views of how adoption changed developmental trajectories in these high-risk children.

3.1. Cognitive recovery

Both the United Kingdom and Canadian studies demonstrated extreme developmental delays in these children at the time of entry into their adoptive home. On arrival in the United Kingdom, 59% of Romanian adoptees had a Denver Developmental Quotient less than 50 (retarded range) and another 15% were 50–69 (mildly impaired) [19]. In Canada, every institutionalized child was developmentally delayed and 78% were delayed in all areas tested (fine and gross motor, personal–social and language) at the time of arrival [25].

Most children made rapid progress during the first years after arrival, with average increases of two developmental quotient points per month in the Canadian study. On follow-up 3 years after adoption, the outcome of the group of Romanian children adopted prior to 4 months of age did not differ significantly from the Canadian-born control group. In children who spent at least 8 to <24 months within institutional care, mean overall Stanford–Binet IQ was 90, with a range from 65 to 127. In children who spent more than 2 years within institutional care, mean overall IQ was 69, with a range from 52 to 98, significantly lower than those children adopted prior to 2 years of age.

A similar degree of recovery and the “dose-dependent” effect of duration of institutionalization on cognitive function were shown in the United Kingdom study. When tested at age 6 years, scores on the Global Cognitive Index in children adopted to the United Kingdom at less than 6 months of age (114 ± 18) were not significantly different from the United Kingdom adoptees placed within the same chronological age range (117 ± 18). Children adopted at 6 to <24 months (99 ± 19) and 24–42 months (90 ± 24), while in the normal range, scored significantly lower than the first two groups and were significantly different from each other. While overall scores remained quite stable between 4 and 6 years, those children who were furthest behind at 4 years made the largest gains [23].

In parallel with cognition, brain growth, as reflected in head circumference *z* scores, was negatively affected by early deprivation and positively affected by adoption. In a study of Romanian adoptees placed in 1990–1991, head circumference decreased in direct relationship to the length of orphanage confinement during early infancy [26]. In children

10 months or older, 41% were less than the third percentile. In the United Kingdom study, 38% were below the third percentile at the time of arrival in their adoptive homes [19]. In a separate study of Eastern European orphans, catch-up brain growth was noted in 85% of post-institutionalized Eastern European Orphans ($n = 34$) after arrival. Mean head circumference z scores increased an average of 0.67 ± 0.82 from arrival at a mean age of 13.2 months to follow-up at a mean age of 26 months [12].

While significant head catch-up growth is observed after adoption, the length of time of institutionalization appears to have the same effect on eventual head (brain) size that it does on cognitive scores. O'Connor et al. found a significant dose-dependent effect of duration of institutionalization on mean head circumference standard deviation scores at 6 years of age, with United Kingdom adoptees 0 to <6 months—0.57, Romania adoptees 0 to <6 months—1.2, Romanian adoptees 6 to <24 months—1.59 and Romanian adoptees 24 to 42 months—2.06 [44]. Head catch-up growth appears to occur in the period immediately following adoption and is not an ongoing phenomenon, since head circumference z scores did not change significantly between 4 and 6 years in the United Kingdom groups [23].

All children present challenges to their parents, and post-institutionalized children are no exception. However, considering their cognitive state on arrival, improvement within adoptive homes was remarkable. In the summary of a 1985 article on the effect of environment on cognitive function, Michael Rutter wrote:

“Environmental effects on IQ are relatively modest within the normal range of environments, but the effects in markedly disadvantageous circumstances are very substantial”...“Cognitive development is influenced by direct effects on cognition and by early indirect effects through alterations in self-concept, aspirations, attitudes to learning and styles of interaction with other people.” [27]

The longitudinal study of Hodges and Tizzard [16,17] confirmed this positive environmental effect. When followed through age 16, post-institutionalized subjects were more likely to have social and emotional problems than other children and more disruptions in their lives. However, there was no effect of early institutionalization on IQ, and children who had been adopted were doing better in their adolescent years than those reunited with their biologic family. The authors speculated that adopted children did better because of the adoptive parents' strong desire for the child, superior financial resources and a strong desire to build a relationship with the adopted child.

This positive environmental effect of adoptive families on these at-risk children is borne out once again in the extension of follow-up studies of the Canadian cohort of Romanian adoptees. Ten years after adoption, the negative correlation between duration of institutionalization and cognitive achievement persisted in these children. Stanford–Binet scores in the two groups who spent the longest time within institutional care settings prior to adoption [>24 months (71 ± 10) and 8–24 months (89 ± 12)] were significantly lower than the children adopted prior to 4 months of age (99 ± 14) or the Canadian control group (108 ± 13). The two longer duration groups also performed less well in reading, math and written work, and 26% had repeated at least one grade in school. Despite the lower intellectual and academic performance in children who had been institutionalized the

longest, all groups had equally positive academic self-concepts and most were functioning within the normal range [28]. While some problems were noted in social functioning within the two groups of older Romanian adoptees, their social self-concepts were positive. Both teachers and parents saw the older adoptees as well accepted by their peers [29].

3.2. Attachment

The attachment cycle in early life, where a bond of trust is formed between an infant and primary caregiver, is the foundation on which we base all other relationships. Faced with overwhelming responsibilities, orphanage attendants rarely have time to attend to each child individually. Consequently, it is the rare child in an orphanage who experiences a single, consistent caregiver who can meet his or her needs as they arise. The question, therefore, is not whether post-institutionalized children have normal attachment behavior, since they have never been in a situation that promotes attachment. The real questions are how serious are these deficits and do they improve over time.

Zeanah [30] recently reviewed the evidence on attachment disturbances in post-institutionalized children, including the aforementioned long-term studies [22,25] and concluded that:

- Institutional care dramatically increases risk for social behavioral abnormalities, particularly attachment disturbances. Risk increases with duration of institutionalization.
- Indiscriminate sociability (friendliness) is linked to the lack of a discriminated attachment figure in children in institutions, but persists long after these children have developed attachment figures in their adoptive home.
- While children who are adopted after having been raised in institutions are at an increased risk for serious attachment disturbance, most children do not exhibit these disturbances.

3.3. Behavior problems and social deficits

At the time of the first evaluation of Romanian children adopted to British Columbia, institutionalized children who had spent ≥ 8 months revealed internalizing behaviors; e.g., failure to make their needs known, stereotyped behavior, refusing solid food, and avoiding or withdrawing from siblings and peers. Three years after arrival, at the time of the second evaluation, externalizing behavior problems predominated. Children were more aggressive, antisocial, undercontrolled, rageful and oppositional [25]. At the extreme end of the behavioral and social spectrum, patterns of behavior similar to those observed in autistic children were also noted in those children coming from the worst circumstances. Rutter et al. [21] found that 6% of 111 Romanian children adopted by families in the United Kingdom and assessed at both 4 and 6 years of age had quasi-autistic patterns of behavior defined as difficulties in social relationships and communications, preoccupation with sensations and intense circumscribed interests. An additional 6% had isolated autistic features.

As with cognitive deficits, improvement over time was substantial. By the time children were 6 years of age, O'Connor found that among seven domains of dysfunction, emotional problems, peer difficulties and conduct problems showed no difference in rate between the adoptees from Romania and the group adopted from within the United Kingdom [24]. Inattention/overactivity and quasi-autistic problems, in addition to cognitive and attachment problems discussed above, were all much more common in the Romanian sample and significantly associated with age of entry. Nevertheless, 24% of those children at highest risk, having spent the longest time within institutional care (24–42 months), had no abnormalities on any of the seven domains. An additional 37% of these children had impairment in one domain and 17% had impairments in two. Only 22% were impaired in three or more domains vs. 20% for children adopted at 6–24 months, 5.4% for children adopted at <6 months and 8% for within the United Kingdom adoptees. Quasi-autistic patterns of behaviors also improved substantially between 4 and 6 years of age in the United Kingdom study, with only one of six children still meeting their full algorithm criteria for autism [21].

3.4. Physical growth

Poor growth within institutional care settings has been recognized for centuries [11,12]. Therefore, it is not surprising that the most common medical problem identified after arrival in post-institutionalized children is growth failure [26,31,32]. Children with psychosocial growth failure, the predominant cause for stunting within institutional care settings, routinely have an immediate and dramatic surge in growth when removed from their hostile environment [33–35], and follow-up confirmed that catch-up growth was excellent in adopted post-institutionalized children. In a study of Romanian adoptees with arrival height/length more than two standard deviations below the mean, height/length velocity *z* scores were markedly elevated in all subjects (mean + 5.5). In children ≤ 18 months at arrival, 78% had reached a height/length in the normal range within nine months of arrival. Growth velocity in children >18 months at arrival was virtually identical to younger children; however, because more absolute growth was required to exceed the third percentile, none of these children had reached height/length within the normal range during the period of observation [12].

Length of time within institutional care does have a moderating effect on catch-up growth. Benoit et al. [36] observed that 12 months after arrival, all children adopted at ≤ 6 months of age were >5th percentile. Growth was also excellent in children adopted at >6 months of age, but 13% were <5th percentile in height and 6% in weight. Rutter [19] found that despite 51% being less than the third percentile in length and 34% in weight at arrival, at 4 years of age only 2% were <3rd percentile in weight and 1% in height. Despite being in the normal range, children adopted at ≥ 6 months of age were slightly shorter and lighter than their control group of adoptees within the United Kingdom. Ames [25] also noted on follow-up at ≥ 4.5 years of age that children who had spend eight months or more in institutional care were 2 in. shorter than their Canadian-born control group and 1 in. shorter than children institutionalized ≤ 4 months.

While overall the prognosis for post-arrival growth is good, studies in Sweden, Belgium, Italy, France and the United States have documented that children adopted

internationally constitute a group at high risk of early puberty and therefore shortened final height [37–40]. In a study of Indian girls adopted to Sweden, 13% reached menarche before the age of 10 years. Girls who are most growth impaired at arrival and who have the highest rate of catch-up growth appear to be the group at highest risk [37]. In a study of 339 children adopted internationally into the United States, Mason et al. [40] found that 30% of the girls surveyed experienced early puberty, with the mean age of 10.5 years at menarche. Precocious puberty in male adoptees appears to be a rare occurrence [37–40].

3.5. Adoptive families of post-institutionalized children

Over the long term, a child's fate is dependent on the well-being of the family unit. The popular press has focused on the negative aspects of institutionalized children within families, including severe attachment disorders, adoption disruption, and profound behavioral and cognitive problems [41–46]. However, a survey of parents of children adopted from Romania in 1990–1991 revealed that 91% felt the overall impact of the adoption on their family was very or mostly positive, and 93% never thought about disrupting the placement. Only 3% felt mostly or very negative about their adoption or thought about disrupting the placement frequently or most of the time [47]. A similar survey of 573 families adopting primarily from Russia revealed that most, if given the chance to go back in time, would “most definitely” again adopt their child (mean = 1.18, with 1 = most definitely to 4 = no, would not have adopted) [48].

During the 1990–1991 Romanian “baby boom,” many adoption agencies assured parents that “love and good food” would transform the non-responsive, skeletal child in their arms into the child of their dreams. While knowledgeable professionals might view this as naïve at best or, at worst, self-serving agency rhetoric, one need only to view the developmental devastation seen in children who remained within Romanian orphanages to appreciate the fundamental truth of this statement [49]. Improvement in post-institutionalized adopted children illuminates the powerful, positive effects of families in reconstituting physical growth, abilities and skills lost or underdeveloped due to early deprivation. Children adopted from institutional settings before 4–6 months of age appear to be virtually indistinguishable from domestic control groups in growth, cognitive skills, behavior and social skills, and attachment behavior. While an adoptive family environment does not make everything right, the majority of older children do not have pervasive problems, peer relationships and social and academic self-concepts are positive, and parents experience a high level of satisfaction with the adoption.

4. Drug-exposed children

Adoption of children exposed to illicit drugs during pregnancy is another situation that offers an opportunity to examine the outcome of an at-risk population. Several problems complicate the interpretation of these data. Infants of substance-abusing mothers are commonly exposed to differing amounts of multiple chemicals at varying times during the gestation. Therefore, it is extremely difficult to establish a uniform definition of a “drug-exposed” child. The second issue is that the effect of some commonly abused substances

such as cocaine on the fetus is controversial. Substantial evidence exists that drug exposure can cause catastrophic neurologic damage or premature termination of pregnancy in a limited number of cases and can affect an infant's neurologic status in the immediate newborn period. However, the long-term effects are not as clearly defined. Finally, few studies have compared adopted drug-exposed children to those drug-exposed children who remain with their birth families [50].

Several cohorts of drug-exposed children followed through early childhood and one meta-analysis of five follow-up studies demonstrated deficits that ranged from subtle to moderate in a variety of areas including verbal reasoning, abstract/visual reasoning, IQ, attention, attachment and language [51–55]. A recent report by Singer et al. [56] suggests that the risks may be far greater for very-low-birth-weight-infants or infants born prematurely. However, methodological problems in most studies prevented clear determination of whether factors aside from prenatal drug exposure were the cause of the observed problems; e.g., socioeconomic status, continued maternal drug use, paternal education, smoking, alcohol use. Clearly, these factors could weigh heavily on outcome.

Griffith et al. [51] reported positive outcomes for children who were not living with drug-affected mothers or had escaped multiple foster placements. Children who remained within drug-using families were more likely to display problems. A Canadian study following a group of drug-exposed children through 6 years of age concluded that adoption reduced the impact of parental drug exposure and resulted in a better outcome than that of children exposed prenatally to cocaine and raised by their birth mothers [52,54].

The longest longitudinal study of adopted children exposed to drugs in utero was conducted by Barth, Needell and Brook [57,58]. While the study was principally designed to determine if the parental adoption experience and outcome for drug-exposed children was different from that of non-drug-exposed children, a positive effect of adoption on development of these at-risk children can be implied from their data. Immediately after adoption and at points 4 and 8 years after adoption placement, parents were asked to complete questionnaires about their adopted children. The study cohort consisted of 233 children divided into approximately equal numbers of drug- and non-drug-exposed children. Drugs to which children were exposed included crack cocaine (62%), other forms of cocaine (63%), heroin (59%), marijuana (75%) and PCP (30%). Children with diagnosed fetal alcohol syndrome were excluded, but neither exposure to alcohol (85%) nor smoking (90%) was considered drug exposure for the purposes of this study.

In an interesting contrast between adoptive families in this particular study, drug-exposed children were somewhat disadvantaged in comparison to non-drug-exposed children as their parents were less educated and earned over 30% less. Additional factors that placed families adopting drug-exposed children at risk included placement for adoption at an older age; children were more likely to have a history of neglect as well as multiple placements, and to be described as having physical, mental, developmental or learning disabilities, and emotional/behavioral problems.

Only 20% of drug-exposed children were reported as being "quite or extremely difficult" to raise and 63% were functioning "well with few problems," figures that did not differ significantly from non-drug-exposed children. Between 87% and 96% of children in both groups were described as affectionate, appreciative and well attached, and more than 97% of parents felt close to their children. Level of parent satisfaction did

not differ between groups. More than 75% responded that they were “satisfied” or “very satisfied” with the adoption, and if they had it to do over again, more than 90% said they “definitely” or “most likely” would adopt the child again.

Despite virtually identical attainment of good to excellent grades (drug-exposed 71% vs. non-drug-exposed 73%), drug-exposed children were more likely to have had difficulties within the educational system. Problems included repeating a grade and being enrolled in classes for the learning disabled, though they were not more likely to be in classes for speech or language difficulties or classes for the behaviorally or emotionally disturbed. The incidence of attention deficit hyperactivity disorder was not statistically different between drug-exposed and non-drug-exposed adoptees, though it was high overall in both groups, and more drug-exposed children scored above the 75th percentile on the hyperactivity subscale of the Behavioral Problem Index.

Despite the prenatal and postnatal factors that placed them at higher risk in this study, the drug-exposed adopted children generally functioned within the normal range and almost identically to non-drug-exposed adopted children in most areas. Whether one accepts that cocaine, heroin, marijuana or PCP actually causes long-term problems, 85% of drug-exposed children were also exposed to alcohol, an unequivocal teratogen. The fact that outcome was as good as it was speaks not only of the powerful positive effect of an adoptive family on development in children exposed to illicit drugs, but also to this dangerous though legal chemical. As in post-institutionalized children, the environment of an adoptive family cannot erase all deficits and eliminate all problems. However, we can infer that, as in post-institutionalized children, adoption has a potent effect on development of drug-exposed children, offering a superior option to remaining within an at-risk care environment.

5. Infant adoption: does adoption have any negative effects on children's development?

Up to this point, the effects of adoption on children's development appear to be overwhelmingly positive. However, the discussion has focused only on the effect of adoption on preschool and school-age children at very high risk of developmental difficulties. What are the long-term effects of adoption on development in children who enter adoptive families without major, preexisting problems? As previously discussed, no child enters adoption without having experienced a traumatic event. It is particularly difficult in most situations to eliminate these events as a cause of problems, particularly in those children old enough to retain memories of their birth family, the conditions that caused disruption of their birth family and the often traumatic journey through placement. While adopted children are over-represented within clinical psychiatric series, their problems can be related, in large part, to events and experiences that occurred prior to adoption and to a greater willingness for parents of adopted children to seek help from behavioral specialists [59–66]. One group, normal infants placed within the first year of life, offers the best opportunity to explore whether loss of a birth family and growing up in an adoptive home has a negative effect on children's development.

For the most part, adopted and birth children are indistinguishable from one another through the preschool period. However, as children age, differences emerge between

adopted children and their peers in birth families [60]. In Sweden, Bohman and colleagues [67,68] followed four groups of children from gestation through young adulthood. These groups included adopted children, children living in long-term foster care, children living with their birth mothers who originally had registered them for adoption but later had changed their minds, and classmates in the community living with biological parents. At 11 years of age, adopted girls had lower math scores but otherwise did not differ. Boys had a higher rate of problem behavior, as rated by teachers, vs. their non-adopted classmates. At 15 years, adopted boys and girls both had a tendency for lower adjustment scores and lower mean grades than classmates. However, foster children and those adolescents living with their birth mothers were more problematic. At 18 years, military records revealed that IQ scores of adopted boys and controls were the same. Again, young men who remained with their birth mothers or were in long-term foster care scored significantly lower than the control groups on most IQ subtests. At 23 years of age, no differences were found in alcohol-related problems or criminal activities for adoptees compared to controls, though boys in long-term foster care were likely to have more problems.

In terms of later life, Collinshaw et al. [69] reviewed data collected at 23 and 33 years of age from a group of children drawn from the National Child Development Study in Britain. Outcome was measured in adopted children, 92% of whom had been placed for adoption prior to 12 months of age, and compared to outcome in two groups, a birth comparison group of non-adopted children from similar birth circumstances and the general population of children in the study. Adopted women, in particular, showed positive adult adjustment across all domains studied and often were doing better than the general population comparisons. While generally doing as well as the general population comparison group, adopted men experienced more employment-related difficulties and social supports were more restricted. In contrast, at age 33, both men and women in the birth comparison group were in less favorable social and material circumstances than the majority of the adopted children.

While not replacing a functional birth family, an adoptive home does provide most children an environment that cultivates normal childhood development and a successful transition through adolescence to adulthood. Differences that exist between adopted children and their peers in birth families are generally subtle and probably related to both preadoption experiences and the issue of loss inherent in all adoptive situations. With competent, loving, and often socially and economically advantaged families, adopted children generally do better than comparison groups of children who are placed in foster care or who remained or were reunited with their birth mothers. The effect of adoption on children's long-term development is particularly satisfactory considering that adopted children must grapple with the meaning and implication of being adopted and cope with discontinuity in their life history, particularly during the struggle to establish self-identity during adolescence [70].

Several recent trends in adoption may improve outcome even further. Open adoptions, where birth parents, adoptive parents and the child remain in contact, are a growing phenomenon. While studies are limited, several indicate improved outcomes for children when avenues of communication remain open among adoption triad members [70–73]. Finally, as adoptees mature, many experience an intense desire to identify and contact birth parents. While adoption records were routinely sealed in the past, changing attitudes both

domestically and abroad, legislative actions, a growing cadre of amateur and professional identity investigators, and the Internet permit many adopted individuals access to their birth histories [74]. These developments have been a boon for those whose feelings of birth family loss are greatest, permitting contact or closure in situations where resolution was once thought impossible.

In conclusion, the data presented leave no doubt regarding the positive effects of adoption on children's development. Out of calamity and loss, children recover and progress to become functionally and emotionally competent adults. Even the loss of birth identity experienced by adopted children in the past may be accommodated, at least in part, by recent developments in openness and enhanced ability to search for one's past. As stated by the distinguished adoption researcher Richard Barth [75]:

Adoption is a time-honored and successful service for children and parents. The outcomes of adoption are more favorable for children than any social program that I know. My own research and that of my colleagues indicates that the modest difficulties experienced by children who are adopted are far outweighed by the significant benefits that they receive from having a permanent family.

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