

Pre-Adoption Adversity and Self-Reported Behavior Problems in 7 Year-Old International Adoptees

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Abstract To further investigate the long-term impact of pre-adoption adversity on international adoptees, externalizing and internalizing symptoms were assessed using a self-report measure at school-age in addition to mothers' reports. The sample consisted of 95 adopted children and their mothers. Children's health and developmental status were assessed soon after arrival in their adoptive family. At age 7, the Dominic Interactive, a self-report measure, was used to evaluate externalizing and internalizing symptoms while mothers completed the CBCL. Children's self-reports were compared to their non-adopted peers'. Adopted children reported more symptoms of specific phobia than their peers. A significant correlation was found between mothers' and children's reports but only for externalizing symptoms. Self-reported symptoms were related to indices of nutritional and psychosocial deprivation at arrival, such as low height/age and weight/height ratios. Our results emphasize the importance of considering international adoptees' perception of their psychological adjustment and the long-term impact of early risk factors.

Keywords International adoption · Behavior problem · Self-report · Pre-adoption adversity · Longitudinal study

Introduction

Until recently, more than 40,000 international adoptions were registered every year in the world [1]. While adoption offers obvious benefits, it is also associated with many challenges and complications in the lives of adopted children and of adults who parent them

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[2]. Children's development and psychological adjustment in their adoptive countries have thus become a source of concern for public authorities, mental health professionals, and researchers.

Internationally adopted (IA) children often endure severe conditions of deprivation before arriving in their adoptive family [3]. Children living in an institutional setting generally experience a lack of adequate nutrition, hygiene, and medical care, a lack of stimulation, and an absence of stable caregivers with whom to form an attachment relationship [4]. Upon arrival in their adoptive family, many of them are therefore in precarious physical and psychological condition [4–10]. Their weight, stature, and head circumference are often below the norm for their age, an indication of nutritional and psychosocial deprivation [11], and delays in motor, cognitive, and social development are often reported [8, 12–14].

Early deprivation may have a long lasting impact on children's physical, intellectual, and social development [3]. According to Juffer and van IJzendoorn's [15] meta-analysis, international adoptees who have experienced pre-adoption adversity show more behavior problems than international adoptees without such backgrounds. IA children also present more behavior problems throughout childhood than their non-adopted peers and are overrepresented in the mental health system [15]. When compared to non-adopted children, they usually show more externalizing problems [16–21], and more internalizing problems [16, 20, 22].

Although researchers agree that pre-adoption adversity is a potential risk factor for the development of behavior problems in the years following adoption, there is still some disagreement on the impact of specific risk factors. In their meta-analysis, Juffer and van IJzendoorn [15] found no convincing evidence that age at adoption is a critical factor for the development of behavior problems in IA children. However, several studies including recent ones reported more behavior problems in children adopted at a later age than in those adopted earlier [23, 24]. Another ongoing debate concerns the evolution of behavior problems from childhood to adolescence. While Juffer and van IJzendoorn [15], in their meta-analysis, found no significant increase in internalizing and externalizing problems with age, behavior problems have been shown to increase in IA adopted children from middle childhood to adolescence in a study based on a large sample [23]. Furthermore, according to Brodzinsky [2], the more children understand about the concept of being adopted and its implications, the more confusion and anxiety they feel about their family status. When they reach school-age, at around 5–7 years of age, adopted children are therefore more at risk to show emotional and behavioral problems.

Another issue in adoption studies involves the impact of informant when assessing behavior problems. Most studies have relied exclusively on parents' assessments of IA children's behavior problems at school-age. Yet, according to Brodzinsky [25], adoptive parents are prone to see their child as being at risk for developing problems. It has also been suggested that the sociodemographic characteristics of adoptive parents could in part explain the high rate of behavior problems reported in IA children [26]. Adoptive parents are usually more educated and more affluent than non-adoptive parents and they have better access to mental health services. However as Juffer and van IJzendoorn [15] have pointed out, the potential impact of the sociodemographic characteristics of parents of IA children has been overlooked in past studies.

The extensive use of parental reports in studies on IA children is partly due to the fact that reliable self-report measures of school-aged children's emotional and behavioral problems have only become available recently. There is no gold standard when assessing children's symptoms of behavioral or emotional problems, and the need of using multiple

informants, including the child him/herself, is widely acknowledged in the literature (e.g., [27, 28]). Research on child mental health has shown that children as young as 6–8 years old can serve as reliable and useful informants [29–33]. Many researchers also agree that child self-perception is essential especially when evaluating symptoms of internalizing problems that are often less obvious to adults [27, 28, 34–37]. Parents and teachers, for instance, often ignore or underestimate children's fears and more easily identify externalizing symptoms [38]. Thus, for both clinical and research assessments, young children can serve as useful informants for their behavioral problems when appropriate measures, adapted to their developmental status, are used [39].

Only one recent study has used self-report measures in addition to parents' reports in order to assess behavior problems in IA children [40]. The study included two groups of IA children aged 8–11 years—one group of post-institutionalised children, and one group adopted from foster care—and a group of non-adopted peers. According to both parents and children, symptoms of externalizing problems were more frequent in IA children than in their non-adopted peers. However, evaluation of internalizing symptoms was found to vary depending on the informant and the group. Parents of IA children reported higher levels of internalizing problems in their child than parents of non-adopted children but only post-institutionalized children reported higher levels of internalizing symptoms.

This finding may be surprising since parents usually underestimate their child's symptoms of internalizing disorders, a result that could reflect adoptive parents' heightened sensitivity to their child's mental health problems. However, from the child's point of view, a history of institutional care, and not adoption per se, seems to be a more important risk factor for the development of internalizing problems. As Wiik and her colleagues [40] have suggested, further attention should be devoted to IA children's perception of their own emotional and behavioral symptoms. The relationships between self-reported symptoms and pre-adoption experiences also deserve to be further examined. It should also be noted that Wiik and her colleagues [40], as many other researchers on adoption, have only examined global scores of internalizing and externalizing disorders. Yet, a detailed analysis of specific emotional and behavioral symptoms is essential to provide a more accurate description of the psychosocial adjustment of IA children [23, 41].

The aim of the present study was thus to further investigate behavior problems in 7 year-old IA children and the impact of pre-adoption adversity using self-report measures of seven specific externalizing and internalizing disorders. IA children's self-reports were compared to their non-adopted peers'. Because the mothers of our adopted children were older, more educated, and more affluent than mothers from the general population, and in order to minimize the potential impact of parents' sociodemographic characteristics, we compared our sample of IA children to a sample of non-adopted peers from families presenting similar sociodemographic characteristics.

Given the large number of studies reporting a high rate of psychological problems among IA children, we hypothesized that children adopted from foreign countries would report more behavior problems than their non-adopted peers. Because low parent–child agreement is generally found for symptoms of internalizing disorders, we also examined the relationship between children's assessment of behavior problems and their mothers'. Finally, we analyzed the relationships between children's self-reported behavior problems at school-age and their health, developmental status, and age at arrival in their adoptive family. We hypothesized that pre-adoption adversity, as indicated by low height/age and weight/height ratios, small head circumference, neurological signs, and low scores of mental and psychomotor development at arrival, would be related to behavior problems at school-age.

Method

Participants

Ninety-five children (69 girls) and their mothers participated in the study. These participants are a subsample of the families who took part in a longitudinal research on the development of IA children from their arrival in their adoptive family (range = 4–18 months) until they reached 3 years of age [8]. Children were adopted mostly from orphanages (92%), the rest from foster care. Initially, the study included 123 children. For the follow-up, 113 families were contacted (10 others could not be reached), and 97 agreed to participate. Those who refused mentioned a lack of availability or interest. Complete data were available for 95 children. Forty-seven of them were adopted from China, 28 from other East-Asian countries (Vietnam, Taiwan, Thailand, South Korea, Cambodia), 17 from Russia, 2 from Haiti, and 1 from Bolivia. Children's mean age at time of assessment was 7 years and 4 months ($SD = 4$ months; range = 6.5–8.6 years). The mean age of mothers was 44.4 years. They had on average 15 years of schooling and 93.6% had a family income over 40,000\$ annually.

The subsample of children who participated in both phases I and II of the study was compared to the subsample of children who participated in the first phase only using T test and χ^2 . Their age at arrival in their adoptive family, their scores of mental and psychomotor development, head circumference, weight/height, and height/age ratios were similar. The proportions of children showing neurological signs at arrival were also similar in both subsamples. Moreover, our sample of IA children is comparable to the population of children adopted from foreign countries between 1990 and 1999 in the province of Québec since the majority of them were adopted from China (42.6%), and almost three quarters of all the adoptees were girls (72.5%) [42].

The comparison sample was drawn from an original convenience sample used to assess the psychometric properties of the Dominic Interactive (DI) [43]. This sample included 585 children aged 6–11 years recruited from the community and psychiatric clinics. From the community subsample, we first selected 6- to 8-year-old French-speaking children ($N = 91$) and then families with average or high income and a biological mother who held a college or university degree ($N = 41$, 23 girls). Children's mean age at time of assessment was 7 years and 8 months ($SD = 10$ months; range = 6.5–8.8 years).

Procedure

Within a few weeks after arrival in their adoptive family, children were met at the Clinique de pédiatrie internationale de l'Hôpital Sainte-Justine in Montréal and at the Laboratoire d'étude du nourrisson at l'Université du Québec à Montréal (UQAM) for medical and psychological assessment (for a detailed description, [8]). For the follow-up at age 7, children were again met at UQAM with their parents. Each assessment phase was approved by the Ethic Committees of UQAM and Hôpital Sainte-Justine. Informed consent was obtained from parents, and from children at school-age.

The children from the comparison sample were recruited from 15 regular primary schools in the Montréal urban area in 2000–2001. They completed the DI at school. In this community sample, children attending special programs were not solicited, leading to a prior exclusion of children presenting severe learning disorders, mental retardation, and other developmental disorders. The study was approved by the Ethic Committee of Hôpital Rivière-des-Prairies. Parents and children provided signed informed consents.

Measures

Children's Health and Developmental Status at Arrival

The data pertaining to children's health status include medical data (e.g., neurological signs) and anthropometric measures (height, weight, and head circumference percentiles, North American norms, [44]). The Waterlow criteria were used to calculate weight/height and height/age ratios as indices of the degree of malnutrition [45]. Neurological signs included symptoms of foetal alcohol syndrome, hemiplegia, epilepsy, cerebral palsy, or organic disease with neurological problems.

Children's mental and psychomotor development was assessed using the Bayley Scales of Infant Development [46]. These scales provide normalized developmental indexes for 1- to 42-month-old children. Since mental and psychomotor scores were highly correlated, $r = .63$, $p = .000$, they were combined into one score of developmental status. Continuous variables (developmental score, weight/height ratio, height/age ratio, age at arrival) and dichotomous variables (head circumference <5th percentile or ≥ 5 th, and presence/absence of neurological signs) were used in the analyses. Children's characteristics at arrival in Québec are presented in Table 1.

Dominic Interactive

The Dominic Interactive (DI) is a computerized pictorial self-report questionnaire used to assess the most frequent internalizing and externalizing symptoms in children aged 6–11 [47]. The computer program displays a series of 94 items illustrated by one or more pictures, with a voiceover repeating a simple question. Drawings and simple questions are used to maximize children's understanding and to help them convey the feelings, thoughts, and behaviors they might be reluctant to express verbally. Children have to answer each item by clicking the Yes or No boxes indicating whether they feel, think, or act like Dominic, the protagonist in all the pictures. Each question refers to a symptom of the following disorders from the DSM-IV-TR [48]: major depressive disorder (MDD; 20 items), generalized anxiety disorder (GAD; 15 items), separation anxiety disorder (SAD; 8 items), specific phobias (SPH; 9 items), attention-deficit/hyperactivity disorder (ADHD; 19 items), oppositional defiant disorder (ODD; 9 items), and conduct disorder (CD; 14 items). With an average running time of 15 min, the DI was developed considering young children's attention span.

For each of the Dominic Interactive symptom scales, two clinical cutpoints have been determined based on the distribution of symptom scores obtained from a convenience sample. Lower cutpoints are one standard deviation from the mean and higher cutpoints

Table 1 Children's characteristics at arrival in their adoptive family ($N = 95$)

	<i>M</i> or <i>N</i>	<i>SD</i> or %
Height/age ratio	95.56	3.92
Weight/height ratio	92.62	7.73
Mental development	81.80	13.22
Psychomotor development	78.41	16.70
Age at arrival (in months)	11.00	3.57
Small head circumference	35	36.8%
Presence of at least one neurological sign	12	12.6%

two standard deviations above [43]. Validation studies of the DI were conducted on children aged 6–11 years and psychometric properties were found to be satisfactory with internal consistency ranging from .59 to .91 [31, 43, 49]. Symptom scores were used in most of our analyses and, following Linares et al. [50], the percentages of children reaching the probable clinical range, based on the lower cutpoints.

Child Behavior Checklist (CBCL)

The French version of the CBCL (ASEBA; [51] was completed by the mothers. The CBCL is a 118 items questionnaire used to assess child behavior problems. The parent responds to each question using a 3-point scale (*not true, somewhat or sometimes true, and very true or often true*). The CBCL provides scores for eight specific syndromes and can also generates a *total problem* score based on the combination of three subscales: *internalizing problems* (anxious/depressed, withdrawn/depressed, somatic complaints), *externalizing problems* (rule-breaking behavior, aggressive behavior) and *other problems* (other problems, thought problems, social problems, and attention problems). Internalizing and externalizing standardized *t* scores were used in the analysis.

Results

Because the distribution of some symptoms scores on the DI was positively skewed (specific phobia, depression, and opposition), square-root and log transformations were applied to normalize the distribution [52]. The symptom scores for conduct disorders could not be transformed and were dichotomized using the lower cutpoint. Descriptive statistics for children's self-reports on the DI are presented in Table 2.

Group Differences

Because the number of boys and girls differed in the two groups, IA children and their non-adopted peers were first compared using a group \times sex MANOVA on the symptoms

Table 2 Mean scores, standard deviations, and percentages of self-reported behavior problems in IA and non-adopted children

Behavior problems	IA children (<i>N</i> = 95)			Non-adopted children (<i>N</i> = 41)		
	<i>M</i>	<i>SD</i>	%	<i>M</i>	<i>SD</i>	%
Internalizing	15.32	9.09	43.2 [†]	14.68	9.73	28.6
Specific phobia	2.06***	1.65	32.6**	1.00	1.18	7.3
Separation anxiety	2.83	1.94	22.1	2.63	1.95	17.1
Generalized anxiety	5.31	3.33	10.5	5.66	3.77	17.1
Depression	5.12	3.82	6.3	5.39	4.23	12.2
Externalizing	8.31	7.06	30.5	7.90	7.01	22.0
Opposition	2.52	2.41	22.1	1.88	1.8	12.2
ADHD	4.67	4.21	10.5	5.39	4.95	17.1
Conduct disorder	1.12	1.79	13.7	.63	1.2	7.3

The percentages of children presenting behavior problem are based on the lower cutpoints; [†] $p < .10$; ** $p < .01$; *** $p < .001$

scores of internalizing and externalizing problems. The analysis revealed no significant group \times sex interaction, $F(2, 131) = .01$, *ns*, and no main effect for group, $F(2, 131) = .02$, *ns*, or for sex, $F(2, 131) = 2.12$, *ns*. The percentages of children above the probable clinical cutpoint were also compared using Chi-square analysis. Results showed no difference for externalizing disorders, $\chi^2(1, 136) = 1.05$, *ns*. However, IA children tended to report more internalizing problems compared to their non-adopted peers, $\chi^2(1, 136) = 3.23$, $p = .07$, $\eta^2 = .02$.

We then performed a second MANOVA in order to compare the symptom scores of both groups for the following disorders: specific phobia, separation anxiety, generalized anxiety, depression, opposition, and ADHD. Because preliminary analysis revealed no significant main effect for sex and no interaction with sex, sex of the child was not included in this MANOVA. A main effect for group was found, $F(6, 129) = 5.01$, $p = .000$, $\eta^2 = .19$. Adopted children reported significantly more symptoms of specific phobia than their non-adopted peers, $F(1, 134) = 17.04$, $p = .0001$, $\eta^2 = .11$. Chi-square analyses were also used to compare the number of children above the probable clinical cutpoint for each specific disorder. Only one significant difference was found between adopted and non-adopted children: the number of children presenting specific phobia was higher among adopted children, $\chi^2(1, 136) = 9.79$, $p = .002$, $\eta^2 = .07$. Analyses based on the number of children in the clinical range (above the higher cutpoint) indicated no group differences. There was no difference in the number of boys and girls presenting each specific disorder.

Correlations Between Mothers' and Children's Reports

Correlations between mothers' and children's reports of internalizing and externalizing problems were examined using Pearson coefficients. Standardized t scores of internalizing ($M = 53.97$, $SD = 10.86$) and externalizing ($M = 54.66$, $SD = 9.55$) problems on the CBCL and raw scores of internalizing and externalizing problems on the DI (Table 2) were used in the analyses. A significant correlation was found for externalizing problems, $r = .35$, $p = .001$, but not for internalizing problems, $r = .03$, *ns*.

Children's Health and Developmental Status at Arrival and Behavior Problems

Pearson correlations were used to examine the relationship between children's health, developmental status, and age at their arrival in Québec and their symptoms of externalizing and internalizing problems at school-age (Table 3). Indices of children's nutritional status and psychosocial deprivation before adoption, such as height/age ratio, weight/height ratio, head circumference, neurological signs, and developmental status, were used in these analyses, as well as children age at arrival in their adoptive country.

Significant correlations were found between children's self-reports of behavior problems at school-age and their condition at arrival in their adoptive family. Low weight/height ratio was significantly related to higher symptoms scores of specific phobia, depression, and conduct disorders. Low height/age ratio and small head circumference were also significantly correlated to symptoms scores of conduct disorders.

A multiple regression analysis was conducted to determine the amount of variance explained by each pre-adoption factor for the development of conduct problems. The multiple regression is significant, $R^2 = .14$; $F(3, 91) = 4.77$, $p = .004$, but only weight/height ratio is a significant predictor, $t(91) = 2.11$, $p = .04$. It accounts for 21% of the variance. Height/age ratio and head circumference, although not significant, contribute respectively to 16 and 12% of the variance.

Table 3 Correlations between IA children's health and developmental status upon arrival and self-reported behavior problems at school-age

Children's condition	IA children's self-reports						
	Internalizing				Externalizing		
	MDD	GAD	SAD	SPh	ADHD	ODD	CD
Neurological signs	.20	.14	.02	.11	.13	.05	.13
Small head circumference	.14	-.01	-.04	-.10	.13	.03	.27**
Weight/height ratio	-.21*	-.14	-.18	-.23*	-.16	-.04	-.28**
Height/age ratio	-.18	-.16	-.13	-.08	-.14	-.19	-.22*
Developmental status	-.06	-.09	-.05	-.12	-.06	-.12	-.14
Age at arrival	.02	.02	-.02	.02	.06	-.05	.12

MDD major depressive disorder, *GAD* generalized anxiety disorder, *SAD* separation anxiety disorder, *SPh* specific phobias, *ADHD* attention deficit/hyperactivity disorder, *ODD* oppositional defiant disorder, *CD* conduct disorder

* $p < .05$; ** $p < .01$

Discussion

The majority of our sample of IA children was well adjusted, a finding that is congruent with Juffer and van IJzendoorn's [15] meta-analysis. However, in contrast to Wiik et al. study [40], IA children did not report significantly more internalizing, externalizing, and ADHD symptoms than non-adopted children, although a tendency towards higher level of internalizing symptoms was observed. The fact that our sample of IA children was younger at time of assessment and had spent less time in institutional settings prior to adoption could account for the discrepancies between the two studies. Also note that a large proportion of the children in our sample consisted of girls adopted from China. Chinese adoptees do not generally show high rates of behavior problems [53].

However, more detailed analyses reveal that IA children reported more symptoms of specific phobia than their non-adopted peers. Anxiety disorders are among the most common psychiatric problems experienced by school-aged children [54]. Among all the anxiety problems, specific phobia has the earliest age onset with most cases emerging in childhood before the age of 12 [55]. Generalized anxiety disorders usually appear later than specific phobias. The stressful conditions IA children have endured prior to adoption could in part explain their higher scores of specific phobia. According to the Early Experience, Stress, and Neurobehavioral Development Research Network, caregiving experienced early in life regulates the activity of critical stress-sensitive systems, which in turn influences the development of systems involved in rapid appraisal and response to threat [56]. Low-responsiveness caregiving, as often found in orphanages, affects the stress-response (e.g., cortisol), the frontal-regulatory systems (EEG asymmetry), and the threat-response (behavioral inhibition system-BIS), throughout development, resulting in chronic stress.

According to Gray [57], the BIS is linked to the development of fears: when an individual is confronted to aversive, novel, and/or unpredictable stimuli, the BIS is activated and fear arises. Because the BIS is altered by early experiences of deprivation, IA children might be prone to behavioral inhibition and therefore to the development of specific phobias. Inhibited children have been shown to have higher heart rates and greater heart-rate acceleration under stressful and novel conditions than uninhibited children, making

them at risk to develop anxiety disorders, particularly specific phobias [58]. Therefore, inconsistent and unstable caregiving prior to adoption could lead to the development of specific phobias in IA children.

But the post-adoption environment may also contribute to the maintenance of these anxiety symptoms. Overprotectiveness and parenting control are associated with anxiety problems in childhood [54, 59], especially with specific phobia [55]. According to Levy-Shiif, Zoran and Shulman [60], parents of IA children are more overprotective, intrusive, and controlling than other adoptive parents. Children who are severely underweight when arriving in their adoptive family may be perceived as fragile by their parents, who then become overprotective and controlling. These parenting practices may therefore enhance or maintain children's anxiety symptoms.

As expected, our results also indicate that IA children's health status at arrival in their adoptive family was related to their behavior problems at school-age. More specifically, weight/height ratio was negatively related to self-reported symptoms of specific phobia, depression, and conduct disorders. In addition, symptoms of conduct disorders were negatively related to head circumference and height/age ratio at time of adoption. These anthropometric measures are indicators of chronic malnutrition and psychosocial deprivation [11] and are known to be related to mental and psychomotor development in IA children [8, 12].

Malnutrition inhibits brain growth during the early years of life and may contribute to the development of behavior problems [61]. Compared to controls, children with malnutrition at age 3 have been found to show more externalizing disorders (anti-social, aggressive, and hyperactive behaviors) at ages 8, 11, and 17 [61]. By impairing the development of brain mechanisms, especially those involved in the regulation of emotion and of impulsive aggressive behavior and cognitive functioning, early malnutrition could predispose to externalizing behavior problems [61]. Although malnutrition is an important factor, the lack of stimulation often experienced in orphanages, and the absence of stable caregivers with whom to form an attachment relationship may also have a longterm impact on children's psychosocial adjustment. Research has shown that the abnormal growth patterns observed in institutionalized children are not only due to malnutrition but also to abnormal growth hormone secretion-responsiveness due to psychosocial deprivation [62]. Johnson [62] further argues that the stress related to neglect may play a larger role in the child's growth than nutritional deprivation.

However, we must emphasize that the correlations found between children's self-reports of behavior problems and their condition at arrival in their adoptive family although significant are modest. Other factors such as children's post-adoption environment may have a stronger influence on their self-evaluation than pre-adoption adversity. Self-reported symptoms of internalizing and externalizing problems could be related to recent events or to the quality of children's relationships with their adoptive parents, siblings, and peers. This possibility should be investigated. Our findings also indicate that age at time of arrival is not significantly correlated to children's behavior problems at school-age. The limited range in children's age at arrival (from 4 to 18 months) could account for this lack of association. Studies showing more behavior problems in children adopted at a later age used cutoff points of 18–24 months [63].

A significant correlation was found between children and mothers' reports but only for externalizing symptoms, a finding similar to Moss and her colleagues [33]. Parent-child agreement is generally higher for externalizing than for internalizing disorders (e.g., [33, 64–67]). The behavioral expression of internalizing problems, such as tension and irritability, can easily be misinterpreted by parents and contribute to low parent-child

concordance [68]. Moreover, externalizing disorders are more easily observed whereas a child's private thoughts or feelings can be difficult to identify [69]. Adults and children also have their own unique characteristics that can influence their reporting skills [39].

There are some limitations to the present study. The first one is the small sample size of the comparison group, which limited the power to detect potential differences between adopted and non-adopted children. We also used a convenience sample as the comparison group instead of a representative sample from the general population, limiting the generalization of our findings. Moreover the DI, like other self-report measures designed for young children, does not take into account all DSM criteria, especially time-related criteria and impairment, and should not be used for diagnostic classification. Also, reliability and validity of children's report may vary depending on the type of symptoms assessed.

Despite these limitations, our study is the first one to document specific behavioral and emotional problems in young IA children using a self-report measure, providing new insight into adopted children's perception of their psychological adjustment. Our findings highlight the importance of using self-report measures when assessing children's behavior problems, especially internalizing symptoms. The sociodemographic characteristics of the families were also considered when comparing our sample of IA children with non-adopted children. Another strength of the present study is the use of a longitudinal design and the assessment of children's health and developmental status by health care professionals soon after their arrival in Québec.

In conclusion, IA children reported more symptoms of specific phobia than their non-adopted peers. Significant correlations were also found between self-reported symptoms of internalizing and externalizing problems and children's characteristics at arrival in their adoptive family, such as a small head circumference, and low height/age and weight/height ratios. These findings suggest that the long-term impact of pre-adoption adversity deserves to be further investigated. We must nevertheless emphasize that the majority of internationally adopted children seemed to be well adjusted at school-age. Although pre-adoption adversity is an important risk factor for psychosocial development, adoption clearly has a positive impact on children's psychological adjustment.

Summary

Internationally adopted (IA) children often endure severe conditions of deprivation before arriving in their adoptive family. To further investigate the long-term impact of pre-adoption adversity on international adoptees, a self-report measure of externalizing and internalizing symptoms was used at school-age. Children's self-reported problems were compared to their non-adopted peers'. The relationship between children and adoptive mothers' reports of behavior problems was also examined. The sample consisted of 95 IA children and their mothers. Children's health and developmental status were assessed within a few weeks after arrival in their adoptive family (range = 4 to 18 months). Anthropometric measures, such as low height/age and weight/height ratios, and head circumference below 5th percentile, were used as indices of malnutrition and psychosocial deprivation. At age 7, children's symptoms of externalizing and internalizing disorders were assessed using the Dominic Interactive, a self-report measure, and the Child Behavior Checklist, completed by the mothers. The symptom scores of internalizing and externalizing disorders was similar in adopted and non-adopted children, although a trend towards more symptoms of internalizing disorders was observed in IA children. More detailed analyses reveal that IA children reported more symptoms of specific phobia than their

peers. A significant correlation was found between mothers' and children's reports but only for externalizing problems. Children's self-reported behavior problems were correlated with their condition at arrival in their adoptive family. Indices of malnutrition and deprivation, such as low height/age and weight/height ratios at time of adoption, and head circumference below the 5th percentile, were related to higher scores of internalizing and externalizing symptoms. Our results emphasize the importance of considering children's perception of their psychological adjustment and to further investigate the long-term impact of early risk factors on international adoptees.

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