

The relationship of institutionalization to the development of romanian children adopted internationally

Summary

Since 1990, a new wave of adoptees have entered the United States. Several thousand children have been adopted internationally from the former Soviet Union and Central and Eastern Europe. This article reviews the pertinent theoretical and practical information about child development, summarizes studies about the effects of institutionalization on child development, presents data from a study of one group of adoptees, and discusses the implications of these findings.

Introduction

An overview of child development and the tasks of childhood

By gaining an understanding of healthy development, we can better understand how life can be complicated for children and families if there is an interruption in the normal path of development. Children develop and grow according to schedules. Growth and development begin prenatally; maternal health, nutrition, exposure to stress or toxic chemicals, and general quality of life have an effect on the developing fetus. The degree depends on multiple variables, including genetics, duration and type of health risk, type of stress, or toxic chemicals. Although this prenatal information often is not known for adopted children, it plays a role in their later development and the difficulties that may occur.

While children vary in their rates of development, they all proceed through the same sequence. Normal development is governed by intrinsic maturational factors and is heavily influenced by environmental conditions. However, there is a typical developmental path that is a part of normal growth and development.

Initially, rapid changes and gains occur in physical development-children gain weight and grow in length. At the same time, children gain and master physical tasks such as gross and fine motor skills that allow them to eat, cry, smile, turn over, crawl, stand, walk, jump, etc. Chil-

dren need proper nutrition, sunshine, hygienic conditions, warmth, stimulation, attention, and love for maximum growth and development. Simultaneously, attachment begins to develop between parent and child, and later between child and significant others. At first, infants become attracted to all social objects; after several weeks they begin to prefer humans to inanimate objects. From birth, children will give cues about their needs, which, if they are well cared for, are met by parents or primary caregivers. For example, when they are hungry or uncomfortable they will whine or cry. When the child's needs are met in a consistent and timely manner, a foundation of trust is established between the child and the attachment figure. From the first weeks of life, a cluster of attachment behaviors emanates that influence how the child will respond to the parent or caregiver, as well as how the parent will respond to the child. While initially children do not differentiate between caregivers, at 3 months old an infant begins to smile more at his or her primary caregiver(s) than at strangers. By the end of the first 6 months, the infant will have learned how to discriminate between familiar and unfamiliar attachment figures. From age 1 to age 3, the child will protest when the attachment figure leaves his or her proximity and will engage in behaviors to remain close to the attachment figure.

If a trusting relationship is developed, the infant will seek to be near the primary caregiver more than any other person. Attachment will enhance the parent's effectiveness in later socialization with the child (Bowlby, 1969, 1973, 1988). In addition to attachment behaviors, as the child's cognitive abilities develop, he/she creates an intellectual representation of relationships based on early attachment experiences (Bowlby, 1969, 1973, 1988).

During the first year, children also pass through other stages in their intellectual development. The changes in development affect their personalities, moral reasoning, and critical thinking skills. They begin to acquire language skills, e.g., sounds such as cooing, crying, laughing, etc. Often, these sounds are introduced or reinforced by primary caregivers or parents. Later, they begin to organize the sounds into what will eventually become language.

Finally, these developmental tasks and activities - physical development, attachment, cognitive development, language development - influence the child as a social being and his or her social skills. Social skills are important for the development and maintenance of relationships with siblings, peers, extended family members, neighbors and community members at large. Social skills are also important as children move through school, as well as other social activities inside and outside the home.

Ecological influences

Recent theories concerning various stages of development have been criticized because empirical studies fail to match how the child actually develops (Case, 1986; Klahr & Wallace, 1976; Thomas, 1996). Modification of the stage approach suggests that the stages of development, at least in the area of cognitive development, have to be examined in the context of the child's life. As Fischer and Canfield (1986) observe, 'Different children show different stages in a given context, and different contexts produce different stages in the same child' (p. 259).

Both the overview of childhood and tasks of childhood are important as the context of children institutionalized at an early age is examined. These children are not exposed to relationships or

environments where they can get their needs consistently met and accomplish the tasks of childhood. They may have different types of developmental outcomes based on this context.

In addition, recent theories suggest that many tasks and developmental achievements, if not organically or physically based, influence the neurological and biochemical development of the brain. For example, Federici (1995) suggests that certain risk factors, such as poor nutrition and environmental neglect, may alter neuronal development, brain chemistry, and molecular genetic functions. He suggests that the part of the brain that affects personality development, emotional responsiveness, and control over emotion—such as anger, love, affection, and rage—could be negatively affected in children who were institutionalized early in life. While these claims cause many parents alarm, tests neither confirm nor negate these declarations (Federici, 1995). Thus, the claims are largely based on theory without confirmation from scientific studies.

The foundation of this theory is ethnological and socio-biological, which suggests that social behavior is, in part, biologically based (Hinde, 1974). In many ways, the theory emphasizes genetic factors and the innateness of behavior, rather than the role of experience in development (see Hinde, 1983). However, the suppositions from this theory are largely based on related research on non-human species. The degree to which the theory and propositions from the theory accurately reflect the capacity of the brain to reverse childhood trauma or the lack of stimulation is not well known.

The theory does provide insight into child development. As Thomas (1996) points out, there are two versions about how specific events impact a child's development: the rigid version and the flexible version. The rigid version is based on the critical-period principle, which maintains that unless an event happens in a strictly defined time frame, the effect that the event could produce will not occur (see also Lorenz, 1977; Hinde, 1983). In essence, if it doesn't happen it won't happen. The flexible version is the sensitive-period principle, which holds that a particular result is more likely to be produced if the associated event happens at a specific moment, or that a stronger effect on development will occur if the event happens at a specific moment. The implication is that similar results can be produced later, and the period when the child is ready to benefit from any given event is not defined by chronological age but by the capacity or readiness for learning.

If the flexible perspective is used, the child may be able to accomplish the tasks that he or she missed, depending on the degree of delay, the length of time during which developmental milestones were not reached, and the quality of the child's family and social environment. Research on animal studies, particularly as they relate to early social deprivation, suggests that negative effects can be rehabilitated (Suomi & Harlow, 1978a, 1978b). In fact, environmental factors that affect behavior do not necessarily produce long-term effects. Evidence suggests that even after unfavorable circumstances there is some recovery of the original developmental track (see Hinde, 1983). Of course, as Hinde states (1983), it is probably the child's relationship with others rather than any internal, self-correcting mechanism that assists him or her in developing or making gains in lost development. If this is an accurate assessment, then a family is the ideal environment for a child to grow and develop appropriately, and to assist him/her in overcoming trauma and delayed development as a result of institutionalization.

However, some children continue to spend their formative years in some type of group setting. It is important to understand the short and long-term effects that living in an institution may have on a child's development, as well as how to mitigate these effects.

This theory also provides useful insight into understanding the child's behavior as it relates to his/her background. Writers and researchers in the field of adoption often discuss 'survival behaviors' of older and special needs children (Sandmaier, 1988; Donley, 1990; Groze, 1996). When children spend their formative years in the child welfare system - without permanence and stability - they develop a repertoire of 'survival behaviors', which are often problematic to the adoptive family. Such behaviors include emotional distancing, lying, hoarding, stealing, manipulating, aggression, and impulsivity (Donley, 1990; Groze, 1996), which serve no apparent function in the adoptive family. Although Hinde (1983, p. 33) focuses on evolution and adaptation, he suggests that understanding 'apparently functionless behavior as part of a repertoire that was formerly adaptive' can give a researcher or practitioner perspective. Knowledge about the child's history enables the researcher/practitioner to better understand behavior that seems abnormal or pathological. Thus, children who are institutionalized at an early age may possess unusual behaviors that emanated from certain situations before entering their adoptive homes. The origin of the adaptive behavior may never be known, since there is little information about the child's early experience when placed. However, unusual behaviors can be quite stressful and frightening to some adoptive families. A framework for understanding these types of behaviors may reduce anxiety and allow the family to problem solve how to intervene.

Typology of adopted children

However, neither version of the theory fits particularly well in understanding European adoptions. Based on clinical observations (Groza, 1997), these children belong to one of three distinct groups. The first group is the 'resilient rascals'. These children, regardless of their circumstances, seem to survive relatively well. They fare well in orphanages, do not have many developmental delays, and have adjusted well in their family settings. About one-fifth of adopted children fall into this category.

The second group is the 'wounded wonders'. These children demonstrate significant developmental delays resulting from institutionalization. However, families often report, with awe and astonishment, the changes that occur after they enter the adoptive homes. These children make up for many of the delays they exhibit at placement and, even though they may be somewhat behind compared to their development had they not been exposed to deprivation, get on a developmental path toward change and growth. About 60% of adopted children fall into this category.

The third group is the 'challenged children'. These children are severely affected by institutionalization, and many have special needs. Although their development improves, they continue to have considerable difficulties. Parents and school systems have the most problems with this group of children; they offer unique challenges. Some interventions work for a short time, then their families have to try new ones. About one-fifth of adopted children fall into this category.

When applying the versions of developmental theory to children adopted from institutions, it is apparent that neither version explains why, under the same circumstances, some children fare well and others don't fare so well. The sensitive version best explains why the majority of children begin to develop accordingly once they are placed in a resource rich and stimulating environment. The critical window version best explains why some children will apparently be confronted with life-long challenges. No single version, however, explains the differential outcomes.

	<i>Critical Window Version</i>	<i>Sensitive Period Version</i>
Resilient Rascals	-	-
Wounded Wonders	-	X
Challenged Children	X	-

The effects of institutionalization on child development

Children who are institutionalized at an early age often demonstrate delays in emotional, social, and physical development (Bowlby, 1951; Dennis, 1973; Freud & Burlingham, 1944; Provence & Lipton, 1962; Spitz, 1945; Kaler & Freeman, 1994; Tizard & Rees, 1974, 1975; Tizard & Hodges, 1977). Institutionalization places children at great risk of certain diseases (Chapin, 1911, 1917; Frank, Klass, Earls & Eisenberg, 1996). Institutional care may affect a child's ability to make smooth transitions from one developmental stage to another throughout his/her life (Freud & Burlingham, 1944; Goldfarb, 1955; Spitz, 1945; Provence & Lipton, 1962; Tizard & Joseph, 1970; Tizard & Rees, 1974, 1975; Tizard & Hodges, 1977). Children brought up in institutions may suffer from severe behavior and emotional problems, such as aggressive or antisocial behavior (Lowrey, 1940; Bender & Yarnell, 1941; Goldfarb, 1943a, 1943b, 1944, 1955; Wolkind, 1974), have less knowledge and understanding of the world (Sloutsky, 1997), and become adults with psychiatric impairments (Frank et al., 1996). Finally, children raised in institutions are at risk for learning problems (Goldfarb, 1944) - such as poor reading ability (Pringle & Bossio, 1960; Mapstone, 1969) - and have more difficulty with critical thinking, establishing cause-and-effect, and impulsivity (Goldfarb, 1943a, 1943b).

However, the effects of institutionalization are not uniform and are dependent on other factors. The extent of suffering is not the same for every child that is institutionalized. The differential effects are due to child characteristics (genetic predisposition, basic personality, attractiveness, prenatal risk factors), caregiver characteristics (training, motivation & attitude), institutional characteristics (child-to-caregiver ratio, quality and degree of programming), and the child's history (the age of the child when he/she entered the institution and the length of time in the institution) (see Burgio, Reid & Whitman, 1983; Wooden, 1976; Shaughnessy, 1984; Durkin, 1982; Marchetti, 1987; Garrett, 1979; Sluyter & Cleland, 1979; McCoy, 1982; Mercer, 1982; Shaughnessy, 1984; Sundram, 1984, 1986; Rindfleisch & Hicho, 1987; Marchetti, 1987). Levy-Schiff, Zoran and Shulman (1987) found that when comparing international adoptions (from institutions) to domestic adoptions of children under the age of 3 months, their adjustments are similar.

Not all children are treated equally in the same institution. Some children are prenatally exposed to risk factors. Prenatal medical care, nutrition, stress, exposure to toxic substances or environments, and genetics influence the developing neonate. Some children are born with a predisposition to be cranky, sickly, or colicky. Some children are immediately responsive to any stimulus or person, while others are more lethargic or less responsive. Some children are physically more attractive than other children. These factors influence how caregivers respond to these children. Children who are cranky, sickly, or colicky are challenging; they are usually ignored by staff or subjected to harsh treatment if they demand more time than caregivers can give. At the same time, if a child responds easily when spoken to or touched, and the caregiver gets some satisfaction from the response, the child receives more attention and responds even more positively. On the other hand, if the child does not respond easily to caregivers, he/she receives less attention. The cycle of stimulus-response-stimulus affects the child either positively or negatively. Finally, children who are physically attractive receive more attention than their less attractive counterparts. Also, children with obvious physical handicaps may receive less attention if they are placed with children who have no apparent handicaps.

The institution itself places children at-risk. The regimentation and ritualization of institutional life do not provide children with the quality of life, or the experiences they need to be healthy, happy, fully functioning adults. In group care, the child's needs are secondary to the requirements of the group's routine. Relationships between adults and children are usually superficial and brief, with little continuous warmth and affection. Institutional staff do not connect emotionally or physically with children in quite the same way that families connect with children.

Finally, the age at placement and the length of institutionalization have an effect on children. The younger the child when placed (Sloutsky, 1997; Goldfarb, 1955; Koluchova, 1972, 1976; Pringle & Bossio, 1960) and the longer he/she remains in the institution (Sloutsky, 1997; Johnson et al., 1992), the more negative the effects on cognitive, emotional, social, and physical development.

Children have different experiences in institutional settings. Of course, the foregoing discussion assumes that there are adequate resources in terms of staffing, food, medicine, and materials for good care. Given the many reports about institutions in Romania (Ames & Carter, 1992; McMullan & Fisher, 1992; Johnson & Groze, 1993; Groze & Ileana, 1996), this assumption can be seriously challenged. Thus, Romania represents a unique situation for the multiple effects of institutional care and deprivation. At the same time, given similar institutional structures in Russia (Sloutsky, 1997) and the Baltic States (Harrison, Rubeiz & Kochubey, 1996), what is learned about children from Romania may have implications for other children adopted internationally.

While the plight of children in Romania remains a human tragedy, particularly with respect to those remanded to institutional care from birth, it is important to look for opportunities to learn from these negative events. The children adopted from Romanian institutions represent an opportunity to examine the effects of deprivation on child development, similar to the experimental research conducted on primates (Harlow, 1958; Harlow & Harlow, 1966; Harlow & Suomi, 1970). In addition, by comparing a cohort of children from the same country, who lived with their families before adoption, we are able to explore the effects of environment on child development.

Method

This is a cross-sectional analysis from the second wave of data collected on children adopted from Romania. In 1994, a convenience sample of adoptive families of Romanian children was contacted. One thousand nine hundred and twenty five surveys were sent to people on the mailing list. Ninety-seven percent ($n=1867$) of the families were successfully located. It was estimated that 5% ($n=93$) had not adopted children but were interested in international adoption issues. There was an overlap in the mailing list of 10% ($n=177$) to 30% ($n=532$). In the first wave, data were collected on 475 children residing in 399 families, representing from 24% to 32% of families contacted (depending on the estimated overlap used). The 475 children represent about 16% of all adoptions from Romania between 1990 and 1993.

In the fall of 1995, families who participated in the first year of the study and gave us their addresses ($n=330$) were recontacted to collect data for a second time. Additional families who heard about the project joined the study during the second year ($n=10$). Surveys were sent to 340 families. Ninety-eight percent of families ($n=333$) were successfully contacted. The second wave of data probed in greater detail the placement history of the children prior to adoption. The changes that occurred in development from the time the children were placed to the time of the study were also examined. Data was collected on 238 children living in 209 families at the second wave of data collection, representing a response of 63% of successfully contacted families. Eight questionnaires were not useable for analyzing the quantitative data. Data for a child placed in 1981 was removed from this analysis because his experiences and the experiences of his family were markedly different than those who participated in Romanian adoptions in 1990. The following data is based on 229 usable questionnaires.

Several problems with the sampling were also discussed elsewhere (Groze & Ileana, 1996; Groza, *in press*). First, it is a convenience sample and results cannot be generalized to other adoptive families. Second, the low response rate for the estimated number of families contacted is a source of concern. There is no way to ascertain the experiences of families who did not participate in the study. Third, approximately 17% of the families did not give their addresses to participate further in the study, and about one third of families who gave us their address dropped out between the first and second years. Sampling attrition also biases the data. Fourth, the data presents parent reports rather than professional assessments of children.

The sample has several strengths. First, this remains the largest data set on children adopted internationally. Second, the families are geographically dispersed and not concentrated at a specific site or recruited from specific medical or psychiatric settings. Thus, the sample is quite diverse, and not drawn from locations that biased the sample towards ill or psychiatrically impaired children. Third, while we cannot generalize results, we can be conclusive about the families at the specific point in time they participated in the study. Fourth, longitudinal designs allow stronger conclusions about cause and effect compared to cross-sectional designs. Subsequent reports will focus on the longitudinal data. Fifth, parent perceptions are critical components for understanding adoption stability. Since parents, for the most part, make the decisions about the placements, their perceptions of the children are critical for understanding adoptive family life. The research question for this project is: How does placement history affect child development at placement?

Results

Testing for sample bias

The first analysis tests for bias in the sample of families who remained with the project compared to families who dropped out of the project. Child characteristics (gender of child, age of child at time of study, age of child at placement, length of time in adoptive home, placement history prior to adoption) and family characteristics (other children in home prior to adoption, parent education, family income, age of parents) were compared for families who remained in the study and families who dropped out of the study. There were no statistically significant differences between the families, suggesting no systematic bias between families.

Descriptive Statistics

Table 1 presents interval level demographic characteristics for families who participated in both years of the study. Data from Year 2 are used in the following discussion to describe the sample. On average, at the time the first wave of the study was initiated (1994), children were 4.6 years old and had been in their adoptive homes 3 years; they entered families through adoption at 1.7 years of age; and adoptive mothers were 41 years of age and adoptive fathers were 43 years of age.

Table 1. *Comparing Demographics of Families Who Participated in Both Years of the Study for Interval Level Variables*

	Dropped out Mean (SD)	Remained Mean (SD)	t	p
Age of Child at time of study	4.6 (2.1)	4.6 (1.8)	.01	.99
Age at Placement	1.7 (2.2)	1.7 (2.0)	-.27	.79
Length of time in adoptive placement	3.0 (.92)	3.0 (1.1)	.63	.53
Age of Adoptive Mother	41.8 (5.3)	40.8 (5.7)	1.81	.07
Age of Adoptive Father	43.7 (7.1)	42.8 (6.9)	1.40	.16

Table 2 presents categorical data of characteristics for families who participated in both years of the study. The adopted children are almost evenly split between males and females. Most children were in institutions prior to placement as well as spending some time in family settings prior to adoption. Most families have other children in the household. Most mothers (61%) have a college or graduate degree, as do most (69%) adoptive fathers. The modal family incomes exceed \$45,000 per year.

Table 2. *Comparing Demographics of Families Who Participated in Both Years of the Study for Categorical Variables*

	Dropped out percent	Remained percent	chi-square	p
Child sex				
Male	52%	51%	.10	.75
Female	48%	49%		
Child institutionalized before placement?				
Yes	62.5%	67%	1.10	.30
No	37.5%	33%		
Child in a family before placement?				
Yes	57%	56%	.23	.88
No	43%	44%		
Other children in the home?				
Yes	73%	73%	.001	.98
No	27%	27%		
Education of adoptive mother				
Less than high school	<1%	0		
Completed high school	8%	10%		
Some college	25%	28%		
College graduate	33%	29%		
Master degree or above	35%	32%	2.73	.74
Education of adoptive father				
Less than high school	<1%	<1%		
Completed high school	7%	10%		
Some college	21%	21%		
College graduate	35%	35%		
Master degree or above	38%	34%	7.26	.20
Family income				
Under \$15,000	<1%	1%		
15,000-19,999	3%	1%		
20,000-24,000	1%	1%		
25,000-29,999	2%	3%		
30,000-34,999	3%	3%		
35,000-39,999	5%	6%		
40,000-44,999	4%	6%		
Over 45,000	50%	31%	4.5	.72

Parents were asked to report their child's functioning (in months) at the time of placement and at the time of the second wave of the study. Unfortunately, most parents did not provide this information. Depending on the variable assessed, from 15% (n=32) to 19% (n=42) of parents indicated the months for both time frames requested. While missing data is a problem, results are interesting and provide additional insight into the complicated issues in the relationship of early institutionalization to development; they are offered here as preliminary. Table 3 presents parental reports about child functioning at the time of placement and at the time of the second wave, average changes in development between placement and the study, and the percentage of children classified as slow in their recovery. This 'slow' group was determined by calculating the percentage of children whose change in development was greater than one standard deviation below the sample mean. This group can be thought of as the 'challenged children' whose recovery from early deprivation is problematic and uneven. While approximately 20% of children were conceptualized to belong to this group, less than 20% of this subsample could be classified as such.

Table 3. *Months at Placement, Months at Time of Study, Average Change, and Percent Slow in Development*

Sample	At placement mean (S. D.)	At time of study ¹ mean (S. D.)	Average change	Percent slow ²
<i>Age of child</i> (in months)	34.5 (24.7)	81.9 (27.9)		
Fine motor skills	15.0 (13.6)	68.7 (25.3)	53.7	11.5%
Gross motor skills	16.9 (15.2)	74.1 (30.3)	57.2	18.9%
Language skills	16.6 (15.9)	66.7 (25.9)	50.1	8.3%
Social skills	20.2 (26.8)	67.3 (31.1)	47.1	18.8%
Children institutionalized before adoption				
	At placement mean (S. D.)	At time of study mean (S. D.)	Average change	Percent slow
<i>Age of child</i> (in months)	19.3 (9.9)	69.5 (15.1)		
Fine motor skills	8.4 (9.8)	57.3 (19.9)	48.9	16.7%
Gross motor skills	7.6 (6.0)	59.4 (21.6)	51.8	15.8%
Language skills	10.5 (12.3)	59.4 (19.9)	48.9	10.5%
Social skills	6.8 (5.5)	54.5 (19.5)	47.6	12.5%

1 At time of second wave of the study.

2 Slow is defined as the group whose average change is one standard deviation below the sample mean.

The entire subsample, at placement, consisted of children who were 19 months behind in fine motor skills, 18 months behind in gross motor skills and language, and 14 months behind in social skills. At the time of the study, about 47 months later, the children were 13 months behind in fine motor skills, 8 months behind in gross motor skills, 21 months behind in language, and 15 months behind in social skills. In essence, while they improved, language and social skills continued to lag behind. At the time of placement, children institutionalized before adoption were 11 months behind in fine motor skills, 12 months behind in gross motor skills, 9 months behind in language, and 13 months behind in social skills. At the time of the study, about 50 months later, the children were 12 months behind in fine motor skills, 9 months behind in gross motor skills, 10 months behind in language, and 15 months behind in social skills. In essence, they still lag behind in all 4 areas assessed.

Multivariate analysis

A logistic regression analysis was employed to explore the research question regarding the impact of institutional placement on child development. This model was chosen because each of the five dependent variables used in this analysis is dichotomous: whether the child had delayed in fine motor skills, gross motor skills, language skills, social skills, and had learning disabilities. A logistic regression model can be expressed as:

$$\text{Prob}(\text{Delay}) = \frac{\exp(Z)}{1 + \exp(Z)}$$

where Z is the linear combination

$$Z = B_0 + B_1X_1 + B_2X_2 + \dots + B_pX_p$$

and X_1 through X_p are explanatory variables.

Two models tested the impact of institutionalization on child development. Based on information about the child's living arrangements during the following five periods: 0-1 months, 2-6 months, 7-12 months, 13-24 months, and 25-36 months, a model timing institutionalization within three years was developed by using five dummy variables, each corresponding to a specific period (for example, 0-1 is one dummy variable, 2-6 is a second dummy variable, etc.). The dummy variable was coded 1 if the child was placed in an institution (i.e., maternity hospital, orphanage, hospital) during the specified period, and was coded 0 otherwise. The advantage of this specification is that it determines which period of institutionalization, in the first three years, caused functional delays. Of the 229 questionnaires, completed data were available for 219 children (96%); thus, missing data did not present a major problem. Out of 219 children studied, 59.4% were placed in institutions the first month; 53.0% were placed in institutions between months 2 and 6; 42.9% between months 7 and 12; 30.6% between months 13 and 24; and 17.8% between months 25 and 36. For the 219 cases, 13.6% had been

continuously institutionalized for 36 months; 10.5% for 24 months; 11.0% for 12 months; 11.0% for 6 months; 8.7% for one month; and 27.9% had not been institutionalized at all in the 36-month window.

The second model took a different approach, which ignored the timing of institutionalization and used the cumulative length of stay in institutions within the first three years as a single explanatory variable. It should be noted that each approach models the impact of institutionalization from a different angle, overlapping but certainly compensating for information not provided by the other.

In addition to the institution variable, the following demographic variables were used in both models for a controlling purpose: gender, age at adoption, and race (Gypsy versus Romanian).

Based on estimated logistic regression, predicted probabilities were calculated in order to give a more visualized presentation of the findings. The probabilities were calculated by inserting certain values of the explanatory variables-those indicating a particular interest defined by the research questions-into the equation, while controlling all other variables at their means.

Table 4. *Estimated logistic-regression coefficients (Timing of placement in institution is modeled)*

Explanatory Variable	Dependent Variable				
	Fine Motor	Gross Motor	Language	Social	Learning
Gender Male (Female is the reference)	-.75*	-.47	-.50	-.60	-.75
Age at Adoption	-.11	.08	.03	.56**	.26*
Race Gypsy (Romanian as the reference)	-.83	-.50	-.30	.28	-.24
If the child was placed in an institution in following periods during the first three years of life:					
First Month: Yes (No is the reference)	-1.36*	-.58	-.69	-.24	-1.36
Month 2 to 6: Yes (No is the reference)	.49	.74	.05	.35	1.34
Month 7 to 12: Yes (No is the reference)	1.85**	.88	1.47	1.68	.10
Month 13 to 24: Yes (No is the reference)	-.10	-.46	.05	-.36	-1.67
Month 25 to 36: Yes (No is the reference)	1.50*	1.16*	1.32*	-.10	2.08*
Constant	-.85	-1.71	-1.17	-2.84	-2.32
N	181	181	180	179	182

* significant at .1 level, two-tailed test

** Statistically significant at .01 level, two-tailed test

Table 4 presents the results of the logistic regression model regarding timing of institutionalization. The models indicate that institutionalization in the second year significantly increased the likelihood of delayed fine motor skills, language skills, and social skills, at a .01 level. The second most important period within the first three years was months 25 to 36; children

placed in institutions during this period were more likely to be delayed in fine motor skills, gross motor skills, language skills, and have learning disabilities at a .1 level. Placement in an institution in the first month significantly related to delays in fine motor skills and learning disabilities at a .1 level, but the impact was opposite. Institutional placement in this period actually reduced the chances of delay.

The cumulative length of stay in an institution (Table 5) reinforces the findings from the timing model. The longer the time spent in an institution during the first three years, the more likely the child will be delayed in developmental functions. This relationship is statistically significant at a .01 level in fine motor skills, gross motor skills, language skills, and social skills, but not significant in learning disabilities.

Table 5. *Estimated logistic-regression coefficients (Cumulative length of stay in institution is modeled)*

Explanatory Variable	Dependent Variable				
	Fine Motor	Gross Motor	Language	Social	Learnin
Gender Male (Female is the reference)	-.65	-.38	-.47	-.50	-.52
Age at Adoption	-.01	.12	.10	.42 **	.38 *
Race Gypsy (Romanian as the reference)	-.74	-.53	-.26	.34	-.41
Number of cumulative time in Institution during the first three years of life (in months)	.07	.04	.06	.05	.004
Constant	-1.24	-1.80	-1.46	-2.36	-2.63
N	181	181	180	179	182

* significant at .1 level, two-tailed test

** Statistically significant at .01 level, two-tailed test

Based on predicted probabilities, Figure 1 clearly shows which specific periods of institutional placement will exert negative consequences on development. Children institutionalized for 36 months are more likely to be delayed in fine motor skills, gross motor skills, language skills, and have a learning disability, while a children placed for 12 months are more likely to be delayed in social skills.

Figure 2 (next page) presents the impact of institutionalization on development. A one-month increase in institutionalization - regardless of the time period within the three-year window - would increase the likelihood of functional delays in all areas except learning disabilities.

Age at the time of adoption was also significantly related to delays in social skills and learning disabilities (Tables 3 and 4). Figure 3 (page 211) shows this impact clearly: the older the child when adopted, the more likely he or she will experience delays in these functions. The implication of this finding is that adoption at an early age increases the positive consequences in the child's developmental functions.

Figure 1. Predicted probabilities of being delayed in various skills by length of stay in Institution

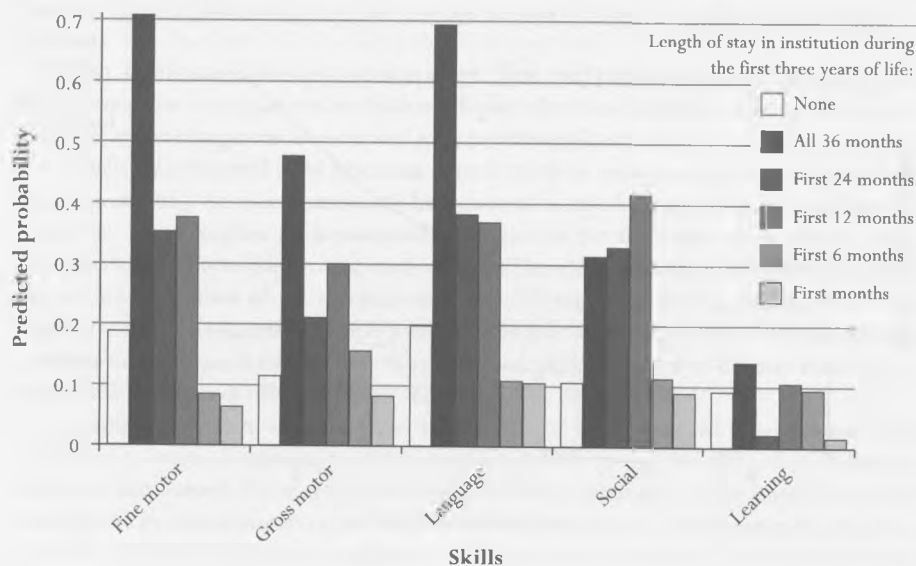


Figure 2. Predicted probabilities of being delayed in various skills as a function of total length of stay in institution during the first three years of life

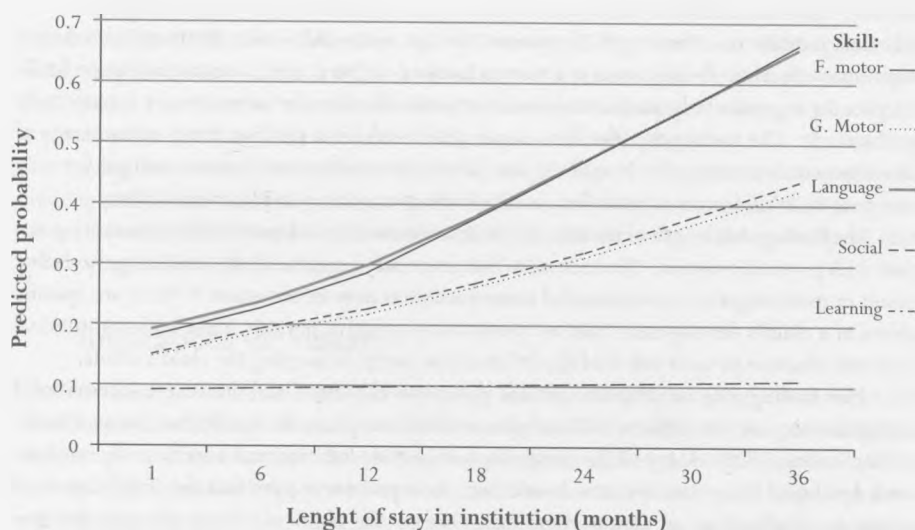
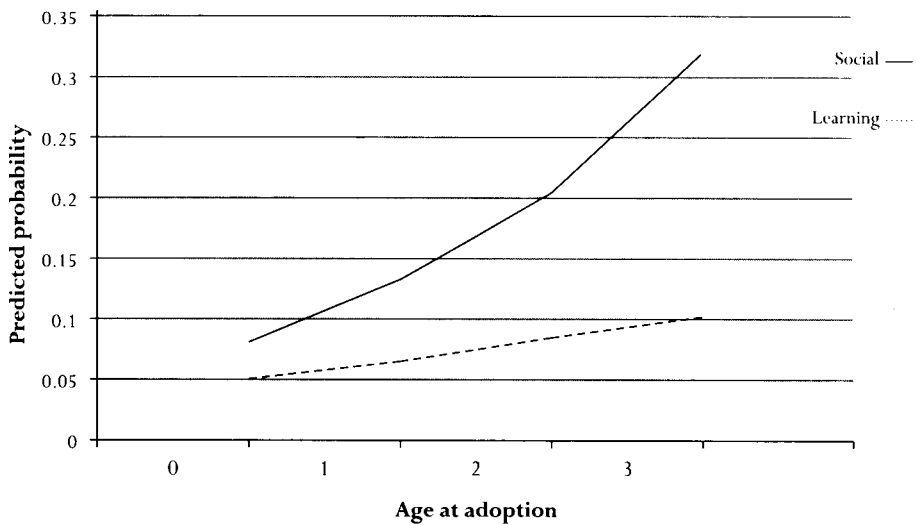


Figure 3. *Predicted probability of being delayed as a function of age at adoption*



Discussion

The data indicate that the length of time and the age of the child when institutionalized have significant effects on development in the areas assessed. In particular, institutionalization for 7-12 months is particularly problematic and institutionalization for over 2 years is extremely problematic. The finding that the first month after birth has a positive effect in two areas of development is an anomaly. It is likely that for children who were institutionalized for only one month, other factors account for positive findings unrelated to placement history.

The finding that length of institutionalization is related to delays in development is consistent with previous research. The indication that there may be particularly sensitive periods that result in more negative developmental consequences is new information. If there are specific times in a child's development that are particularly sensitive periods, then both institutional staff and adoptive parents may find this information useful in meeting the child's needs.

This finding also has implications for policy development and advocacy. International adoptions account for 10% to 16% of all unrelated adoptions in the United States (Barth, 1992; Stolley, 1993). Many of the countries that provide international adoptions do not have well developed foster care systems. In addition, their policies require that the child's family of origin be explored as an adoption resource before the child can leave the country (see UNICEF, 1997). The time period for this search is usually 6 months to 1 year. Although the child is legally free after 6 months, there are still several months before an international placement. Thus, at a most sensitive period in their lives, many children are forced to stay in insti-

tutional care. Countries that provide children for international adoption may need to re-examine their current policies if the policies increase the risk of children having developmental difficulties.

Also, families need to be prepared to adopt. They need to be told about the sensitive periods, the negative consequences for children adopted after these periods, the short-term consequences, and the long-term outcomes of early institutionalization.

Finally, international child advocates must focus their energy on improving institutions. While preventing the abandonment of children must always be a priority, child welfare systems that are dependent on institutional arrangements for their dependent children must increase their efforts to improve the environment. There are a number of obstacles to improving the care of children who reside in institutions. One problem is not having control over the types of staff hired (Marchetti, 1987; Johnson, Edwards & Puwak, 1993). While administrators may not have much control over the established qualifications, they do have some discretion in the provision of training to their staff (Sundram, 1984, 1986).

Increased attention must be given to the role of training in risk management. Staff employed to work in orphanages and institutions, which can be stressful and frustrating at times, are not trained. Training to reduce mistreatment in institutions is the single factor most controllable by administrators, as well as a technical assistance that could be provided by international relief and development programs that do not disempower staff. Too often training is considered a luxury, when, in fact, it is a necessity if staff are to become more effective by improving care and reducing institutional mistreatment (Marchetti, 1987; Rosenthal, 1988; Groze, 1988).

In addition, there is active interaction between developing children and their environments (Barker, 1978; Bronfenbrenner, 1979; Sloutsky, 1997). Sloutsky (1997) suggests that children in institutions follow a different developmental process than children raised in families. Special care must be taken for children who reside in institutions, and specialized programs must be developed that stimulate their growth and development.

Paying attention to inoculation schedules, improving anti-hygienic living conditions, training staff in the care and management of children, and developing appropriate programming that is individually based will contribute to better outcomes for children who spend time growing up in institutional settings.

Implications for research

There is much to be learned about the growing number of children adopted internationally from institutional settings. Research would be strengthened if a mechanism for generating random samples of children could be developed. In addition, funding is needed both to increase participation of families by providing economic inducements as well as to gather developmental and behavioral data directly from children. Studies should continue to recruit families and children that are geographically dispersed and not concentrated at a specific site or recruited from specific medical or psychiatric settings. More research should also be conducted to examine the effects of living in a family compared to an institution during the sensitive windows, including

both the short-term and long-term effects of these different placements on child behavior and development. As such, longitudinal designs are strongly encouraged to allow stronger conclusions about cause and effect compared to cross-sectional designs. Finally, cross-national studies examining children with a history of institutionalization adopted abroad compared to children adopted in-country would allow for interesting cross-cultural comparisons.

References

- Ames, E. W. & Carter, M. (1992). Development of Romanian orphanage children adopted to Canada. *Canadian Psychology*, 33(2), 503.
- Barker, R. (1978). *Habitats, environments, and human behavior*. San Francisco: Jossey-Bass.
- Barth, R. P. (1992). Adoption. In P. J. Pecora, J. K. Whittaker, A. N. Maluccio with R. P. Barth & R. D. Plotnick (Eds.), *The child welfare challenge: policy, practice, and research* (pp. 361-400). New York: Aldine De Gruyter.
- Bender, L. & Yarnell, H. (1941). An observation nursery: A study of 250 children in the psychiatric division of Bellevue Hospital. *American Journal of Psychiatry*, 97, 1158-1174.
- Bronfenbrenner, U. (1979). *The ecology of human development*. Cambridge, MA: Harvard University Press.
- Bowlby, J. (1951). Maternal care and mental health. *World Health Organization Monograph No. 2*. Geneva: WHO.
- Bowlby, J. (1969). *Attachment and loss: Attachment*. New York: Basic Books.
- Bowlby, J. (1973). *Attachment and loss: Separation, anxiety and anger*. New York: Basic Books.
- Bowlby, J. (1988). *A secure base: Clinical applications of attachment theory*. Routledge, London: A Tavistock Professional Book.
- Burgio, L. D., Reid, D. H. & Whitman, T. L. (1983). A participative management approach for improving direct care staff performance in an institutional setting. *Journal of Applied Behavior Analysis*, 16, 37-53.
- Chapin, H. D. (1911). The proper management of foundlings and neglected infants. *Medical Record*, 79, 283-288.
- Chapin, H. D. (1917). Systematized boarding out vs. institutional care for infants and young children. *New York Medical Journal*, 105, 1009-1011.
- Case, R. (1986). The new state theories in intellectual development: Why we need them; what they assert. In M. Perlmutter (Ed.), *Perspectives for intellectual development* (pp. 57-96), Hillsdale, NJ: Erlbaum.
- Dennis, W. (1973). *Children of the Creche*. New York: Appleton Century-Crofts.
- Donley, K. S. (1990). Understanding survival behaviors: System children in adoption. Presentation sponsored by Four Oaks, Inc., Cedar Rapids, Iowa, September 6-7.
- Durkin, R. (1982). Institutional child abuse from a family systems perspective: A working paper. In R. Hanson (Ed.), *Institutional abuse of children and youth*. New York: The Hawthorn Press.
- Federici, R. S. (1995). Commentary on neuropsychological evaluation of post-institutionalized children. *The Post*, 3/4, 2-3.

- Fischer, K. W. & Canfield, R. L. (1986). The ambiguity of stage and structure in behavior: Person and environment in the development of psychological structures. In I. Levin (Ed.), *Stage and structure: Reopening the debate*. Norwood, NJ: Ablex.
- Frank, D. A., Klass, P. E., Earls, F. & Eisenberg, L. (1996). Infants and young children in orphanages: One view from pediatrics and child psychiatry. *Pediatrics*, 47(4), 569-578.
- Freud, A. & Burlingham, D. T. (1944). *Infants without families*. New York: International University Press.
- Garrett, J. R. (1979). Institutional maltreatment of children: An emerging public issue. *Residential and Community Child Care Administration*, 1, 57-68.
- Goldfarb, W. (1943a). Infant rearing and problem behavior. *American Journal of Orthopsychiatry*, 15, 249-265.
- Goldfarb, W. (1944). Effects of early institutional care on adolescent personality: Rorschach data. *American Journal of Orthopsychiatry*, 14, 441-447.
- Goldfarb, W. (1943b). The effects of early institutional care on adolescent personality. *Journal of Experimental Education*, 12(2), 106-129.
- Goldfarb, W. (1955). Emotional and intellectual consequences of psychological deprivation in infancy: A re-evaluation. In P. Hoch & J. Zubin (Eds.), *Psychopathology of childhood* (pp. 105-119). New York: Grune & Stratton.
- Groza, V. (in press). Adopted children from Romania: A special focus on Roma (Gypsy) children. *International Journal on Child and Family Welfare*.
- Groza, V. (1997). International adoption. In R.L. Edwards (Ed.), *Encyclopedia of social work, 19th edition, 1997 Supplement* (pp.1-14). Washington, DC: NASW Press.
- Groze, V. (1996). *Successful adoptive families: A longitudinal study of special needs adoption*. New York: Praeger.
- Groze, V. (1988). *Institutional mistreatment*. Prepared for the Office of Advocate Defender, Oklahoma Department of Human Services, Oklahoma City, OK.
- Groze, V. & Ilcana, D. (1996). A follow-up study of adopted children from Romania. *Child and Adolescent Social Work Journal*, 13(6), 541-565.
- Harlow, H. F. (1958). The nature of love. *The American Psychologist*, 13, 673-685.
- Harlow, H. F. & Harlow, M. K. (1966). Learning to love. *American Scientist*, 54, 244-272.
- Harlow, H. F. & Suomi, S. J. (1970). The nature of love-simplified. *American Psychologist*, 25, 162-168.
- Harrison, L, Rubeiz, G. & Kochubey, A. (1996). Lapsele Oma Kodu (bringing abandoned children home: a project from Tallinn, Estonia to reunite institutionalized children with families. *Scandinavian Journal of Social Welfare*, 5, 35-44.
- Hinde, R. A. (1974). *Biological bases of human social behavior*. New York: McGraw-Hill.
- Hinde, R. A. (1983). Ethnology and child development. In M. M. Haith & J. J. Campos (Eds.), *Handbook of child psychology, Vol. II: Infancy and developmental psychobiology* (pp. 27-93). New York: Wiley,
- Johnson, A. & Groze, V. (1993). The orphaned and institutionalized children of Romania. *Journal of Emotional and Behavioral Problems*, 2(4), 49-52.

- Johnson, A. K., Edwards, R.L. & Puwak, H. C. (1993, September/October). Foster care and adoption policy in Romania: Suggestions for international intervention. *Child Welfare*, 72(5), 489-506.
- Johnson, D. E., Miller, L. C., Iverson, S., Thomas, W., Franchino, B., Dole, K., Kiernan, M. T., Georgieff, M. K. & Hostetter, M. K. (1992, December). The health of children adopted from Romania. *Journal of the American Medical Association*, 268(24), 3446-3451.
- Kaler, S. R. & Freeman, B. J. (1994). An analysis of environmental deprivation: Cognitive and social development in Romanian orphans. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 35(4), 769-781.
- Klahr, D & Wallace, J. G. (1976). *Cognitive development: An information-processing view*. Hillsdale, NJ: Erlbaum.
- Koluchova, J. (1972). Severe deprivation in twins: A case study. *Journal of Child Psychology and Psychiatry*, 13, 107-114.
- Koluchova, J. (1976). The further development of twins after severe and prolonged deprivation: A second report. *Journal of Child Psychology and Psychiatry*, 17, 181-188.
- Levy-Shiff, R., Zoran, N. & Shulman, S. (1997). International and domestic adoption: Child, parents, and family adjustment. *International Journal of Behavioral Development*, 20(1), 109-129.
- Lorenz, K. Z. (1977). *Behind the mirror: A search from a national history of human knowledge*. New York: Harcourt Brace Jovanovich.
- Lowrey, L. G. (1940). Personality distortion and early institutional care. *American Journal of Orthopsychiatry*, 10, 576-585.
- Mapstone, E. (1969). Children in care. *Concern*, 3, 23-28.
- Marchetti, A. (1987). Abuse of mentally retarded persons: Characteristics of the abused, the abuser, and the informer. Paper presented at the Annual Meeting of the American Association on Mental Deficiency, 111th, Los Angeles, Ca, May 24-28.
- McCoy, D. H. (1982). Assessing employee potentials for abuse. Doctoral dissertation, Rosemead Graduate School of Professional Psychology, La Mirada, California.
- McMullan, S. J. & Fisher, L. (1992). Developmental progress of Romanian orphanage children in Canada. *Canadian Psychology*, 33(2), 504.
- Mercer, M. Closing the barn door: The prevention of institutional abuse through standards. In R. Hanson (Ed.), *Institutional abuse of children and youth*, New York: The Hawthorn Press, 1982.
- Pringle, M. L. & Bossio, V. (1960). Early, prolonged separation and emotional adjustment. *Journal of Child Psychology and Psychiatry*, 37-48.
- Provence, S. A. & Lipton, R. C. (1962). *Infants in institutions*. New York: International Universities Press.
- Rindfleisch, N. & Hicho, D. (1987). Institutional child protection: Issues in program development and implementation. *Child Welfare*, 66, 329-341.
- Rosenthal, J. A. (1988). *A descriptive study of abuse and neglect in out-of-home placements*. Unpublished manuscript, University of Oklahoma School of Social Work.

- Sandmaier, M. (1988). *When love is not enough*. Washington, DC: Child Welfare League of America.
- Shaughnessy, M. F. (1984). Institutional child abuse. *Children and Youth Services Review*, 6, 311-318.
- Sloutsky, V. M. (1997). Institutional care and developmental outcomes of 6- and 7-year-old children: A contextualist Perspective. *International Journal of Behavior Development*, 20(1), 131-151.
- Sluyter, G. V. & Cleland, C. C. (1979) Resident abuse: A continuing dilemma. *American Corrective Therapy Journal*, 4, 99-102.
- Spitz, R. A. (1945). Hospitalism: An inquiry into the genesis of psychiatric conditions in early childhood. *Psychoanalytic Study of the Child*, 1, 53-74.
- Stolley, K. S. (1993). Statistics on adoption in the United States. In I. Schulman (Ed.), *The future of children* (pp. 26-42). Los Altos, CA: Center for the Future of Children.
- Sundram C. J. (1984). Obstacles to reducing patient abuse in public institutions, *hospital and community psychiatry*, 3, 238-243.
- Sundram C. J. (1986). Strategies to prevent patient abuse in public institutions, *New England Journal of Human Services*, 6, 20-25.
- Suomi, S. J. & Harlow, F. J. (1978a). Early experience and social development in rhesus monkeys. In M. E. Lamb (Ed.), *Social and Personality Development*. New York: Holt, Rinehart & Winston.
- Suomi, S. J. & Harlow, F. J. (1978b). Early separation and behavioral maturation. In A. Olivier (Ed.), *Genetics, Environment and Intelligence*. Amsterdam: Elsevier.
- Tizard, B. & Joseph, A. (1970). Cognitive development of young children in residential care: The study of children aged 24 months. *Journal of Child Psychology and Psychiatry*, 11, 177-186.
- Tizard, B. & Rees, J. (1974). A comparison of the effects of adoption, restoration to the natural mother, and continued institutionalization on the cognitive development of four year old children. *Child Development*, 45, 92-99.
- Tizard, B. & Rees, J. (1975). The effect of early institutional rearing on the behaviour problems and affectional relationships of four-year-old children. *Journal of Child Psychology and Psychiatry*, 75, 61-73
- Tizard, B., Hodges, J. (1977). The effect of early institutional rearing on the development of eight-year-old children. *Journal of Child Psychology and Psychiatry*, 19, 99-118.
- Thomas, R. M. (1996). *Comparing theories of child development* (4th ed.). Cincinnati, OH: Brooks/Cole Publishing Company.
- UNICEF. (1997). *Children at risk in Central and Eastern Europe: Perils and promises*. Florence, Italy: United Nations Children's Fund, International Child Development Centre.
- Wolkind, S. N. (1974). The components of 'affectionless psychopathy' in institutionalized children. *Journal of Child Psychology and Psychiatry*, 15, 215-220
- Wooden, K. (1976). *Weeping in the playtime of others*. New York: McGraw-Hill.
- The Relationship of Institutionalization to the Development of Romanian Children Adopted Internationally.