Journal of Applied Developmental Psychology 42 (2016) 49–57

Contents lists available at ScienceDirect

Journal of Applied Developmental Psychology

Pre-adoption adversity and behavior problems in adopted Chinese children: A longitudinal study

Tony Xing Tan [a,*], Kofi Marfo [b]

[a] University of South Florida, United States
[b] Institute for Human Development, Aga Khan University (South-Central Asia, East Africa & UK), Nairobi Campus, Kenya

ARTICLE INFO

Article history:
Received 16 December 2013
Received in revised form 17 November 2015
Accepted 19 November 2015
Available online 8 December 2015

Keywords:
Pre-adoption adversity
Adopted children
Longitudinal data
Multilevel modeling
Behavior problems

ABSTRACT

In this paper, we report (1) trajectories in adopted Chinese children's behavior problems over six years, (2) how pre-adoption adversity predicted Wave 1 behavior problems and the rate of behavioral change in subsequent Waves, and (3) the predictive importance of age at adoption relative to four psychosocial measures of pre-adoption adversity. Four waves (across six years) of data on 1285 adopted children ($M_{\text{age at adoption}} = 16.40$ months, $SD = 15.40$; $M_{\text{age}} = 4.89$ years, $SD = 2.96$ at Wave 1) were collected from adoptive mothers with the Child Behavior Checklist (CBCL). At Wave 1, data on age at adoption, and four psychosocial measures of pre-adoption adversity were collected: physical signs/symptoms (e.g., sores) of deprivation, developmental delays at arrival, refusal/avoidance behaviors, and crying/clinging behaviors during the first three weeks of adoption. Multilevel modeling yielded three key findings: First, the adopted Chinese children's CBCL scores increased over time. Second, signs/symptoms, refusal/avoidance and crying/clinging behavior predicted differences in the adopted children's Internalizing, Externalizing and Total CBCL scores at study entry; developmental delays at arrival predicted differences in Internalizing and Total CBCL scores at study entry. Crying/clinging scores also predicted rates of change in Internalizing and Total CBCL scores. Refusal/avoidance scores also predicted rates of change in Internalizing, Externalizing and Total CBCL scores. Finally, the four psychosocial measures of pre-adoption adversity outperformed age at adoption as predictors of CBCL scores at study entry and the rate of change in CBCL scores in subsequent Waves.

International adoption has been considered a natural experiment in studying such topics as the long-term consequences of early adversity. Research on Romanian children adopted into the United Kingdom (e.g., Beckett et al., 2006; Kreppner et al., 2007; Rutter, O'Connor, & the ERA Study Team, 2004) and Canada (Fisher, Ames, Chisholm, & Savoie, 1997; Marcovitch et al., 1997) has shown remarkable convergence of findings on some of the most fundamental questions pertaining to the role of early experiences in children's long-term development. For example, even in the face of significant recovery from institutional deprivation, there is marked heterogeneity in adopted children's long-term socio-emotional and cognitive outcomes (e.g., McClean, 2003). Unfortunately, the extent of pre-adoption adversity has not been systematically measured multi-dimensionally or at different levels of severity.

Adoptions from China offer remarkable opportunities to further investigate how varying degrees of pre-adoption adversity might foreshadow later outcomes. Although China's state-run Child Welfare Institutes (CWIs), through which most Chinese children are adopted, have tended to be qualitatively superior to the Romanian institutional environments of the 1980s and 1990s, the quality of early experiences for children in China's CWIs can vary as a function of such factors as child–caregiver ratios and living conditions (Johnson, Huang, & Wang, 1998). Upon adoption, differences have been frequently observed in these children's developmental attributes. For instance, in examining the developmental status of 192 Chinese children adopted into the United States, Miller and Hendrie (2000) found no cases of prenatal drug/alcohol exposure, a finding which distinguishes these children from children adopted from Russia (Miller et al., 2006). Miller and Hendrie (2000) also found that the most prevalent delays (i.e., delays in gross and fine motor skills) occurred among just about half of the children; social–cognitive delays occurred among about one-third of the children, and global delays occurred among 41% of the children. The rest of the children were developmentally on target.

Some other features of adopted Chinese children further differentiate this population. Unlike other internationally adopted children, those adopted from China are mostly infants at the time of adoption (US Department of State, 2015). The annual influx of several thousand Chinese infants into US homes makes it possible to design and fine-tune studies over time to address recurring and emerging questions on the broader subject of adoption as a natural experiment to study the developmental consequences of early adversity. It permits

* Corresponding author at: EDU105, 4202 E. Fowler Ave., University of South Florida, Tampa, FL, United States. Tel.: +1 813 974 6496.
E-mail address: tan@usf.edu (T.X. Tan).

http://dx.doi.org/10.1016/j.appdev.2015.11.006
0193-3973/

researchers to obtain near point-of-adoption measures of observable indicators that might more closely index the magnitude of pre-adoption adversity than the measure used conventionally in much of the literature as a proxy for pre-adoption adversity: age at adoption. Our research in this area has been driven by a desire to understand the role of psychosocial indicators of pre-adoption developmental adversity in adopted children's post-adoption development.

Capitalizing on adoptions from China, we have begun to address questions about the role of pre-adoption adversity on post-adoption outcomes (e.g., Tan, Marfo, & Dedrick, 2010). We have focused on how child-level psychosocial indicators of pre-adoption adversity and factors within the post-adoption environment work independently or transactionally to influence the long-term effects of institutional adversity on behavioral adjustment. In the present paper, we address three questions on how child-level indicators of pre-adoption adversity might predict long-term behavior problems among children adopted from China, using four waves of large-scale data accumulated over a period of six years.

Question 1 What is the nature of the trajectories of behavior problems observed in a sample of adopted Chinese children across four time points over a six-year period?

Question 2 How do indicators of pre-adoption adversity predict behavior problems at study entry and the rate of change in behavior problems over time?

Question 3 How adequately does age at adoption, in comparison with psychosocial measures of pre-adoption adversity, predict behavior problems over time?

Long-term behavioral outcomes of international adoptees

Longitudinal studies have shown that from early childhood to late adolescence, adopted children experience an increase in behavior problems (e.g., Cohen & Farnia, 2011; Kreppner et al., 2007; Stams et al., 2000; Verhulst & Versluis-den Bieman, 1995). In our research, we have found that adopted Chinese girls' Internalizing and Total CBCL scores increased significantly over a two-year period from 2.7 to 4.8 years (Tan, 2011). Similarly, Cohen and Farnia (2011) found that adopted Chinese girls in their study experienced an increase in internalizing symptoms over the course of 18 months (i.e., from about six months post adoption when the adoptees were about 1.5 years of age to 24 months after adoption when the adoptees were about three years old). Verhulst and Versluis-den Bieman (1995) found that from 11–14 and 14–17 years, both male and female internationally adopted children in the Netherlands ($N = 1538$) experienced an increase in behavior problems but the adopted boys scored higher than the adopted girls in behavior problems at the beginning of the study and at the three-year follow-up. For Romanian children adopted into Canada, Audet and Le Mare (2011) found that children who spent ≥8 months in orphanages prior to adoption showed higher levels of inattention/over-activity at ages 4.5, 10.5 and 17 years, compared to children adopted ≤4 months of age. Overall, then, the existing literature suggests that as internationally adopted children get older, their risk for elevated behavior problems also increases. Generally, however, adopted boys appear to be at a higher risk of developing behavior problems than girls.

The majority of adopted children appear to show significant catch-up in physical, social–emotional and cognitive development within a few years after adoption (Van IJzendoorn, Bakermans-Kranenburg, & Juffer, 2007). However, there is evidence of persistent effects from early adversity after years of higher quality childrearing in adoptive homes (e.g., Kreppner et al., 2007). Due to a lack of systematic measures to capture adopted children's pre-adoption experiences, age at adoption has typically been used as a proxy for the length of time spent in suboptimal environments, even when age at the time of institutional placement is unknown. Implicit in this use of age at adoption is the assumption of a linear relationship between duration of institutional exposure and magnitude of deprivation such that the longer children have been institutionalized, the greater their presumed risk of developmental damage and, hence, the more limited their prospects for favorable post-adoption outcomes. For children placed in an institutional setting shortly after birth and adopted directly from there, age at adoption might serve as a reasonably appropriate measure of duration of exposure to deprivation (Beckett et al., 2006; Marcovitch et al., 1997). This assumption is also reasonable for children raised in universally deplorable conditions (such as the Romanian orphanages) soon after birth. Almost all earlier studies of children adopted from Romania have shown that children adopted at a younger age experience more favorable outcomes (see Fisher et al., 1997; Marcovitch et al., 1997; Morison, Ames, & Chisholm, 1995).

There are, however, fundamental challenges in the use of age at adoption as the sole measure of pre-adoption adversity (Cederblad, Höök, Irhammar, & Mercke, 1999). For many children adopted internationally, the magnitude of deprivation effects cannot be legitimately inferred from duration of institutionalization due to differences in the quality of institutional caregiving across time and institutions (Gunnar, Bruce, & Grotevant, 2000). Additionally, it is also possible for children to enter an institution with pre-existing constitutional limitations (Miller et al., 2006). These characteristics are likely the reason why among children adopted from China, research has not found a significant correlation between age at adoption and later social–emotional and/or behavioral development (Rojewski, Shapiro, & Shapiro, 2000; Tan & Marfo, 2006).

Evidence from the work of the English and Romanian Adoptees (ERA) research team buttresses the case for our ongoing search for relatively more direct measures of the impact of pre-adoption adversity at the time of adoption. Specifically, the ERA team has reported that the presence of minimal vocalization at the time of adoption, even in the form of the ability to imitate speech sounds, is predictive of positive language and cognitive outcomes (Croft et al., 2007), whereas the absence of minimal vocalization is predictive of impaired development at age 11 years (Kreppner et al., 2007). Croft et al. (2007) characterized the presence of minimal language as "a rough index of the degree of institutional deprivation" that likely reflects the level of language and cognitive reserve that had "survived the effects of institutional deprivation" (p. 41). Other earlier efforts to obtain psychosocial measures of deprivation effects have been quite limited in scope. They have largely entailed the use of single items in the form of parent's suspicion of pre-adoption abuse and/or neglect (e.g., Groza & Ryan, 2002; Tan & Marfo, 2006; Verhulst, Althaus, & Versluis-den Bieman, 1992).

Our consideration of measures that most likely reflect the effects of pre-adoption institutionalization and other forms of adversity underscores the imperative to carefully consider pre-adoption conditions in studying post-adoption outcomes (Tan et al., 2010). Given that data on pre-adoption conditions are usually unavailable, we have utilized parent-report data to capture four additional dimensions of the potential residual effects of pre-adoption adversity besides age at adoption. The first, labeled Signs and Symptoms, consisted of readily observable physical indicators (e.g., sores) that might be suggestive of the quality of pre-adoption care-giving. The second, labeled Developmental Delays at Arrival, was a measure of gross motor, fine motor, social, and cognitive delays based on parental reporting of results from professional assessments. The third and last, labeled respectively as Refusal/Avoidance and Crying/Clinging behaviors, consisted of child behaviors suggestive of adjustment difficulties during the earliest post-adoption period.

Method

Participants

Participants for the first phase (Baseline/Wave 1) of the study were recruited through internet discussion groups and adoption agencies in