I. CHILDREN IN INSTITUTIONAL CARE: DELAYED DEVELOPMENT AND RESILIENCE

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Children exposed to institutional care often suffer from "structural neglect" which may include minimum physical resources, unfavorable and unstable staffing patterns, and socially emotionally inadequate caregiver-child interactions. This chapter is devoted to the analysis of the ill effects of early institutional experiences on resident children's development. Delays in the important areas of physical, hormonal, cognitive, and emotional development are discussed. The evidence for and against the existence of a distinctive set of co-occurring developmental problems in institutionalized children is weighed and found to not yet convincingly demonstrate a "postinstitutional syndrome." Finally, shared and nonshared features of the institutional environment and specific genetic, temperamental, and physical characteristics of the individual child are examined that might make a crucial difference in whether early institutional rearing leaves irreversible scars.

Children exposed to institutional care do not receive the type of nurturing and stimulating environment needed for normal growth and healthy psychological development. This chapter is devoted to the analysis of the ill effects of early institutional experiences. The chapter starts with a description of the nature of institutional care, exemplified by the case of a specific, well-documented institution for young children. A summary of the typical delays and deviations in the development of institutionalized children is then presented. The evidence for and against the existence of a distinctive set of co-occurring developmental problems that might constitute a "postinstitutional syndrome" is presented, and the practice and policy implications of

employing such a concept are explored. Finally, since it is clear that not all children exposed to similar institutional circumstances develop in a similar way, the final section is devoted to a consideration of the heterogeneity of outcomes, as well as to an analysis of resilience and protection mechanisms.

THE NATURE OF INSTITUTIONAL CARE

The institutional care of abandoned and orphaned children is widely used in countries with different ethnic, cultural, and economic backgrounds, and its nature may vary not only between but also within countries. Ideally, an analysis of the nature of institutional care would be based on systematic assessments of those environments; however, such assessments are rare. With a few significant exceptions (e.g., Groark, McCall, Fish, & The Whole Child International Team, 2011; Groark, Muhamedrahimov, Palmov, Nikiforova, & McCall, 2005; The St. Petersburg-USA Orphanage Research Team, 2005; Vorria et al., 2003), most reports include only brief first- or second-hand narrative impressions and perceptions. Although there is considerable consistency among these accounts, there are also conflicting reports. On the basis of such accounts, Gunnar (2001) classified institutions into three levels, based on the quality of care they provide: (1) institutions characterized by global deprivation of the child's health, nutrition, stimulation, and relationship needs; (2) institutions with adequate health and nutrition support, but deprivation of the child's stimulation and relationship needs; and (3) institutions that meet all needs except for stable, long-term relationships with consistent caregivers. Logically, it is possible to add a fourth level, namely an institutional environment that provides for stable and consistent caregiving, and only deprives children of a regular family life embedded in a regular social environment. Small group home type of institutions such as described by Wolff and Fesseha (2005) might be seen as representing this fourth level of institutional environment. Some SOS Children's Villages structured as a set of family houses with six to eight children in each house and headed by the same caregiver for 24 hr, 7 days per week may also be an example of this almost "ideal" but at the same time very expensive institutional setting. Some SOS Children's Villages combine this institutional arrangement with family strengthening programs to support larger family networks to take care of orphaned children (see for an example in Lusaka, Zambia: http://www.soscvzambia.org.zm). Promoting such family-like institutions might be considered the ultimate goal of some institutional intervention efforts (e.g., The St. Petersburg-USA Orphanage Research Team, 2005, 2008, see Chapter VIII).

Despite the variability in care that can be found among institutions, it is possible to put together a composite description of what is typical (Rosas & McCall, in press). The following narrative is not a report of a particular

institution but rather combines various accounts to give the reader a better sense of what is common amidst considerable heterogeneity in institutional care

- Group sizes tend to be large (typically 9–16 children per ward, although in extreme cases, the number may approach 70). The number of children per caregiver is large (approximately 8:1 to 31:1, although a few institutions have fewer children per caregiver).

- Groups tend to be homogeneous with respect to ages and disability status. Children are periodically "graduated" from one age group to another perhaps as many as two or three times in the first 2 or 3 years of life.

- Caregivers for any single child tend to change constantly because there may be a high staff turnover; caregivers may work long shifts (e.g., 24 hr) and be off 3 days; caregivers may not be consistently assigned to the same group; and caregivers may get up to 2 months vacation. The result is that a child may see anywhere from 50 to 100 different caregivers in the first 19 months of life.

- Other adults tend to come and go in children's lives, including medical and behavioral specialists, prospective adoptive parents, and volunteers who may visit for only a week or a few months.

- Caregivers typically receive little training, and the training they do receive is more focused on health issues than on social interaction. They spend the vast majority of their hours feeding, changing, bathing, cleaning children and the room, and preparing food rather than interacting with the children. Caregivers are invariably female, so children rarely see men.

- When caregivers perform their caregiving duties, it is likely to be in a business-like manner with little warmth, sensitivity, or responsiveness to individual children's emotional needs or exploratory initiatives.

Metera Babies Center (MBC), in Athens (Greece), is a specific example of institutional rearing that is characterized by many of the features described above. MBC was originally established to protect and support unmarried mothers and their infants (Paraskevopoulos & Hunt, 1971). Over time, it became a residential care setting for about 100 infants, providing them with accommodation and care 24 hr per day, 7 days per week until they are placed with adoptive or foster families, or restored to their biological parents. A

special unit exists for newborns; and approximately 5 months after birth, these infants are moved to pavilions housing children ranging in age from 5 months to 5 years. The vast majority of the children are adopted or fostered by the age of 2.5 to 3 years, with some also returning to their biological families. A small number of children remain in the institution until the age of 5, either because their parents do not allow them to be adopted or fostered or because they have serious developmental or physical problems. Most infants entering the institution come from settings in which they are at high risk for neglect or abuse having been abandoned or relinquished shortly after birth by parents who are unable to provide for them. The large majority are "social orphans" rather than "true" orphans (i.e., without parents).

MBC provides adequate nutrition and health care but lacks a playful and cognitively stimulating environment and stability in child–caregiver relationships. In MBC, the most depriving period is the first few months of life. In the special unit for newborns, social contacts and interactions are very restricted. Each newborn is placed alone in a separate small room. One caregiver is responsible for as many as seven infants, which is why caregivers limit their attention to feeding and cleaning the babies. Subsequently, when the babies move to the pavilions, they are housed in groups of 12 children who are looked after by 12 caregivers in total. Thus, in theory, the infant/caregiver ratio is 1:1; but in practice, due to the 24-hr shifts, the real ratio ranges from 4:1 to 6:1, as each caregiver has to look after four to six infants at the same time. During weekends and holidays, even fewer caregivers are available. Although books and toys are available in MBC wards for somewhat older babies, the caregivers do not have enough time to interact with the infants using these materials in a stimulating way.

According to the MBC daily time schedule, on a regular day, infants spend a total of 3.5 hr playing and 17.5 hr in their beds; the remaining time is taken up with feeding and cleaning. Apart from the problems caused by understaffing, many of the caregivers are not adequately trained for their jobs and their interactions with the infants are less sensitive than those of biological mothers in a comparison group of family-reared infants, even in optimal conditions, such as when the caregiver is interacting with only one child (Vorria et al., 2003). Applying the Early Childhood Environment Rating Scale (ECERS; Harms & Clifford, 1980) developed for group care, MBC provides an extremely low quality of care in all domains of child rearing (personal care, furnishing, language—reasoning experiences, fine and gross motor activities, creative activities, social development, and adult needs) compared to child care centers in various countries (Vorria et al., 2003), a result found for orphanages in St. Petersburg (Russian Federation; The St. Petersburg-USA Orphanage Research Team, 2005) and three Latin American orphanages (Groark et al., 2011).

Both MBC and the "prototypical" institution described above inevitably deprive children of sensitive reciprocal interactions with stable caregivers. In this respect, many if not most institutions are characterized by *structural neglect*, which may include minimum physical resources, unfavorable staffing patterns, and socially emotionally inadequate caregiver-child interactions. Structural neglect should be located at the extreme end of the cumulative risk continuum (Rutter, 1990), and as such, it may be considered a special case of child maltreatment (Cyr, Euser, Bakermans-Kranenburg, & Van IJzendoorn, 2010).

DELAYS AND DEVIATIONS IN INSTITUTIONALIZED CHILDREN'S DEVELOPMENT

Children raised in institutions often suffer from dramatic developmental delays and may follow deviant developmental pathways. However, the various causes of these delays are difficult to disentangle. First, in some instances, it is difficult to know whether the institutional experience actually causes the deficits or simply maintains preexisting deficits. Second, the forms of deprivation experienced by institutionalized children rarely occur in isolation from one another. Here, we briefly present the (often severe) developmental deficiencies that most institution-reared children display. We selected to concentrate on the important areas of physical, hormonal, cognitive, and emotional development for which replicated evidence exists; however, this does not constitute a complete picture. A range of other delays, deviations, and disorders have been observed in children in the postinstitutional period which almost certainly had their roots in institutional care (see Chapters V, VI, IX).

Physical Growth

Children who spend the first few years of their lives in institutional care often show retarded physical growth (Van IJzendoorn, Bakermans-Kranenburg, & Juffer, 2007, Chapter IV). Institutionalized children and adopted children with early institutional experience lag behind their family-reared peers on such central parameters of physical growth as weight, height, and head circumference. For example, in a meta-analysis of eight studies ($N = 893$ postinstitutionalized [PI] adopted children), longer institutional stays prior to adoption were strongly and linearly associated with a more delayed age-corrected growth in height ($r = .62$; $d = 1.71$), which points to a dose–response relation, illustrating the potentially causal, negative effect of institutional care on physical growth, and in particular on height. This meta-analytic finding is supported by longitudinal studies on growth within institutions in Greece (Vorria et al., 2003, see Van IJzendoorn & Juffer, 2006) and Ukraine

(Dobrova-Krol, Van IJzendoorn, Bakermans-Kranenburg, Cyr, & Juffer, 2010) (see also Chapter IV). These effects can be long lasting. For instance, negative effects persisted to 15 years of age for adopted children who experienced extended severe global deprivation in Romanian institutions. This was despite apparent near catch-up by age 11, which turned out later to be due, most likely, to earlier onset of the pubertal growth spurt (Sonuga-Barke, Schlotz, & Rutter, 2010).

Hormonal (Hypothalamic-Pituitary-Adrenal [HPA] Axis) Development

Atypical patterns of diurnal cortisol activity for children living in institutions were first reported by Carlson and Earls (1997). They examined 46 children, aged 2 years, who lived in an institution in Romania. Most had been there since shortly after birth. Not one of the children exhibited a normal pattern of cortisol variation over the day (8 a.m., noon, 7 p.m.), with low early morning and slightly elevated evening values being the norm in this sample. This finding was replicated in a very small sample of PI children, adopted from Russia and China (Gunnar, 2001). Another study conducted in a Russian Baby Home with 11 children at 3–5 months of age produced similar results of blunted rhythms of diurnal cortisol production (Kroupina, Gunnar, & Johnson, 1997, cited in Gunnar, 2000).

To study the effect of institutional rearing on diurnal cortisol production, Dobrova-Krol et al. (2008) examined 16 institution-reared children (3–6 years old) from Ukraine and compared them with 18 local family-reared children pair-matched on age and gender. Diurnal salivary cortisol was sampled six times during 1 day. Almost one third of institution-reared children were chronically and severely delayed or "stunted" in their physical growth, whereas none of the family-reared children were. Institutionally reared and family-reared children showed similar patterns of diurnal cortisol production with decreases over the day. However, nonstunted institutionally reared children had a significantly higher total daily cortisol production than both chronically stunted institution-reared children and family-reared children. The chronically stunted children had suffered from perinatal hypoxic conditions and underwent a treatment to stabilize the functioning of the nervous system involving diazepam as well as corticosteroids (Edelstein, Bondarenko, & Bykova, n.d.), which could have had a lasting effect on the HPA axis functioning of these children. All groups demonstrated a normal diurnal pattern with elevated morning cortisol values and subsequent decline during the day. The discrepancy with previous findings (Carlson & Earls, 1997; Kroupina et al., 1997) may be explained by the older age of the children in the Ukraine study, and may be also due to the differentiation between stunted and nonstunted children.

As yet, there are little or no data to evaluate whether alterations in growth or neuroendocrine activity as measured while children are in institutional care or shortly after adoption mediate any of the cognitive and emotional effects noted for PI children (see Chapters II, III, IV).

Cognitive Development

The cognitive development of institutionalized children has been studied for more than 70 years. Between 1930 and 1950, a first wave of studies documented that children in institutions often showed a low IQ and severe language delays (Crissey, 1937; Durfee & Wolf, 1933), and children's orphanages have been considered "natural experiments" on the necessary conditions for intellectual growth (MacLean, 2003). Recent research continues to show the delayed cognitive performance of children in residential care (Ahmad & Mohamad, 1996; Sparling, Dragomir, Ramey, & Florescu, 2005; Vorria et al., 2003; Zeanah, Smyke, Koga, Carlson, & the BEIP Core Group, 2005), although in one study increases in cognitive development with longer stay in the institution was noted (The St. Petersburg-USA Orphanage Research Team, 2008).

In a recent meta-analysis, children growing up in institutions showed a substantial delay in IQ compared with children reared in (foster or biological) families (Van IJzendoorn, Luijk, & Juffer, 2008). The combined effect size in 75 studies on more than 3,800 children in 19 different countries was about 0.75 *SD*. For most samples, absolute IQ/DQ scores were available. The children reared in institutions showed on average an IQ/DQ of 84; the average IQ/DQ of comparison children raised in families was 104. Favorable caregiver-child ratios were associated with smaller cognitive delays, whereas early entry into residential care (before 12 months) and thus longer stays seemed to be associated with larger delays. One or more years of family life prior to institutionalization may provide a (relatively) firm basis for further intellectual development even when children grow up in a poor intellectual environment later on.

In the unique randomized control Bucharest Early Intervention Project (BEIP, Nelson et al., 2007), young children living in institutions were randomly assigned to continued institutional care or to placement in foster care, and their cognitive development was tracked through 54 months of age. The authors report three main findings confirming the meta-analytic findings on nonrandomized trials. First, children reared in institutions showed greatly diminished intellectual performance (borderline mental retardation) relative to children reared in their families of origin. Second, children randomly assigned to foster care experienced significant gains in cognitive function. Lastly, the younger a child was when placed in foster care, the better the cognitive outcome. Indeed, there was a continuing "cost" to children who

remained in the institution for longer periods of time (see Chapter VI on sensitive periods).

Attachment Security

Institution-reared children all experience separation from or loss of their birth parents and other caregivers. In a famous report on institutions for the World Health Organization, Bowlby (1952) concluded that children suffered from the effects of institutional care, even when their physical needs (food, clothes, etc.) were adequately met. The children are deprived of opportunities to develop stable and continuous attachment relationships due to the limited amount and poor quality of contact with their caregivers (Gunnar, Bruce, & Grotevant, 2000; Palacios & Sánchez-Sandoval, 2005; Vorria et al., 2003; Zeanah et al., 2005).

Six recent studies addressed the effects of institutional care on attachment, using the Strange Situation Procedure (SSP; Ainsworth, Blehar, Waters, & Wall, 1978) or a modification, and institutionalized children showed high rates of insecure attachment and especially high rates of disorganized attachment (Dobrova-Krol, Van IJzendoorn, Bakermans-Kranenburg, & Juffer, 2010; Herreros, 2009; Steele, Steele, Jin, Archer, & Herreros, 2009; The St. Petersburg-USA Orphanage Research Team, 2008; Vorria et al., 2003; Zeanah et al., 2005). Overall, the attachment status distribution of institution-reared children deviated markedly from the typical distribution (62% secure, 15% avoidant, 9% resistant, and 15% disorganized; Van Ijzendoorn, Schuengel, & Bakermans-Kranenburg, 1999), with 17.1% secure, 5.5% avoidant, 4.6% resistant, and 72.8% disorganized attachments to the favorite caregiver. Indeed almost three fourths of the institution-reared children were classified as disorganized.

The higher rate of disorganized attachment in an institutional environment of structural neglect compared to that in family-reared normative groups was to be expected. Compared to children maltreated within their families, the percentage of secure attachments is somewhat higher in the institution-reared children (maltreated children: 14%; institutionalized children: 17%) but the percentage of disorganized attachments is considerably larger (institutionalized children: 72.8 %; maltreated children: 51%, as derived from Cyr et al., 2010). Whether attachment classifications, in particular disorganized attachments, mean the same in an institution as in a family environment remains to be determined (Rutter, Kreppner, & Sonuga-Barke, 2009; Zeanah et al., 2005, see Chapter III for an extensive discussion of this issue). The wide variety of attachment outcomes within institutions, from extremely disorganized to secure, is puzzling in view of the fact that all children went through the same kind of institutional ordeal in a sensitive stage of their development. This heterogeneity is discussed in the next section.

A POSTINSTITUTIONAL SYNDROME?

As shown in the previous sections, problems experienced by children growing up in institutions include delayed physical growth and brain development, dysregulation of the neuroendocrine systems, delayed cognitive development, and deviant attachment or attachment disorder, to mention just a few domains of dysfunction. A significant body of research demonstrates that to varying degrees, the deficits seen in institutionalized children persist in PI adoptees once they have been removed from orphanages and are being raised in family settings (see Chapter II). This begs the questions: (i) whether these elements form a syndrome and (ii) if so is the use of the label "postinstitutional syndrome" of any practical utility.

According to the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV; American Psychiatric Association, 1994, p. 771), a syndrome has three key elements: (1) a group of signs and symptoms, (2) their frequent co-occurrence in affected individuals, and (3) a common underlying pathogenesis, course, familial pattern, or treatment selection. While apparently simple in themselves, deciding whether each of these three criteria is met is complicated by a number of factors. In the case of children from institutions experiencing the sorts of developmental delays and deviations described above, there is prima facie evidence for the first and third element. By definition, all have symptoms and all had a common experience of early institutional care. However, this interpretation is complicated by two important developmental phenomena—equifinality and multifinality; both of which are present in the development of PI children. Equifinality refers to the fact that the same end-state may be reached from a variety of initial conditions (Cicchetti & Rogosch, 1996). Some emotional or behavioral problems considered to be typical of PI children have also been reported in children who have been abused or maltreated by their families (Cicchetti & Toth, 2005). Similarly, the disturbances associated with attachment in PI children are also found in children without the experience of institutional life (O'Connor & Zeanah, 2003). Obviously, a low IQ can be found in children with an array of developmental circumstances. It would then be quite possible to find a child who was never institutionalized but who presents some kind of growth problems, attachment disorder, and low intelligence similar to a PI child. However, some outcomes may be more specific to PI children (e.g., disinhibited attachment and quasi-autism; see below and Chapter III). So the question with regard to element (i) is not whether PI children suffer negative outcomes but how distinctive and specific are these outcomes of institutional effects.

With regard to the third element, while it is tempting to assume a common pathogenesis grounded in institutional deprivation, it cannot be assumed that such deprivation in fact *causes* the characteristic pattern of developmental delays and deviations observed. Nor can it be assumed, even

where causality can be inferred, that the effects of institutional care operate through the same pathogenic processes in all cases—there may be different neuro-developmental pathways to similar patterns of outcome. Here, the concept of multifinality is relevant. This refers to the fact that a particular adverse event (in our case, the early experience of institutional rearing) should not be seen as necessarily leading to the same outcomes in each individual (Cicchetti & Rogosch, 1996), due to nonshared institutional effects and child-related resilience mechanisms (see below and Kumsta, Rutter, et al., 2010, for a discussion in relation to institutionalized children). Two children with a similar amount of exposure in the same institution can end up with very different developmental profiles, from profound maladaptation to normal functioning (e.g., Beckett et al., 2006). Multifinality means that institutional deprivation appears to have probabilistic rather than deterministic influences on children's difficulties.

The third element—the frequent co-occurrence of the signs and symptoms—again appears a simple statistical question. However, it also raises some difficulties. Although, according to MacLean (2003), there is no area in which, as a group, institutionally reared children remain unscathed. From what we know about the development of institution-reared children, it is unclear whether delays in all of the domains need to be present to speak of a syndrome or if, for the same purpose, a combination of certain problems is more critical than a combination of others; that is, before establishing the level of co-occurrence using statistical means one has to decide which signs and symptoms need to co-occur: What are the central features of any putative syndrome?

Finally, it must be noted that answering the generic question about the validity of a "postinstitutional syndrome" is further complicated by the wide range of different patterns of risk that operate within institutions. It is certainly possible that those institutions with moderate levels of social deprivation but no subnutrition (perhaps level 3 in Gunnar's taxonomy) may have a more diffuse, less coherent, and less distinctive patterns of outcomes than that seen in more severe and global deprivation. It may be therefore that we might be able to talk of a syndrome in one setting and not in others.

DOES A DISTINCTIVE GROUP OF SYMPTOMS CO-OCCUR IN PI CHILDREN?

As noted above, according to the DSM-IV definition, the co-occurrence of symptoms is a defining characteristic of a syndrome. Are there symptoms that tend to co-occur because of the experience of institutional life?

It is not easy to derive an answer to this simple question from the extant studies. Even when research on PI children is concerned with several areas

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(growth, intelligence, behavioral problems, attachment difficulties), the results usually remain disconnected—multivariate analyses are rare. This might be due to the fact that researchers are mainly interested in the epidemiology of a problem, that is, comparing PI children with children in the general population or are interested in the developmental trajectory of a given characteristic (e.g., what is the IQ at age 10 of those adopted as infants from an orphanage?), and pay no attention to other developmental domains.

For a cluster of symptoms to be identified in the same individual, the approach would need to be more clinical than epidemiological and several areas would need to be covered simultaneously. So far, most of the analyses are at the level of between-group differences (e.g., institutional care below and above 6 months), providing little information about the co-occurrence of the symptoms. Recent analyses of the outcomes from the English and Romanian Adoption (ERA) Study of the effects of early severe global deprivation has addressed the issue of (i) what outcomes are the most distinctive and deprivation specific and (ii) whether these core elements overlap sufficiently to suggest a syndrome. The first relevant analysis reported in Kreppner et al. (2007), explored seven psychological domains, and is one of the first attempts to analyze the co-occurrence of impaired functioning in the same individuals and the impact of single versus multiple impairments. This study suggests that, among the children with several impairments, a deprivation-specific pattern of cognitive deficits, quasi-autism, disinhibited attachment, and elevated activity and inattention could be identified. More recent analyses of the age 15 ERA data provide a more refined analysis of the issue. In this work, researchers identified a distinctive deprivation-specific core of impairment associated with early onset and persistent quasi-autism and disinhibited attachment, which was associated with the duration of deprivation. These core elements overlapped significantly but incompletely, suggesting a degree of commonality to children's responses to severe deprivation (Kumsta, Kreppner et al. 2010). Furthermore, this core pattern overlapped with less distinctive deprivation-specific deficits in intellectual impairment and overactivity/inattention (Rutter & Sonuga-Barke, 2010; Kumsta et al., 2010).

While this analysis provided some evidence for a syndrome at the level of symptoms, this finding needs to be interpreted in the light of the marked heterogeneity of outcomes more generally and the fact that there was little evidence that quasi-autism and disinhibited attachment had the same neuropsychological mediators. Furthermore, the findings may be specific to the extremely deprived and rather homogeneous group of children who suffered extended deprivation in the Romanian orphanages of the 1980s. That is, this may be evidence for a severe deprivation syndrome rather than an institutionalization syndrome per se. The pattern of findings needs to be replicated in independent, less extremely deprived postinstitutional samples before a broader "postinstitutionalization syndrome" concept could be supported.

RISKS OF A "POSTINSTITUTIONAL SYNDROME" LABEL

Even if future analysis of less-deprived cohorts confirmed a broader pattern of sufficiently distinctive and overlapping symptoms, the costs and benefits of using "postinstitutional syndrome" as a "diagnostic label" would still remain to be seen. As yet there is no evidence that such a label would have advantages in terms of the understanding and management of deprivation-specific problems. Furthermore, there are substantial potential risks of such a move. According to Pennington (2002), naming a syndrome can confer a false sense of validity on the diagnostic category and the impression that there is an explanation for the deviant behavior. The idea that a name provides an explanation is called the "nominal fallacy."

The risks of this fallacy can be illustrated by an example. The early onset of puberty has been described as one of the symptoms of PI children, with the speculation that circumstances of early severe deprivation produce significant alterations in the hypothalamic systems regulating food intake, physical growth, and the biology of puberty (Gunnar, 2001). Although not all adopted children have been exposed to institutional rearing (and not all of those exposed were in the institution for the same length of time or under similar circumstances), recent Danish data show that the risk of developing precocious puberty significantly increased by 10 to 20 times in adopted girls compared with girls with a Danish background (Teilman, Main, & Skakkebaek, 2002). If precocious puberty was one of the symptoms listed under the "postinstitutional syndrome" then the nominal fallacy would suggest that the deprivations suffered in the institution are the cause of the early onset of puberty via damage to the appropriate brain structures (see Chapter II). However, the evidence shows that, out of 11,000 adopted children in the Danish sample, only 655 (around 6%) developed precocious puberty, with children from some regions (e.g., South America, India) being at much higher risk and children from other regions (e.g., South Korea) at no risk. Also, there is evidence showing that both genetic and prenatal factors (poor intrauterine growth) are implicated as antecedents of the increased risk of precocious puberty in these children (Mul, Oostdijk, & Drop, 2002; Teilman et al., 2002, Chapter II). These preinstitutional factors could interact with the depriving postnatal institutional circumstances, thus increasing the risk, but not necessarily causing it.

Another risk with the concept of a PI syndrome is stigmatization. In 1978, the concept of the "Adopted Child Syndrome" was introduced by Kirschner to refer to a form of conduct disorder presumably connected to an adoptive status. Behaviors would include conflict with authority, preoccupation with excessive fantasy, pathological lying, stealing, running away from home or school, learning difficulties, lack of impulse control (acting out, promiscuity, sex crimes), and a fascination with fire or fire lighting. The main difference

from other conduct disorders would be the link to adoption-related dynamics, such as unresolved issues around the birth parents' rejection, fantasies about the birth parents, and identity difficulties. Although initially endorsed by some clinicians and researchers, the concept of "Adopted Child Syndrome" was later abandoned following criticism of its conceptual and methodological flaws (e.g., Smith, 2001).

The concept of the adopted child syndrome originated within the context of a clinical practice in which adopted persons were over-represented. When the focus of the research moved from clinical to community samples, the perception of adopted persons became more positive and adoption was seen as protective rather than as a risk factor for maltreated children (Palacios & Brodzinsky, 2005), and indeed adoption is now more often perceived as a successful intervention that leads to remarkable catch-up in all domains of child development (Van IJzendoorn & Juffer, 2006). Adopted persons are a very heterogeneous group and the vast majority seems to be able to function well within normal ranges of behavior and development. In these circumstances, the concept of an adoption-related syndrome is not justified by the evidence and creates a negative image that is of little help to the adoptees, the professionals working with them, their parents, and the community as a whole.

The same could happen with PI children. If we take one of the well-documented areas of inquiry, externalizing problems, it is true that the proportion of PI children scoring in the clinical-borderline range is higher than in the general population of children (Juffer & Van IJzendoorn, 2005). Whereas in the general population of children, 15% are in the clinical-borderline range of externalizing problems, the percentage of PI in this range is 35% for children from globally deprived institutions and around 20% for children from less-deprived institutional circumstances (Merz & Mc-Call, 2010, see Chapter IX). With 65% (globally deprived institutionalization) or 80% (more favorable institutional circumstances) of PI children not showing elevated externalizing scores, the use of a label that negatively unifies the heterogeneity and ignores the diversity seems neither advisable nor helpful.

The less well defined and substantiated a syndrome is, the more advisable it seems to avoid the risk of over-generalization and self-fulfillment. If, based on weak evidence, a syndrome is defined as characteristic of children who have been in institutions and if a child has been institutionalized, then there may be a tendency to interpret some normal behaviors in accordance with the syndrome. The risk of a friendly, ex-institutional child being labeled as disinhibited or of an active child with not very good attention skills being characterized as inattentive/hyperactive is the type of stigmatization worth avoiding.

An Alternative

An alternative to the idea of a PI syndrome would be to return to the concept of institutional maltreatment, in particular structural neglect. As it was defined by Gil (1982), institutional maltreatment refers to acts and policies of commission or omission that inhibit or insufficiently promote the development of children or that deprive or fail to provide them with the material, emotional, and symbolic stimulation needed for their normal development. Structural neglect is probably the main and most widespread form of institutional maltreatment, pointing to the fact that, by their arrangement and form of operation, institutions fail to respond to children's basic needs for stable and positive personal relationships as well as for adequate care and stimulation. As a common background for the problems observed in PI children, the concept of structural neglect is fruitful, because it identifies the cause more than its potential consequences, adds less burden to the victims, and points to a reality that can and should be changed if the needs of the children are to be met in a "good-enough" manner. Also, as discussed previously, some of the consequences of institutional rearing are shared by other forms of child maltreatment, which may provide a wider conceptual framework for understanding some formerly institutionalized children's problems and their solutions.

Whether or not the concept of PI syndrome in its broadest sense is supported by the data, a deeper analysis of the observed heterogeneity among PI children is definitely needed. This concerns the type, degree, and overlap of impairment(s); the diversity of institutional effects; and the child-related resilience mechanisms in the face of the institutional adversity. These issues are discussed in the next section.

RESILIENCE AND PROTECTION

Heterogeneity in terms of both degree and type of impairment and/or disorder is a hallmark of the developmental outcomes of children who experienced early institutionalization. In terms of degree, children suffering to all intents and purposes the same exposures to adverse environments can end up with very different levels of impairment and dysfunction. For some, extended institutionalization can lead to profound impairment or mental disorders, or both. Others who spent the same length of time in the same institutions can function quite normally and be indistinguishable from their noninstitutionalized peers.

Further, individuals showing impairment and dysfunction can be affected in different ways across a wide variety of intellectual, interpersonal, and behavioral domains. In some cases, outcomes may be quite specific: For instance,

problems of attention and activity are frequently reported in children who have suffered early institutional deprivation (Audet & Le Mare, 2010; Stevens et al., 2008). For some children, these may be part of a complex of problems involving low IQ, attachment problems, and impairments in interpersonal relationships (Kreppner et al., 2007). However, for others, these additional domains may be completely unaffected. While heterogeneity is marked, the degree of variation in outcome is not unconstrained. This is best illustrated in relation to the duration of deprivation experienced. It is very unusual for exposure of only a few months to cause problems of significance assuming normal liability, whereas in the case of extended periods or even permanent institutionalization, outcomes are likely to be invariably poor. That being said, there is also evidence suggesting that quality of caregiving in the postinstitutional (adoptive) environment can mitigate the effects of even very lengthy institutional experience on inattention/overactivity (Audet & Le Mare, 2010).

Given this, the study of factors that may account for this diversity, by moderating the paths between risk and disorder, represents a vital stage in the development of both scientific understanding and improved clinical care (Kumsta et al., 2010). In terms of exposure to, and impact of, deprivation-related risks within institutions, there are shared and nonshared institutional effects that need to be considered, together with resilience mechanisms operating within the child that need to be specified.

Shared Institutional Effect

Are there characteristics of particular institutions that place children in general at risk, or alternatively are there common factors that ameliorate deprivation-related risks?

There are likely to be general factors of significance that relate to the regime of an institution and their levels-of-care provision for the children. The overall quality of institutional care is likely to play a key role in determining outcomes. Therefore, we would expect that children in institutions with more and better food, more staff, and greater levels of personalized care and social and cognitive stimulation are likely to fare better and those with the obverse to fare worse.

However, the relative importance of these different elements of provision is not known. Could provision in one key area override the damaging effects of other elements of the risk of institutions? Would, for instance, a plentiful and nutritious diet completely offset the deleterious effects of severe and chronic social deprivation? A recent analysis of the ERA data looking at the relative contributions of subnutrition as indexed by physical growth at the time of leaving the institutions and duration of deprivation across multiple outcome domains is relevant to this question. There were a number of findings of significance. First, the children suffering extended duration of

deprivation were extremely subnourished by the time they left the institutions in terms of both weight and height—suggesting a preceding period of chronic lack of adequate food. Second, subnutrition (as marked by physical growth) was significantly related to brain growth (as measured be head circumference) and IQ even accounting for duration of deprivation effects—however, subnutrition was unrelated to broader patterns of mental health problems. Third, even in cases where there was no evidence of subnourishment in the sample, problems could be seen across all domains (including head circumference) in children with extended duration of deprivation.

This pattern of results was interpreted as highlighting the power of psychosocial deprivation to determine outcomes. So in answer to the question, this analysis suggests that while an adequate diet would likely improve outcomes in some domains residual deficits would be likely to remain even in brain development and closely related functions (Sonuga-Barke et al., 2008). At the same time, it is important to understand the limitations of the study as set out by the authors. Physical growth at the time of leaving the institutions is not a perfect proxy for nutritional status. First, reduced weight (the definition of subnutrition in the analysis) could be a marker of acute rather than chronic reduction in calorific intake. Second, alterations in physical height may mask less obvious micronutritional deficiencies known to be important for brain growth (that is institutional children of normal height and weight might still have important deficiencies that can account for the negative outcomes in the nonsubnourished groups). Third, in this study, the quality of care in terms of social interaction and intellectual stimulation in institutions was not directly measured so we do not know whether shared institutional enhancements in these areas may have protective potential and override the effects of poor diet on IQ.

Within-institution intervention studies seem to support the significance of socio-emotional features. These studies have varied from highly structured, somewhat artificial additional sensory or perceptual experiences to attempts to change the entire institutional behavioral climate, promote more stability and consistency in caregivers, and encourage warm, sensitive, and responsive caregiver-child interactions. The latter interventions are the most comprehensive (e.g., The St. Petersburg-USA Orphanage Research Team, 2008; see also Smyke, Dumitrescu, & Zeanah, 2002, Sparling et al., 2005), are implemented by ordinary orphanage staff, and they seem to produce the most developmental improvement in children in both physical and behavioral domains (but see Bakermans-Kranenburg, Van IJzendoorn, & Juffer, 2008, for some caveats regarding the design of some quasi-experimental studies, the problem of detecting the working component of some of the more comprehensive interventions, and the feasibility of up-scaling complicated intervention efforts).

Nonshared Institutional Effects

Nonshared institutional effects are either due (i) to chance or at least arbitrary events of a positive (or negative) nature that occur independently of the characteristics of the child or (ii) are due in some way to those characteristics and the way they elicit a particular sequence of events. That is, there are potentially child effects that likely form part of a reciprocal relation between the child and the social environment in institutions, as there are known to be in other rearing environments. For the former, we can think of a child being placed under the care of a particularly kind or considerate caregiver, and for the latter, we can think of a child with a demonstrative and demanding temperament who may get more attention and care than a quiet and reserved child (see Chapter III). Unfortunately, by their very nature many of these effects operate on a microlevel in idiosyncratic and individualistic ways and are therefore hard to study empirically. However, more generic hypotheses about the role of physical attractiveness or temperamental reactivity could be tested.

Child-Related Resilience Mechanisms

Children may elicit, either through active engagement or some feature of their personality or appearance, a response from their environment that might protect them from deprivation-related risk either by reducing their exposure to risk factors or altering their impact once they have been exposed. In addition to these child-led effects, child-based genetic factors may operate to reduce or increase the vulnerability of a particular child to risk in general (i.e., general hardiness genes), to institutional deprivation generally, and/or to the effects of institutional deprivation on specific outcomes. The evidence that genetic factors can moderate pathways between social risk and developmental outcome is growing (e.g., Caspi et al., 2003).

How might we investigate genetic moderation of the effects of early deprivation? The most direct way to test for genetic effects is to look at markers of genes that either (1) confer risk for a specific disorder outcome common in populations exposed to institutional deprivation or (2) might alter the response to the risk factor more generally (Stevens et al., 2009).

In terms of the first strategy, genes of potential functional significance with regard to activity of dopamine (e.g., DAT1, DRD4, DRD2, see Bakermans-Kranenburg & Van IJzendoorn, 2007) and serotonin (5HTT) systems look to be especially interesting candidates. Initial studies provide evidence for genotype by duration of institutional deprivation interactions implicating both the DAT1 10R/10R (for ADHD; Stevens et al., 2009) and the 5HTT-LPR L/L genotype (for emotional problems; Kumsta et al., 2010). The latter finding converges with recent evidence on Ukrainian children still residing in

orphanages. Dobrova-Krol and colleagues found a moderating role of 5HTT for the association between adverse environment (family vs. institution) and attachment disorganization. In case of the long variant of 5HTT children appeared to be protected against the adverse institutional environment on attachment disorganization, at least in this pilot study. Children may not be equally vulnerable to extremely adverse rearing experiences (Dobrova-Krol, Bakermans-Kranenburg, & Van IJzendoorn, 2010, see also Chapter III).

In terms of the second strategy, a number of candidate classes of genes can be identified. One possible model implicates the stress reactivity systems and argues that early adversity in institutional setting may reprogram brain-stress systems. For instance, laboratory and clinical studies implicate polymorphisms within glucocorticoid receptor genes in determining individual differences in biological stress reactivity and the level of cortisol response to different stressful situations. However, initial exploration of the role of genotypic variations in these genes does not support a genetic stress moderation hypothesis (Kumsta et al., 2010).

Generally, there are a number of plausible mechanisms that might account for genetic moderation of environmental risk. For example, genetic factors may "block" the exposure of children to, or determine their degree of sensitivity to, deprivation-related risk. Genetic factors may reduce the receptivity of children to the experience of adversity (this is the differential susceptibility hypothesis based on genetic factors; Belsky, Bakermans-Kranenburg, & Van IJzendoorn, 2007). A second class of explanations focuses more on the possibility that high-risk environments alter the expression or effect of genes. Perhaps adverse social environments may switch-off or socially benign environments switch-on genetic effects through epigenetic mechanisms such as DNA methylation (Meaney, 2010; Mill & Petronis, 2008). Not much is known empirically about the power of early deprivation that impinges on gene expression within humans although some recent studies show emerging evidence of the power of methylation in shaping human development (McGowan et al., 2009; Van IJzendoorn, Caspers, Bakermans-Kranenburg, Beach, & Philibert, 2010). These preliminary findings certainly converge with animal models suggesting that such epigenetic effects are powerful and plausible (Diorio & Meaney, 2007; Meaney, 2010), in particular in circumstances of severe deprivation, abuse, or neglect.

CONCLUSIONS

Children in institutional care show delays and maladaptation in various domains of development, but not every child is affected in the same way and to the same degree. Despite some suggestive evidence from severely deprived institution-reared children (Kreppner et al., 2010), at present there

are insufficient empirical grounds to support the validity of the concept of a more general postinstitutional syndrome. Furthermore, at the present time, there are no obvious benefits and a number of potential costs to using the postinstitutional syndrome label. Children from institutions should not be labeled with a psychiatric diagnosis that would by applied to all children. The institutional setting itself is in most cases pathogenic and should be classified as a type of child maltreatment, particularly in the form of structural neglect.

Although most institutions even in modern times create a childrearing environment best typified by structural neglect, some children remain resilient even in the most adverse settings. Shared and nonshared features of the institutional environment and specific genetic, temperamental, and physical characteristics of the individual child might make a crucial difference in whether or not early institutional rearing leaves irreversible scars. It is important to study the interaction between the children and their institutional environment at a microlevel, taking into account individual hardiness and vulnerabilities at the genetic or temperamental level as well as strengths and weaknesses of the specific child-rearing setting. A closer look at the interactions of resilient children with various facets of the institutional environment may provide insight into ways to improve institutional life for all or most children involved. In this regard, gene by environment studies enriched with epigenetic information seems to be of special value.

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