Beyond Preadoptive Risk: The Impact of Adoptive Family Environment on Adopted Youth's Psychosocial Adjustment

Juye Ji
Syracuse University

Devon Brooks
University of Southern California

Richard P. Barth
University of Maryland

Hansung Kim
California State University, Fullerton

Adopted children often are exposed to preadoptive stressors—such as prenatal substance exposure, child maltreatment, and out-of-home placements—that increase their risks for psychosocial maladjustment. Psychosocial adjustment of adopted children emerges as the product of pre- and postadoptive factors. This study builds on previous research, which fails to simultaneously assess the influences of pre- and postadoptive factors, by examining the impact of adoptive family sense of coherence on adoptee's psychosocial adjustment beyond the effects of preadoptive risks. Using a sample of adoptive families ($n = 385$) taking part in the California Long Range Adoption Study, structural equation modeling analyses were performed. Results indicate a significant impact of family sense of coherence on adoptees' psychosocial adjustment and a considerably less significant role of preadoptive risks. The findings suggest the importance of assessing adoptive family's ability to respond to stress and of helping families to build and maintain their capacity to cope with stress despite the sometimes fractious pressures of adoption.

Extensive adoption research suggests that adopted youth are more likely than nonadopted youth to exhibit behavioral and emotional problems (Cubito & Brandon, 2000; Slap, Goodman, & Huang, 2001). Further, adopted youth are overrepresented in clinical populations and mental health service settings (Juffer & van IJzendoorn, 2005; Miller et al., 2000). While it is fairly well accepted that adopted children have greater risk for maladjustment than nonadopted children, researchers have also turned their attention to identifying risk factors that predispose adopted children to adverse outcomes (Barth, 2002; Rushton, Mayes, Dance, & Quinton, 2003; Simmel, Brooks, Barth, & Hinshaw, 2001; van der Vegt, van der Ende, Ferdinand, Verhurlst, & Triemeier, 2009). Adopted children, particularly those who come out of the foster care system, often are exposed to preadoptive stressors—such as prenatal exposure to stress hormones (Rutter et al., 2004) and drugs (Cadoret & Riggins-Caspers, 2000; Crea, Barth, Guo, & Brooks, 2008), child maltreatment (Grotevant et al., 2006; van der Vegt, van der Ende, Kirschbaum, Verhulst, & Tiemeier, 2009), and out-of-home placements (Simmel, Barth, & Brooks, 2007)—that increase their risk for psychosocial maladjustment following adoptive placement.

Despite increased risk for a variety of negative outcomes in adoptees, the extant literature indicates that a sizable proportion of adopted children with preadoptive risk factors can and do exhibit healthy functioning following adoptive placement (Juffer & van IJzendoorn, 2005; Rushton & Dance, 2006; van IJzendoorn & Juffer, 2006). This phenomenon raises important questions about why some adoptees fare better than other adoptees and what factors might explain variability in adoptees' psychosocial adjustment and promote resilience in adoptees. To answer these questions, it is critical to understand how postadoptive individual or environmental factors contribute to the adjustment of adopted children and youth.

For the most part, previous studies that examined predictors of adoptees' psychosocial adjustment establish correlations between adoptees' adjustment and the presence or absence of

Correspondence concerning this article should be addressed to Juye Ji, School of Social Work, College of Human Ecology, Syracuse University, Syracuse, NY 13244. Electronic mail may be sent to juyeji@syr.edu.

preadoptive risks and/or postadoptive factors (Grotevant, Wrobel, van Dulmen, & Mcroy, 2001; Jaffari-Bimmel, Juffer, van IJzendoorn, Bakermans-Kranenburg, & Mooijaart, 2006). Yet, empirical research has not illuminated precisely how pre- and postadoptive risk factors, taken together, shape outcomes for adopted children. Further, although the literature on pre-adoptive risks is expanding rapidly, relatively little empirical knowledge exists on the role that adoptive family environment plays in shaping developmental outcomes of adopted youth, particularly those with various preadoptive risk factors.

Clearly, there is a need for a more balanced and comprehensive picture of adoptees' outcomes incorporating the influence of both pre- and postadoptive risk and protective factors. Toward this end, the present study examines the impact of adoptive family sense of coherence—an important *postadoptive* factor influencing the development of adopted children—on the psychosocial adjustment of adopted children *beyond the effects of preadoptive risk*. Results of our study shed light on the etiology of psychosocial adjustment in adoptees and provide important empirical data that can be used to inform strategies for recruiting adoptive families and to guide the development and provision of effective postadoption services.

Family Sense of Coherence

Postadoptive experiences that shape children's well-being occur across a child's broader social ecology with family environment and functioning serving as key components of these experiences. Numerous theoretical approaches explain adoptive family functioning and adjustment of adopted children: mother–child attachment, family life-cycle theory, family system theory. Additionally, there have been ongoing efforts to understand adoptive families within a framework of stress coping (Brodzinsky, 1990; Pinderhughes, 1996), largely from a theoretical standpoint, although a small number of empirical investigations have been carried out.

The family stress and coping literature often describes family's capacity to cope with stress and challenge as family sense of coherence (FSOC). Generally speaking, FSOC refers to a family's cognitive orientations, that is, the degree to which a family perceives family life as comprehensible, manageable and meaningful (Antonovsky & Sourani, 1988). From a family resilience perspective, which emphasizes family's ability to withstand and rebound from disruptive life adversity, FSOC is regarded as an important coping resource that can promote family resilience in the face of adversity (Patterson, 2002). A central feature of the FSOC construct, stemming from Antonovsky's (1996) salutogenic model, is that stress in itself is not pathological, but rather it is a normative and necessary stimulus that can introduce factors that promote healthy change and family well-being. Thus, through the lens of FSOC theory, when adoptive families face stress and challenges—both adoption and nonadoption related—the manner in which they cope is considered integral to the adjustment of the adoptive family unit and its members. Thus, less important than the presence of particular risk factors is the capacity of adoptive families to manage risk factors effectively. Although the previous literature provides a conceptual understanding of FSOC, to the best of our knowledge, little empirical research exists on FSOC in general and no research has explicitly examined FSOC in adoptive families.

Factors Influencing the Psychosocial Adjustment of Adopted Children

A large body of empirical research has identified various factors that place adopted children at risk for adjustment problems and disorders. To a large degree, this research addresses pre-adoptive risks that can influence adoptees' psychosocial adjustment. Age at adoption is perhaps the most commonly studied preadoptive risk factor (Stams, Juffer, Rispen, & Hoksbergen, 2000). Studies that have examined the impact of age at adoption show that older age at adoption is positively correlated with behavior problems following adoptive placement. Preadoptive risks often co-occur; it is difficult therefore to disaggregate the unique effect of isolated risk factors. Indeed, researchers suspect that the elevated level of behavioral problems among adoptees placed at older ages cannot be attributed solely to the age at adoption but to adverse early nurturing conditions and experiences such as prenatal drug exposure, child abuse and neglect, and having multiple out-of-home placements.

A wide range of postadoptive factors have also been found to influence adjustment of adoptees, though the exact role and impact of these factors is somewhat murky. Brodzinsky (1993) highlights the importance of familial, interpersonal and societal factors in children's adoption adjustment. Of all these factors, he suggests that the family environment in which adopted children are raised is the most important factor influencing adoptees' adjustment. Attachment security, maternal sensitive responsiveness (Jaffari-Bimmel et al., 2006), positive communications with parents, openness in adoption communication (Brodzinsky, 2006), lower level of parenting stress (Grotevant et al., 2001), and higher levels of perceived parental supports (Rosnati & Marta, 1997) have all been shown to decrease adopted children's risk for maladjustment. Further, adoptees from highly organized, expressive families have been found to be more likely than other adoptees to perceive themselves in positive ways (Kelly, Towner-Thyrum, Rigby, & Martin, 1998).

To date, only a handful of studies have investigated the effects of both preadoptive risk and postadoptive family factors on the adjustment of adoptees (Brooks & Barth, 1999; Cadoret & Riggins-Caspers, 2000; Grotevant et al., 2001; Levy-Shiff, 2001). Cadoret and Riggins-Caspers (2000), for instance, study 197 adoptive families, 95 of whom adopted a child who had a birth parent diagnosed with a substance abuse disorder and as antisocial. The researchers found significant increases in psychiatric symptoms among adoptees who were both prenatally exposed to alcohol and residing in adverse adoptive home environments. Levy-Shiff (2001) examined the psychological adjustment of a nonclinical, community-based sample of 100 Israeli adult adoptees and a matched control group of 100 Israeli non-adoptees. Overall, findings indicate that adoptees were more likely than nonadoptees to have problematic adjustment. Among adoptees, older age of placement was associated with problematic adjustment and greater adoption openness was associated with less problematic adjustment. Family environment variables, however, were more strongly predictive of adjustment than those associated with preadoptive child charac-

teristics. The findings from these two studies strongly suggest the potential interaction between pre- and postadoptive factors in explaining adoptees' adjustment.

Despite their significant contributions, neither study explicates the impact on adoptees' outcomes of a wide range of pre and post factors. Building on previous research, the current study investigates the impact on adoptees' psychosocial adjustment of numerous preadoptive risk factors, including prenatal substance exposure, history of child abuse and neglect, history of multiple out-of-home placement, and older age at adoption, as well as postadoptive family environment (i.e., FSOC). Key research questions for the study are as follows:

1. How do preadoptive risks affect the psychosocial adjustment of adopted children?
2. How does FSOC affect the psychosocial adjustment of adopted children?
3. Do preadoptive risks have indirect effects on the psychosocial adjustment of children through FSOC?
4. Does FSOC moderate the relationship between preadoptive risks and the psychosocial adjustment of adopted children?

Method

Participants

The study sample included adoptive parents participating in the California Long Range Adoption Study (CLAS). Begun in 1989, there have been four waves of CLAS to date. Solicited through their social workers to be part of the study were 2,589 California adoptive parents. Parents interested in participating were asked to provide their contact information and to complete and return a consent form to the team of researchers carrying out the study. Based on information provided, questionnaires were mailed to 2,058 parents; of these, 1,219 (59.2%) were completed and returned. Subsequent waves of CLAS were carried out in 1992, 1996, and 2004. The sample for the current study composed initially of adoptive parents who completed the Wave 4 survey in 2004 ($n = 466$; 38.2% of the initial sample). Adoptive parents included either an original adoptive father or adoptive mother, as determined by the respondent. Parents with children over the age of 19 years at Wave 4 ($n = 79$) were excluded from the present analysis due to the nature of the outcome measures, which were not designed for use with older children. Also excluded were parents who either adopted a child with Down syndrome ($n = 2$), adopted a child internationally ($n = 5$), or did not complete at one of the measures of family or children's adjustment ($n = 1$). The final sample consisted of 379 adoptive parents, representing 81.3% of Wave 4 participants.

An attrition analysis was conducted to determine whether the sample we studied differed in important ways from the original sample. For the analyses, we identified parents in the original sample whose children would be 19 years old or younger at Wave 4 ($n = 947$, 77.6% of initial sample). We then used t tests and chi-square tests to compare parent and child characteristics of subjects in the current sample ($n = 379$) with those who did not participate in Wave 4 but who met the criterion described earlier ($n = 563$). The characteristics we examined include respondent's

family income, respondents' age, and children's age, gender, ethnicity, type of adoption. Additionally, we examined several preadoptive risks older age at adoption, prenatal exposure to drug, multiple out-of-home placement, child maltreatment). No statistically significant differences were found with two exceptions: Nonparticipants tended to be parents who adopted children from public agencies and parents with higher incomes.

Characteristics of the study sample are presented in Table 1. The majority (82%) of respondents were adoptive mothers, with a mean age at Wave 4 of 52 years ($SD = 5.3$ years). Respondents were overwhelmingly Caucasian (91%). Hispanic/Latino respondents comprised 5% of the sample, Black/African American respondents comprised < 2% of the sample, and respondents from other racial/ethnic backgrounds made up the remaining 2%. At the time of the study, 97% of respondents were partnered and families had a mean income of $83,000

Table 1. *Sample Characteristics* (n = 379)

Characteristic	N	%
Respondent's family role		
Mother	304	82.4
Father	65	17.6
Respondent's mean age in years	M = 51.9	SD = 5.3
Respondent' race/ethnicity		
Caucasian	333	91.2
Latino	17	4.7
African American	6	1.6
Other	9	2.5
Relationship status at the time of adoption		
Living with partner or spouse	332	97.4
Single	9	2.6
Mean family income	M = $83,000	SD = $53,000
Child's gender		
Male	184	53.2
Female	162	46.8
Child's mean age	M = 15.5	SD = 1.2
Child's ethnicity		
Caucasian	230	68.7
Latino	59	17.6
African American	22	6.5
Other	24	7.2
Inracial adoption		
Yes	296	85.3
No	51	14.7
Type of adoption		
Independent	173	50.4
Public agency	92	26.8
Private agency	78	22.7
Prenatal substance exposure		
No	194	64.5
Yes	107	35.5
History of maltreatment		
No	283	84.7
Yes	51	15.3
Multiple placement		
No	300	90.4
Yes	32	9.6
Older age at adoption		
No	316	92.9
Yes	24	7.1

(SD = \$53,000). In terms of children's characteristics, slightly more than half (53%) were male and the average age was 15.5 years (SD = 1.2 years). The sample not only consisted of primarily Caucasian adoptees (69%), but also included Hispanic/Latino adoptees (18%), African American adoptees (7%), and adoptees of other racial/ethnic backgrounds (7%). Eighty-five percent of adoptions were same-race or "inracial" adoptions. Half the adoptions were independent adoptions, whereas 27% were public agency adoptions and 23% were completed through private agencies. International adoptions were not included in the study to control for potentially confounding effects related to the nature of domestic United States versus international adoption.

Measures

Preadoptive risk factors. To obtain information on preadoptive risks, respondents were asked whether or not their adopted child had any of the following conditions: (a) prenatal exposure to drugs, (b) history of child maltreatment, (c) multiple out-of-home placements, and (d) age at the time of adoption placement. The distributions of variables regarding the number of out-of-home placements and the age at the time of adoption were positively skewed. Therefore, the variables were dichotomized to increase the power of the analyses to determine statistically significant relationships between and among variables. A dichotomized multiple out-of-home placement variable indicated whether an adopted child experienced out-of-home placement more than once. Older age at adoption was operationalized by indicating whether an adopted child was 2 years old or older at the time of adoption, a cutoff based on the theoretical and empirical literature. Attachment theory argues that the most important stage of quality of relationship with the caregiver occurs within first 2 years and suggests that interrupted caregiver–child relationship may result in negative consequences (Singer, Brodzinsky, Steir, & Waters, 1985). Similarly, findings from earlier studies suggest that adoption of a child after age 2 or older increases the risk for maladjustment of the adopted child (Sharma, McGue, & Benson, 1996). The present study used parental reports of preadoptive risks at Wave 1. As shown in Table 1, 35% of adoptees were reported by parents as prenatally exposed to drugs, 15% had a history of maltreatment, 10% experienced multiple out-of-home placements, and 7% were adopted at an older age. Correlations among the preadoptive risks variables ranged from .28 to .56.

Family sense of coherence. Adoptive families' family environment, namely their family sense of coherence was measured by the Family Sense of Coherence Scale (Antonovsky & Sourani, 1988). The FSOC scale assesses a family's cognitive orientation to family life in terms of the degree of predictability and explicability of family life (the Comprehensibility subscale; e.g., "Do you sometimes feel that there's no clear and sure knowledge of what's going to happen in the family?"), the extent to which family resources are available to meet the demands posed by family stressors (the Manageability subscale; e.g., "When you think of possible difficulties in important areas of family life, is the feeling, there are problems which have no solution?"), and the degree to which family perceives the demands are worthy of investment by family (the Meaningfulness; e.g., "Family life seems to you full of interest"). A total of 26 items of the FSOC scale were scored on a 7-point continuum from 1 to 7. Cronbach's alphas for the Comprehensibility, Manageability, and Meaningfulness subscales in this study are .77, .80, and .85, respectively.

Adoptee's psychosocial adjustment. Two dimensions of adoptees' psychosocial adjustment were measured—externalizing (i.e., behavioral) problems and internalizing problems. To measure the former, we used the Behavior Problem Index (BPI; Zill, 1991). The original BPI is a 28-item parent-report measure of a child's behavior in the previous 3 months. For our study, we used a six-item short version of the BPI that was developed and validated by Moore, Halle, Vandivere, and Mariner (2002). Six items include "Cheat or tells lies," "Has difficulty concentrating, cannot pay attention for long," "Bullies or is cruel or mean to others," "Is disobedient at school," "Has trouble getting along with other children," "Has a very strong temper and loses it easily." Cronbach's alpha for the BPI in this study was .76. We used the Depressive Symptom Subscale of the Depression and Anxiety in Youth Scale (DAYS; Newcomer, Barenbaum, & Bryant, 1994) to measure adoptees' internalizing problem. The scale contains 13 items in a true–false format (e.g., Doesn't seem to enjoy life). Cronbach's alpha for Depressive Symptoms Subscale of the DAYS in this study was .85.

Control variables. Study questionnaires also included items pertaining to the characteristics of respondents, families, and adoptees. All statistical analyses included family role of respondents (i.e., adoptive mother or adoptive father), relationship status (i.e., single vs. partnered/married), respondent's age, and child's gender at Wave 4 as covariates to control for potentially confounding effects of the variables, as established in previous studies.

Analysis

We used SPSS 15.0 for Windows (SPSS Inc., Chicago, IL) to conduct descriptive statistics and Mplus 5.21 (Muthén & Muthén, 2009) to conduct structural equation modeling (SEM) analyses. As a preliminary step, we examined missing and univariate normality of study variables. Data were missing for 24 items from the FSOC scale, the BPI, and the DAYS. Multiple imputations for item-level missing data were generated using NORM (Schafer, 1999) software before creating item-parcel indicators of latent variables and composite scores of subscales of the FSOC scale. Even after producing the imputations, values were still missing for demographic variables and BPI items (29.2% of participants failed to answer at least one item). Analyzing only cases with complete data has the potential to produce biased results (Muthén, Kaplan, & Hollis, 1987); therefore, we aimed to reduce potential bias in our findings by analyzing the total sample. Hence, we used full information maximum likelihood estimation to deal with missingness in the data (Arbuckle, 1996). This strategy allowed us to use the entire sample, resulting in an improved likelihood of minimizing the untoward effects of bias on our findings.

For our SEM analysis, the randomly selected items within each outcome measurement (i.e., BPI, DAYS depression scale) formed item-parcel indicators of latent constructs for behavioral problems and depressive symptoms. Response categories in the BPI (0, 1, and 2) and DAYS (0 and 1) are ordered categorical or dichotomous; thus creating item parcels seemed to be appropriate in order to meet the typical assumptions of normality of distribution in SEM modeling. Another reason we chose to use item parcels was that each parcel is likely to be more strongly related to the latent factor and less likely to be influenced by the idiosyncratic wording and method effects associated with individual items (Marsh, Hau, Balla, & Grayson, 1998). Prior to creating item-parcel indicators, exploratory factor analysis (EFA) was performed to examine the unidimensionality of each behavioral problem and depressive symptom scale. Unidimensionality of the measurement justifies parceling with randomly selected items within each scale. The weighted least squares mean and variance adjusted (WLSMV) estimator was used due to the categorical response options of the BPI and DAYS. The WLSMV is robust against the violation of normality and can be used with ordered categorical data and smaller samples sizes (Brown, 2006). The results of EFA with one factor solution reasonably supported the unidimensionality of the BPI (comparative fit index [CFI] = .98, Tucker–Lewis Index [TLI] = .98, root mean square error of approximation [RMSEA] = .07) and the DAYS depressive symptom scale (CFI = .97, TLI = .98, RMSEA = .05). Rotated factor loadings for the DAYS depression scale ranged from 0.60 to 0.89 and the loadings for the BPI ranged from 0.60 to 0.82. Therefore, randomly selected items within each scale formed three parcel indicators to construct each latent variable of behavioral problem (two items per each parcel indicator) and depressive symptoms (four items or five items per each parcel indicator). Univariate skewness values for the item-parcel indicators of BPI and DAYS and three subscale scores of the FSOC scale ranged from −0.92 to 1.79, whereas kurtosis values ranged from −0.45 to 2.44; therefore, practically acceptable distributions were assumed for all variables.

A series of nested models based on SEM were estimated to test the relationships between and among preadoptive risks, postadoptive FSOC and the outcome variables (see Figure 1). Model 1 tested main effects of preadoptive risks on behavioral problems and depressive symptoms, while effects of FSOC on behavioral problem and depressive symptoms were fixed to be zero. Model 2 examined main effects of FSOC on behavioral problems and depressive symptoms, but effects of preadopted risks were set to be zero. Model 3 estimated main effects of both preadoptive risks and FSOC on adoptive children's behavioral problems and depressive symptoms, but the relationship between preadoptive risk and FSOC was fixed to be zero. Model 4 tested indirect effect of preadoptive risks on the behavioral problem and depressive symptoms through FSOC. This model added freely estimated paths between preadoptive risks and FSOC to Model 3. FSOC was considered as a partial mediating factor between preadoptive risk and adoptive children's psychosocial adjustment.

The final step of our SEM analysis examined whether FSOC moderates (attenuates or accelerates) the effects of preadoptive risk on adoptive children's psychosocial adjustment. Model 5 tested interactions between each preadoptive risk factor and
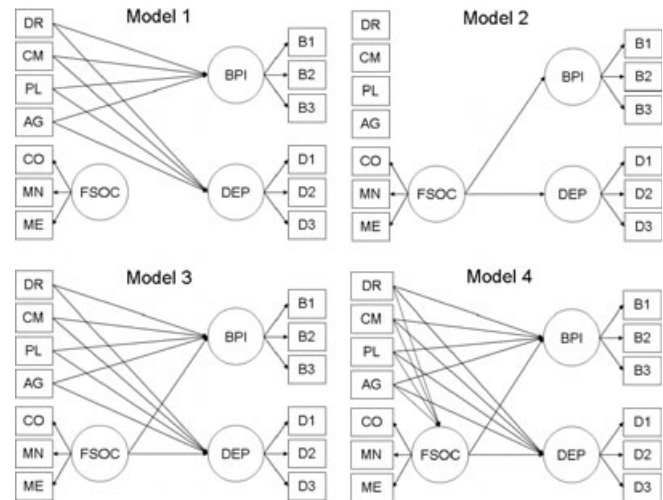

Figure 1. Analytic models of the study.
Note. DR = prenatal exposure to drug; CM = history of child maltreatment; PL = history of multiple out-of-home placement; AG = older age adoption; CO = comprehensibility; MN = manageability; ME = meaningfulness; FSOC = family sense of coherence; BPI = Behavioral Problem Index; DEP = depressive symptoms. For clarity of presentation, covariance between BPI and DEP, and disturbance terms of FSOC, BPI, and DEP are not shown.

FSOC. Model 5 was not compared with the other structural models, because Model 5 was not a nested model. All variables in the final analysis were mean-centered to prevent multicolinearity, and interaction terms were computed using these centered variables (Aiken & West, 1991).

Fit indices such as the chi-square goodness-of-fit statistic, the RMSEA, and CFI were used to evaluate the fit of the model to the data. The study compared the nested structural models using chi-square difference test (likelihood ratio test) to determine the best fitting model. The RMSEA is a fit index to indicate how closely a model fits population covariance matrix and is known to be less sensitive to the sample size than other model fit indexes. A value of about 0.05 or less indicates a close fit and 0.08 or less indicates a reasonable error of approximation (Browne & Cudeck, 1993). Probability that the RMSEA is ≤ .05 (PCLOSE) provides additional information on how closely a model fits data. Second, CFI ranges from 0 to 1, and a CFI values above .95 suggest an acceptable fit between the model and data (Hu & Bentler, 1999).

Results

Level of Adjustment by Pre- and Postadoptive Risks

Four risk group categories were created for each preadoptive risk factor (i.e., prenatal drug exposure, child maltreatment, multiple out-of-home placements, and older age at adoption) based on the presence or absence of the risk factor and the level of FSOC (high or low; see Figure 2). A median split was used to categorize families by high or low level of FSOC. Membership in the "no risk" group indicates that an adoptee had no
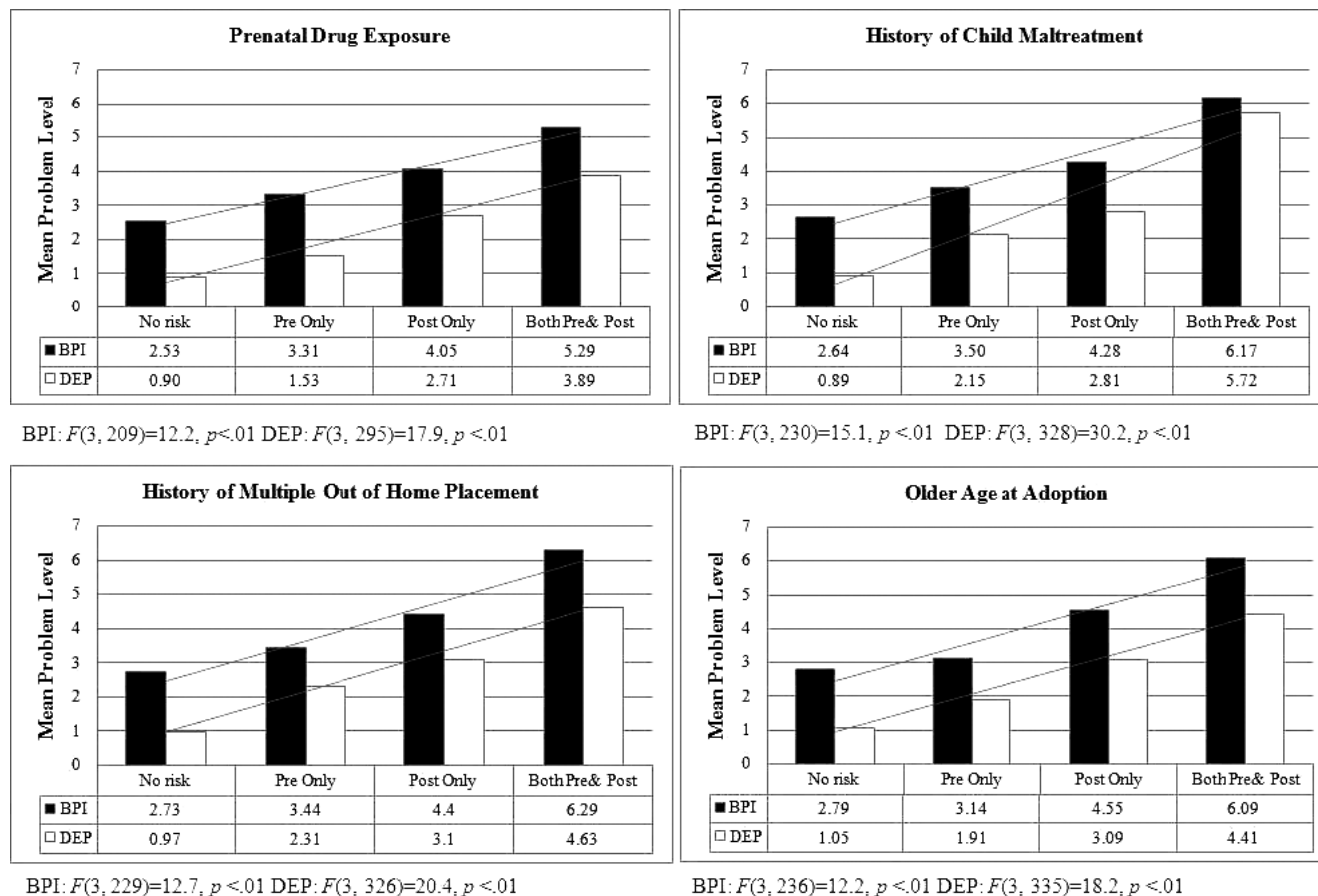
Figure 2. Mean levels of behavioral problems and depressive symptoms by pre- and postadoptive risk.
Note. BPI = Behavioral Problem Index; DEP = depressive symptoms; No Risk = absence of preadoptive risk and high family sense of coherence; Pre Only = presence of preadoptive risk and high family sense of coherence; Post Only = absence of preadoptive risk and low family sense of coherence; Both pre and post = presence of preadoptive risk and low family sense of coherence.

preadoptive risk and resided in a family with high FSOC. The "pre only" group includes adoptees who were exposed to preadoptive risk but lived in families with high FSOC. Adoptees in the "post only" had no preadoptive risk but were reared in families with low FSOC. Finally, adoptees in the "Both Pre and Post" group experienced preadoptive risk and lived in families with low FSOC.

Figure 2 presents mean levels of behavioral problems and depressive symptoms by the four-group categorizations. For all preadoptive risk factors, children with no risk exhibit the lowest levels of behavioral problems and depressive symptoms. The trend lines in the figure reveal a linear increase in behavioral and emotional problems: from no risk to only prerisk, to only postrisk, to both pre- and postrisk. The trend line describes the cumulative effects of pre- and postadoption risks. Importantly, the problem levels are higher for those with postrisk only than for those with prerisk only. Of all preadoptive risk categories, children who experienced multiple out-of-home placements prior to adoption show the highest mean level of behavioral problems. Moreover, children who were maltreated exhibited the highest mean level of depressive symptoms of all four risk fac-

tors tested, and having both child maltreatment and low FSOC risks markedly increases the level of depressive symptoms. A series of one-way analyses of variance (ANOVA) was performed using the four-group classification based on presence of risk factors (i.e., no risk, pre only, post only, both pre and post). F statistics and significance are reported in Figure 2. The no risk group does not differ from the pre only group with the exception of a significantly higher level of depressive symptoms exhibited in maltreated adoptees than nonmaltreated adoptees. No significant difference exists between the pre only group and the post only group. However, the level of problems exhibited by the post only group is significantly higher than the no risk group. Adoptees in the pre- and postgroup exhibit significantly higher levels of behavioral problems and depressive symptoms than all three other groups.

Structural Analyses

Table 2 provides the raw means, standard deviations, and correlations among the focal variables in the primary analyses. Results of the SEM analyses are presented next. Model 1 tests

Table 2. *Bivariate Correlations Among the Study Variables*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Drug exposure	1																
2. Child maltreatment	.400**	1															
3. Multiple placement	.413**	.526**	1														
4. Older age at adoption	.354**	.283**	.277**	1													
5. Dep. Item Parcel 1	.144*	.239**	.201**	.114*	1												
6. Dep. Item Parcel 2	.210**	.229**	.143**	.097	.621**	1											
7. Dep. Item Parcel 3	.104	.207**	.063	.053	.630**	.686**	1										
8. BPI Item Parcel 1	.163*	.176**	.159*	.066	.385***	.512**	.437**	1									
9. BPI Item Parcel 2	.196**	.191**	.162*	.133*	.495***	.519**	.500**	.533**	1								
10. BPI Item Parcel 3	.171*	.160*	.100	.080	.527***	.524**	.521**	.458**	.690**	1							
11. Comprehensibility	-.115*	-.021	-.068	.017	-.349**	-.370**	-.374**	-.354**	-.401**	-.340**	1						
12. Manageability	-.055	-.067	-.056	.040	-.369**	-.409**	-.430**	-.383**	-.392**	-.410**	.750**	1					
13. Meaningfulness	-.124*	-.057	-.074	-.053	-.373**	-.373**	-.367**	-.333**	-.373**	-.340**	.771**	.785**	1				
14. Child's gender	-.009	.128*	.029	.005	.065	.006	.031	-.086	-.040	.011	.019	.000	.046	1			
15. Relationship to child	-.063	-.124*	-.119*	-.060	-.069	-.033	-.012	.020	-.054	-.072	-.024	-.021	-.057	.017	1		
16. Respondent's age	.065	.018	-.039	-.053	.045	.004	.074	.042	-.017	-.050	-.069	-.084	-.108*	-.053	.181**	1	
17. Single parent	-.050	-.154**	-.086	.036	-.069	-.121*	-.172**	-.207**	-.177**	-.093	.140**	.145**	.203**	.025	-.049	-.228**	1
Mean	0.40	0.2	0.1	0.1	0.7	0.5	1.0	1.9	0.8	1.2	42.7	44.6	53.0	0.5	0.2	51.9	0.9
SD	0.48	0.36	0.30	0.26	0.96	0.95	1.37	1.00	0.94	1.15	7.34	6.64	7.09	0.50	0.38	5.34	0.34

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

main effects of preadoptive risks. Results reveal significant relationships between history of prenatal drug exposure and behavioral problems ($\beta = .17$, $p < .05$) and between child maltreatment history and depressive symptoms ($\beta = .20$, $p < .01$). The model fits the data moderately well ($\chi^2/df = 213/78$, CFI = .93, RMSEA = .07, PCLOSE = .00), but explains 10% of the variance in each behavioral problems and depressive symptoms.

Model 2 tests only the main effects of FSOC. FSOC is significantly associated with both behavioral problems ($\beta = -.59$, $p < .01$) and depressive symptoms ($\beta = -.53$, $p < .01$). The fit of Model 2 ($\chi^2/df = 127/84$, CFI = .98, RMSEA = .04, PCLOSE = .96) is significantly superior over Model 1 ($\Delta\chi^2/\Delta df = 90/6$, $p < .01$) and explains 37% of the variance in behavioral problems and 30% of the variance in depressive symptoms. Comparison of Model 1 and Model 2 indicates a stronger influence of FSOC on the psychosocial adjustment of adoptees than preadoptive risks.

Model 3 estimates the main effects of both FSOC and preadoptive risk factors simultaneously. Although maltreatment history still has significant effects on depressive symptoms ($\beta = .22$, $p < .01$), the effects of prenatal drug exposure on behavioral problems become insignificant ($p > .05$). However, FSOC has a greater impact on both adoptees' problem behavior and depressive symptoms than do preadoptive risk factors. Adoptees residing in families with higher FSOC have significantly lower levels of behavioral problems ($\beta = -.57$, $p < .01$) and depressive symptoms ($\beta = -.52$, $p < .01$). Model 3 provides an excellent fit to the data ($\chi^2/df = 103/76$, CFI = .99, RMSEA = .03, PCLOSE = .99) and the fit of the Model 3 is significantly better than Model 2 ($\Delta\chi^2/\Delta df = 25/8$, $p < .01$). Model 3 explains 40% of the variance in behavioral problems and 35% of the variance in depressive symptoms.
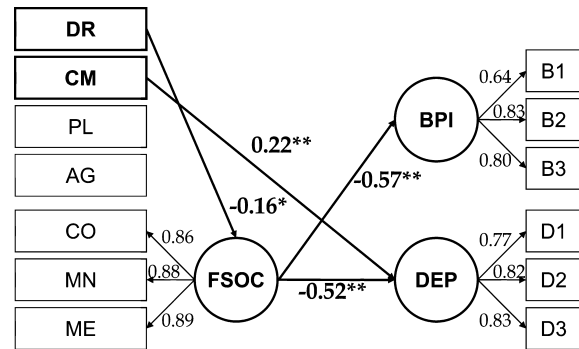

Figure 3. Results of the selected final model (Model 4).
Note. DR = prenatal drug exposure; CM = history of child maltreatment; PL = history of multiple out-of-home placement; AG = older age at adoption; CO = comprehensibility; MN = manageability; ME = meaningfulness; FSOC = family sense of coherence; BPI = behavioral problem; DEP = depressive symptoms. Only significant paths are shown and values given are standardized coefficients. For clarity of presentation, control variables, disturbance terms of FSOC, BPI, and DEP and error terms of the manifest variables are not shown. R^2 for BPI = .40; R^2 for DEP = .35.
*$p < .05$. **$p < .01$.

Model 4 examines the indirect effects of preadoptive risks on the psychosocial adjustment through FSOC. A significant effect of prenatal drug exposure on FSOC is found, indicating prenatal drug exposure is indirectly associated with psychosocial adjustment of adoptees through FSOC (see Figure 3). The significance of the indirect effect of prenatal drug exposure on behavioral problems and depressive symptoms through FSOC was evaluated using Sobel's test. The Sobel test statistic is 2.12 for behavioral problems and 2.15 for depressive symptoms, indicating indirect effects for both types of problems are statistically significant (two-tailed $p < .05$). Model 4 shows excellent fit to the data ($\chi^2/df = 97/72$, CFI = .99, RMSEA = .03, PCLOSE = .99) and explains 40% of the variance in behavioral problem and 35% of the variance in depressive symptoms. Although Model 4 does not provide a statistically better fit over Model 3 ($\Delta\chi^2/\Delta df = 6/4$, $p > .05$) and addition of mediation paths does not contribute much to the explained variance in adoptees' psychosocial adjustment.

The final analysis focuses on whether or not FSOC moderates the effects of preadoptive risks on the adjustment of adoptees. For this analysis, composite scores of FSOC were used to create the interaction terms between preadoptive risk factors and FSOC (Model 5). The model also estimates the indirect effects of prenatal drug exposure on behavioral problems and depressive symptoms through FSOC as the preceding analyses indicated (see Figure 4). Model 5 fits the data well ($\chi^2/df = 104/71$, CFI = .97, RMSEA = .04, PCLOSE = .96) and explains 39% of the variance in behavioral problem and 34% of the variance in depressive symptoms. Results indicate a significant interaction effect between FSOC and maltreatment history in predicting depressive symptoms ($\beta = -.17$, $p < .05$), demonstrating that FSOC moderates the effects of maltreatment history on psycho-
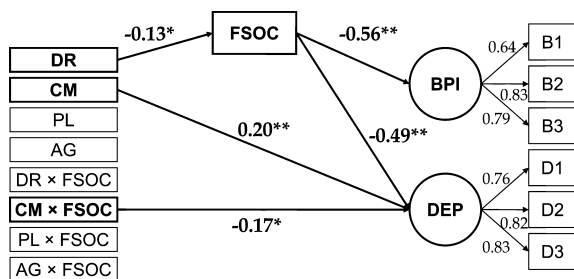
social adjustment of adoptees. No interaction effect is found for the other three preadoptive risks. While there is no interaction between FSOC and prenatal drug exposure, indirect effects of prenatal drug exposure on the behavioral problems and the depressive symptoms through FSOC are still significant as shown in the preceding analyses. Comparisons between Model 5 and the other models were not conducted because Model 5 does not have a nested relationship with the other models.

Discussion

Recall that the first aim of this study was to examine the direct effects of preadoptive risk factors on the psychosocial adjustment of adopted youth. Consistent with findings from previous research, our results reveal a negative impact of preadoptive risks on adoptees' adjustment. Specifically, findings suggest that adopted youth in our sample who were prenatally exposed to drug are at risk for behavioral problems and that those who experienced maltreatment are at risk for depression. These findings intimate that particular types of preadoptive risks may affect adoptees differently. If so, it remains unclear as to what underlying mechanisms shape different outcomes for children with different characteristics. Future research should continue to explore relationships between different preadoptive risks and a wide range of adjustment outcomes.

The second aim of our study was to test whether family sense of coherence affects the adjustment of adopted youth. Results demonstrate that the adoptive family environment, namely family sense of coherence, may have a strong influence on adoptees' psychosocial adjustment. The conclusion is consistent with findings from previous studies that have examined both kinds of risk factors (Levy-Shiff, 2001). Perhaps our finding suggests that adopted youth placed in families with a high family sense of coherence exhibits better psychosocial adjustment compared to children placed in families with a low family sense of coherence.

This finding has two significant implications: It suggests that functional family environments can promote resilience in adopted children with preadoptive risks; it also suggests that adopted children without any preadoptive risk may become at higher risk for maladjustment when they reside in dysfunctional adoptive family environments.

Given our sampling methods and partially cross-sectional design, however, we cannot firmly attribute adoptees' outcomes to FSOC. It is certainly possible that families with particular characteristics or styles adopt children with certain characteristics. Future research should investigate more fully the potential restorative influence of postadoptive family environments on the adjustment of youth with preadoptive risk factors. This could be done by including the FSOC early in longitudinal adoption studies. At the same time, adoptees who have only postadoptive risks should be studied further to better elucidate the influence of postadoptive influence on adoptees.

The third aim of the study was to investigate whether there is an indirect effect of preadoptive risk through family sense of coherence. To this end, we examined whether preadoptive risks contribute to dysfunctional family environments and in turn lead to the maladjustment of adopted children. The history of prenatal drug exposure was predictive of family sense of coherence, and thus evidence was found of preadoptive risk factors indirectly

Figure 4. Moderating effects of family sense of coherence on the relationship between preadoptive risk and psychosocial adjustment (Model 5).
Note. DR = prenatal drug-exposure; FSOC = family sense of coherence (sum score of three subscales); DR × FSOC = interaction term of prenatal drug exposure and family sense of coherence; CM = history of child maltreatment; CM × FSOC = interaction term of child maltreatment and family sense of coherence; PL = history of multiple out-of-home placement; PL × FSOC = interaction term of multiple out-of-home placement and family sense of coherence; AG = older age at adoption; AG × FSOC = interaction term of older age at adoption and family sense of coherence. Only significant paths are shown and values given are standardized coefficients. For clarity of presentation, control variables, disturbance terms of FSOC, BPI, and DEP and error terms of the manifest variables are not shown. R^2 for BPI = .39; R^2 for DEP = .34.
*$p < .05$. **$p < .01$.

effecting adoptees' adjustment through family sense of coherence. Previous studies have established that preadoptive risk is related to adoptive family characteristics such as adoptive parent–child relationships (McDonald, Propp, & Murphy, 2001). This finding suggests that parents who are knowledgeable about the presence of prenatal drug exposure may perceive their control over or coping with family stresses less than the other preadoptive risks. Granted, it remains unclear how parental knowledge of an adopted child's prenatal drug exposure status influences a family's capacity to cope with stress. Unfortunately, our data do not allow us to establish whether prenatal drug exposure results in maladjustment of adopted youth, and if so, through what mechanisms. In our study, the relationship between family sense of coherence and psychosocial adjustment is cross-sectionally estimated. Additionally, reports of prenatal drug exposure occurred 15 years prior to assessment of family sense of coherence. These design and sampling shortcomings preclude us from drawing conclusions about causal relationships between preadoptive risks, adoptive family environment, and later psychosocial adjustment.

Finally, our study investigated whether family sense of coherence moderates (i.e., attenuates) the relationship between preadoptive risks and the psychosocial adjustment of adopted youth. Results indicate that family sense of coherence does in fact attenuate the adverse impact of child maltreatment. Specifically, adoptees who experienced maltreatment prior to adoption show significantly lower risk for depression when growing up in adoptive families with higher levels of coherence. This finding indicates that although preadoptive factors have the potential for increasing risk for behavioral and emotional problems in adopted youth, adoptive families that can respond to and cope effectively with family stressors and crises can protect the vulnerable children, thereby promoting resilience and healthy adjustment in adopted youth. Although we did not find significant interactions between other preadoptive risks and family sense of coherence, we cannot rule out the possibility that associations among preadoptive risks might have led to statistical insignificance in our tests for interaction effects. Similarly, it is possible that the significant relationship between prenatal drug-exposure and family sense of coherence drowned out our ability to detect significant interaction between them.

Implications

All too often, the challenges and perceived negative consequences of adopting children with preadoptive risks are highlighted in the empirical and professional literature, and in the popular media. Misrepresenting or overemphasizing the impact of preadoptive risks undoubtedly leaves the impression in some prospective adopters that children available for adoption with preadoptive risks will inexorably develop behavioral and emotional problems. We hope our findings provide prospective adopters and adoption professionals a balanced view of what can be expected when adopting children with particular characteristics and of factors that are truly instrumental in shaping outcomes for adoptive children and families.

Our study lends strong empirical support for the development and routine provision of pre- and postadoption services designed to strengthen the coherence of adoptive families, especially those that adopt children with special needs conditions or other characteristics that may place adoptees at risk for certain outcomes. With more than 100,000 children being adopted in the United States each year, interest in postadoption services is expanding. The rapidly emerging field of postadoption service needs theoretical and empirical guidance that goes beyond attachment theory, in particular (Barth, Crea, John, Thoburn, & Quinton, 2005). We believe that family sense of coherence perspectives have enormous relevance and potential for guiding the development of family-based postadoption services.

Limitations

Although this study provides important empirical evidence related to psychosocial adjustment in adoptees, several methodological limitations should be explicitly acknowledged. First, our sample includes mostly Caucasian, inracial adoptive families. Considering the substantial and growing diversity in adoptive family forms, it is important to validate our findings with a more heterogeneous group of adoptive families. Furthermore, results of our attrition analysis reveal that parents who adopted children through public agencies and had higher incomes attrited over the four waves of the study. It is possible therefore that the characteristics of those we studied are not representative of the larger adoptive population and the generalizability of the findings may be limited.

Second, we relied on parent reports for our data. Although standardized measures were used to assess postadoptive family environment, relying on parents to provide us with information on preadoptive risk may not be a reliable strategy. Certainly, parents would be knowledgeable about the age they adopted their child, and likely knowledgeable about whether their children had been placed in foster care. They may be less knowledgeable, however, in regard to whether their children experienced maltreatment or prenatal substance exposure prior to placement of the child in their family. Therefore, undetected experience of preadoptive risks may confound our findings.

In addition, parents may interpret their child's behavior in terms of what they know and, reciprocally, the child's behavior may reinforce a parent's idea of its cause. Therefore, parents' knowledge of preadoptive risks and their interpretation of their child's behavior may take on a life of its own, regardless of whether the parents' knowledge of the child's history is accurate. Furthermore, having a single informant for both predictor and outcomes data collected concurrently may result in inflated outcomes. The observed relationship between the predictors and the outcomes cannot be fully confirmed.

Finally, although the data used in this study were from a longitudinal study, the study was methodologically limited by the partially cross-sectional design. Information regarding postadoptive family sense of coherence was available only in the final wave and thus the relationship between the family environment variable and child psychosocial functioning was cross-sectional. The directionality of the observed relationship cannot be determined and the implications of our findings are only speculative.

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