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Parenting Mediates the Impact of Caregivers' Distress on Children's Well-Being in Families Affected by HIV/AIDS

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Abstract

Parental illness imposes great challenges to children's life and mental health. Having a parent infected by HIV may further challenge children's psychological well-being. Existing studies have demonstrated a negative impact of caregiver's distress on children's well-being. Limited studies examined the potential pathways of the link. This study aims to examine whether parenting stress, parenting competence and parental responsiveness can explain the relationship between caregivers' distress and children's well-being. A community sample of children of parents living with HIV and their current caregivers ($n = 754$ dyads) was recruited in rural central China. Children completed the measures on their psychological well-being and perceived parental responsiveness of their caregivers. Caregivers reported on their psychological well-being, parenting stress, and parenting competence. Structural equation modeling analysis showed that caregivers' distress indirectly affect children's well-being through parenting stress, parenting competence and parental responsiveness. Parenting stress explained the impact of caregiver's distress on parental responsiveness and showed pervasive effects on parenting competence. Our findings lend credence to family-based intervention for children affected by HIV and affirm the importance of incorporating the cognitive, emotional and behavioral components of parenting practices in such intervention.

Keywords

Children affected by HIV/AIDS; Parenting stress; Parenting competence; Parental Responsiveness; Caregiver

Parental illness has great impacts on children's life and mental health [1]. Having a parent infected by HIV further challenges children's psychological well-being, because of HIV-related stigma, anticipatory grief, uncertainty about future living arrangement, and potential caregiver replacements [2]. Having access to antiretroviral therapy, some HIV positive

parent(s) are able to live longer with their children [3]. This is favorable in terms of children's bonding and attachment with their biological parents. However, the chronic stresses associated with HIV seropositive status may also compromise the psychological well-being of both parent(s) and their children [4]. As illness progresses from HIV to AIDS, some parent(s) may not be able to fulfill the parenting role, and then arrange others, mostly paternal or maternal grandparents, to take care of their children. Because of the stigma attached to HIV, legal adoption in resource-limited settings is seldom an option for orphaned children [5]. Care arrangement within the extended families for children orphaned by HIV/AIDS has been observed globally [3]. In this case, the psychological well-being, energy level, and parenting practices of the arranged caregivers may affect children's well-being [6]. Although existing studies have demonstrated the negative impact of caregiver's distress on children's well-being [e.g., 4, 7], little is known about the potential pathways and underlying mechanisms of the relationship. The purpose of this study is to examine whether parental responsiveness, parenting stress and parenting competence can explain the relationship between caregivers' distress and children's well-being in the families affected by HIV/AIDS.

In comparison to the wealth of literature on families adjusting to a child's illness, research literature examining the effects of parental illness on a child's development and well-being remains underdeveloped [1]. A few of existing studies suggest that parental illness is negatively associated with children's mental health. The findings in the context of parental HIV/AIDS are consistent with the findings in other types of parental illness. HIV/AIDS potentially drains the capacities of families by reducing household income, destabilizing livelihoods and family structure, provoking anxiety and grief among adults and children, and increasing dependency and stigmatization [8]. Parental HIV seropositive status and the accompanying psychological stresses have been found to be associated with children's externalizing problems (e.g., aggression, delinquency) and internalizing problems (e.g., anxiety, depression) [9-11].

Most of the existing studies focused on the effect of maternal HIV on children's well-being in the western cultural context and developed countries. This sampling strategy is understandable given that mothers take more parenting roles in child rearing. However, in some non-western culture or some resource-limited countries, family members assume the roles of parenting collaboratively. In the context of HIV/AIDS, the primary caregiver of children might not be the biological mother or father. Other extended family members (e.g., grandparents, siblings, relatives) might become the primary caregivers if the parents were unable to fulfill the parenting role. To date, limited large-scale studies in resource-poor settings allow the comparison of effects of parent caregiving versus non-parent caregiving, and having HIV positive caregivers versus HIV-free caregivers, on children's well-being. This study will take advantage of the large sample size and explore these differences.

The fact that caregiver's distress, especially depression, compromises parenting practices is established [1, 12]. Psychologically depressed parents or caregivers tend to have less positive parenting practices, such as less responsiveness, lack of involvement with children, negative emotional expression and ineffective discipline, and all these factors may lead to poor child outcomes. In the context of parental HIV/AIDS, studies examined the effects of parenting behaviors (e.g., communication, discipline, monitoring) on children's well-being

and consistently showed that caregivers' distress was associated with less positive parenting behaviors [4]. Murphy and colleagues [13] found that parenting behaviors such as implementing and maintaining family routines and parental monitoring protected children against the negative impact of maternal HIV. Despite considerable evidence linking caregiver distress to less positive parenting behaviors, the mechanisms responsible for these associations are poorly understood. As a result, we cannot answer such questions: why some caregivers appear having more positive parenting behaviors than others even though they are similarly depressed; what are the cognitive, emotional, or other processes that may affect parenting behaviors, and therefore, should be the targets of intervention efforts.

One factor that might have an impact on parenting behaviors is parenting stress. Parenting stress refers to caregivers' perception of the degree of stress related to various domains of child rearing. Generally, healthier caregivers reported lower level of parenting stress than those with poor health and high level of parenting stress was associated with less positive parenting practices, such as responsiveness and authoritarian parenting styles [14]. Financial and psychological strains have been also found to be associated with parenting stress [7]. Another factor that may explain the relationship between caregivers' distress and parenting behaviors is parenting competence. Parenting competence can be defined as caregivers' self-referent estimations of competence in parental role or as caregivers' perceptions of their ability to positively influence the development of their children [15]. Parenting self-efficacy is the central element of parenting competence. Parenting competence is the cognitive aspect of parenting practices. Caregivers with psychological distress may perceive that they are not able to be good caregivers, or they are in lack of the knowledge and skills to provide a suitable environment in which to care the children [16]. Indeed, mothers with mental illness reported that parenthood was central to their lives, but they were troubled about their degree of competence in their parenting roles [17]. Similarly, a qualitative study reported that one of the major concerns of mothers with HIV was their inability to provide adequate care to their children when they became ill [18].

It is estimated 260,000 children lost one or both parents to AIDS in China [19, 20]. This number of orphans continues to grow with an estimated 27,000 AIDS-related death and an additional 780,000 people living with HIV [21]. Many of the children affected by HIV are living in Central China provinces because of the nature of the HIV prevalence due to unhygienic blood donation in the late 1980s to early 1990s [20]. The participants in this study were recruited from a central province, a HIV epidemic center in one of the six provinces with highest HIV prevalence in China. It is estimated that there are 50,000 to 60,000 people living with HIV in the province [22]. While many infected individuals in the study province have died and left children behind, reliable data regarding the actual number of children orphaned by AIDS is limited. Currently, there is no accessible prevalence data on children affected by parental HIV.

The current study examined the interplay of the parenting stress, parenting competence and parental responsiveness in linking caregiver's distress to children's well-being in a large community sample of families affected by HIV/AIDS. The hypothesized model is presented in Figure 1. We hypothesized that parenting stress, parenting competence, and parental responsiveness together account for the relationship between caregivers' psychological

distress and children's well-being. Regarding the interrelationships among the three parenting components, we hypothesized that caregivers' distress exert an effect on parental responsiveness (the behavioral aspect of parenting) through parenting stress (the emotional aspect of parenting) and parenting competence (the cognitive aspect of parenting).

Method

Participants

A community sample of children and caregivers ($n = 754$ dyads) were derived from the baseline data of a randomized controlled trial of a resilience-based intervention for children of parents living with HIV ($n = 790$), based on the availability of caregivers' data. The participants were recruited in a rural county in central China, where many residents had been infected with HIV through unhygienic blood collection practices [23]. The county has the highest prevalence of HIV infection in the region and participants in the current study were mainly recruited from five administrative villages. Children's age is ranged from 6 to 17.

Procedure

Data were collected in 2012 using a protocol that was approved by the Institutional Review Board at Wayne State University in the United States and Henan University in China. We recruited the dyads of children and their primary caregivers through the village administration and school system, because they are responsible for distributing the government allowance to children and families affected by HIV. We first accessed village-level HIV surveillance data from the county's anti-epidemic station to identify villages with the highest numbers of HIV infected individuals and/or HIV-related deaths in the area. We then accessed the lists of family caring for orphans or with confirmed diagnosis of parental HIV/AIDS. Based on the eligible criteria of the intervention study, children with known HIV infection were not included in the study. Children's HIV-infection status along with age eligibility and parents' viral status were verified through the current caregivers or local community leaders. We randomly selected families on the lists and invited one child and his/her primary caregiver to participate in the study, till the target sample size was achieved. If there is more than one eligible caregiver who is willing to participate in a household, female or healthier caregiver will be selected. Caregivers who are HIV positive were allowed to participate in the study.

Each participating child and caregiver completed a confidential survey in Mandarin Chinese. The survey includes measures on demographic information and several psychosocial scales. Most of the child survey was self-administrated in a small group in presence of two interviewers. For a few children younger than 8 or with reading difficulty, interviewers read the questionnaire items and recorded their responses. The entire survey took 75 to 90 minutes, depending on the reading ability of the children. Children were offered a 10-15 minute break after every 30 minutes. Caregivers completed their questionnaires at home and returned the questionnaire to the local team members. Each child and caregiver received a gift at completion of the survey as a token of appreciation

Measures

Children's well-being was examined using three indicator variables including depression, loneliness, and self-esteem. *Depression* was measured using a short version (10-item) of the Center for Epidemiologic Studies Depression Scale for Children [24, 25]. Item 5 and item 8 were removed in the data analysis because their item-total correlations were less than .30. *Loneliness* was measured with the 16-item Child Loneliness Scale [26]. *Self-esteem* was measured with the widely used 10-item Rosenberg Self-esteem Scale [27]. All three scales have been validated in the same population and demonstrated very good psychometric properties [28].

Caregiver's well-being was tapped by three scales including depression, anxiety, and perceived stress. *Depression* was measured with the short version of Center for Epidemiologic Studies Depression Scale [25, 29]. *Anxiety* was measured with the Anxiety Subscale of Depression Anxiety Stress Scale [30]. *Stress* was measured with the Perceived Stress Scale [31]. All of the three scales have been validated among Chinese population and showed good psychometric properties [32-34].

Parenting were captured by three scales including parenting stress, parenting competence, and parental responsiveness. Caregiver provided the data on parenting stress and competence; children provided the data on perceived parental responsiveness. The six items of *parenting stress* asked the respondent's agreement on a 5-point scale to the following statements: "I feel that I fail to be a good caregiver"; "I face a lot of stresses to raise and educate the child"; "Raising the child is more difficult than I imagine"; "I have financial burden to take care of the child"; "Taking care of the child brings many problems in my life"; "I have no energy to take care of the child because of my health status". This scale is developed by the authors based on previous literature and our previous work in this population. The first three items evaluate the emotional parenting stress and the other three items evaluate instrumental parenting stress. The four items of *parenting competence* asked the caregiver's agreement (on a 5-point scale) to the following statements: "I am capable to take care of and guide the child"; "I believe I have the skills necessary to be a good caregiver"; "I know how to communicate with him/her"; "I am a good problem solver no matter what happened to him/her". These four items assessed the four aspects of parental competence: efficacy, skills, communication, and problem solving. The scale is selected and adapted from Parenting Sense of Competence Scale [35] based on the local context and educational level of caregivers. *Parental responsiveness* were evaluated by the 6 items selected and modified from the responsiveness subscale of the Authoritative Parenting Index [36]. Children reported their perceived parental responsiveness of their primary caregiver on the aspects of sensitivity (3 items) and acceptance (3 items). Example items are "he/she makes me feel better when I am upset", "he/she listen to what I have to say", "he/she tells me when I do a good job on things", and "he/she is pleased with how I behave". Cronbach's alphas for all the used scales were reported in Table 1 together with other descriptive statistics.

There are seven potential covariates in the study. Socio-demographic information was provided by the caregivers, including age, gender, household income and educational level.

Caregivers also reported whether they are HIV positive and their relationships with the children. The household burden was measured by two questions: 1) how many children under 18 years old that you need to take care of; and 2) how many elderly or sick people that you need to take care of? A composite score is created by adding the number of two questions. Larger number indicates higher level of household burden.

Statistical analysis—Descriptive statistics were calculated for socio-demographic variables. The differences of socio-demographic variables and main study variables by type of caregiver (i.e., parent vs. non-parent) and caregiver's HIV status (HIV+ vs. HIV-) were tested using chi-square statistics (for categorical variables) or t-test (for continuous variables). Pearson correlations were performed to examine the strength of associations between all indicator variables in the proposed model. Structural equation modeling was employed to test the proposed model (Figure 1). Measurement model was tested using confirmatory factor analysis to examine the relationships between latent constructs and their indicating variables. Structural model was then tested for the relationships among all latent constructs. Goodness of model fit was evaluated using chi-square to degree-of-freedom ratio (χ^2/df), comparative fit index (CFI), Tucker-Lewis fit index (TLI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR). A good fit was determined by a χ^2/df less than 3, a RMSEA less than .05, a SRMR less than .05, and values of CFI and TLI greater than .95 [37]. Data analysis were assisted by SPSS 18.0 and Mplus 5.1 [38],

Results

Table 1 presents the sample statistics on demographic characteristics of children and caregivers. The majority of children were cared for by their parents (76.1%) and almost half of the caregivers reported that they were infected by HIV (42.4%). Among children who were not cared for by parents, 63.2% were cared for by paternal grandparents. Approximately 3.1% of the children lost two parents and 8.9% lost one parent due to AIDS; 14.6% of children had both parents infected by HIV and 73.5% had one parent infected. Non-parent caregivers appeared older ($t=12.72, p < .001$) and had lower education level ($\chi^2=31.01, p < .001$) than parent caregivers. HIV positive caregivers have lower education level than HIV negative caregivers ($\chi^2=14.65, p < .01$). As shown in Table 2, children cared for by parent caregivers showed lower level of loneliness and higher level of self-esteem. HIV seropositive status was associated with higher level of depression ($r = .12, p = .001$), anxiety ($r = .11, p < .01$), and perceived stress ($r = .45, p < .001$) among caregivers. In addition, caregivers' education level was negatively associated with depression ($r = -.11, p < .01$), anxiety ($r = -.13, p = .001$), perceived stress ($r = -.09, p = .01$), and parenting stress ($r = -.11, p < .01$). Caregivers' income level was negatively correlated with depression ($r = -.13, p < .001$), perceived stress ($r = -.16, p < .001$), parenting stress ($r = -.20, p < .001$).

The bivariate correlations for the indicator variables are presented in Table 3. The indicator variables of same latent construct were strongly correlated with each other ($p < .001$). The measurement model consisted of 5 latent constructs and 14 indicator variables, presenting a good fit ($\chi^2/df = 2.21$, CFI = .97, TLI = .96, RMSEA = .04, 90% CI [.03, .05], SRMR = .04). All factor loadings were substantial and significant ($p < .001$), indicating that the latent

constructs were adequately explained by the indicator variables. The conceptual model included 10 direct or indirect paths among latent constructs. The effects of 7 covariates on all the variables were controlled in the model. Estimation of this model revealed an acceptable fit. To gain a parsimonious model, we eliminated all the insignificant paths. The final model fit the data very well ($\chi^2/df = 1.60$, CFI = .97, TLI = .96, RMSEA = .03, 90% CI [.02, .04], SRMR = .04). All the indirect effects in the model were significant. The final model with standardized path coefficients was presented in Figure 2. Among the covariates, household burden was associated with caregivers' distress ($\beta = .12$, $p < .01$); caregivers' HIV-positive status was associated with caregiver's distress ($\beta = -.15$, $p < .001$), parenting competence ($\beta = .09$, $p < .05$), and children's psychological well-being ($\beta = .09$, $p < .05$); income level was associated with lower caregiver's distress ($\beta = -.13$, $p < .01$), parenting stress ($\beta = -.16$, $p < .01$); caregivers' education level was associated with lower caregiver's distress ($\beta = -.11$, $p < .01$); parent caregivers have lower psychological distress ($\beta = -.11$, $p = .01$); and being a female caregiver was associated with parental responsiveness ($\beta = -.12$, $p < .01$).

Discussion

Our findings support the link between caregiver's well-being and children's well-being in the context of parental HIV/AIDS. The results also enrich the current literature by explaining the mechanism and pathways of the link. Parenting stress, competence and parental responsiveness account for the impact of caregivers' distress on children's well-being. Parenting stress explains the impact of caregivers' distress on parental responsiveness and shows pervasive effect on parenting competence.

The current findings affirm the importance of directly targeting the cognitive, emotional and behavioral components of parenting in intervention work with parents/caregivers of children affected by HIV/AIDS. At cognitive level, enhancing parenting competence can be a promising direction. Efforts can be made to empower the caregivers to perceive themselves as confident and effective caregivers. Appreciation of the parenting role and positive encouragement from supportive network might be essential to the competence of caring a vulnerable child. At the emotional level, supporting caregivers in stress management might be a promising direction. Caregivers of children affected by HIV/AIDS might encounter several practical stress (e.g., financial burden, energy shortage) or emotional stress (e.g., overwhelming feeling, frustration). Intervention efforts failing to provide empathy towards those actual stressors may limit the efficacy to promote positive parenting, then impact children's psychological well-being [39]. Thus, stress management skills could be taught to help the caregivers adaptively coping with the life difficulties. At behavioral level, parenting skill training should emphasize parental responsiveness, including sensitivity and acceptance.

More importantly, our findings reveal that the three components of parenting are reciprocal. This finding is consistent with previous prevention studies that have shown that programs induced growth in parental sense of competence predicted an increase in supportive and warm parenting behaviors and a decrease in inept disciplines and harsh parenting [40]. We found that parenting stress also demonstrate spillover effects on parenting competence and

parental responsiveness. Future research needs to address various components of parenting and further explore the interplay of these components in affecting the psychological well-being of children in adversities. While prior studies have suggested that caregivers of children who demonstrated more externalizing and internalizing problems might have higher level of parenting stress, lower levels of parental efficacy and less effective parenting discipline [41], the relationship of parenting and children's well-being is probably bidirectional over time.

Our findings lend credence to family-based intervention for caregivers and children affected by HIV/AIDS in resource-limited settings. Despite the advocacy for family-centered approaches for families affected by HIV/AIDS [42], little has been done beyond small-scale programs [3]. HIV/AIDS has an effect not only on people living with HIV/AIDS, but also their family members. Families are the most immediate context and the first to respond to children affected by HIV/AIDS [3]. A supportive and trusting relationship within the family can benefit each family member, including both parents and their children. For those orphaned children, a caring and supportive caregiver is essential to their healthy development. However, under social and individual stresses associated with HIV infection, families may not be able to meet children's needs and can become dysfunctional and potentially damaging [8]. A family-based intervention that integrates cognitive, emotional and behavioral components of parenting seems promising to promote resilience of HIV-affected families. Strengthening family functioning would enable parents to display the knowledge and skills necessary for effective interactions with their children, as well as the development of essential parenting roles. The key issue of implementing parenting training in resource poor setting is how to identify those successful components of parenting programs and implement them in a culturally appropriate way [2]. Flexibility and feasibility should be considered in the very beginning of parenting intervention design for caregivers and children affected by HIV/AIDS.

The study also subjects to several limitations. First, HIV testing was not performed in the current study. The accuracy in caregivers' self-reports might bias the results. Second, the current cross-sectional design cannot rule out the possibility that children's internalizing problems may elicit the parenting stress, reduce parenting competence and parental responsiveness. Future research could benefit from longitudinal studies investigating the reciprocal relationships among caregiver's distress, children's well-being and the three components of parenting. Third, although the scales evaluating caregiver's and children's well-being had been previously used in this population, no clinical cut-off scores have been validated among the population, thus we cannot screen out children or caregivers in clinical range of internalizing problems. Finally, our findings show that the HIV status of caregivers was inconsistently correlated with the study variables. It may suggest that caregivers' HIV status might not be the best predictor in caregivers' function and children's well-being. More proximal variables such as the health status, illness progression deserve further investigation.

Nevertheless, the current study is among the first efforts to examine the role of parenting in explaining the impact of caregiver distress on children's well-being among families affected by HIV/AIDS in resource poor settings, particularly in an Asian cultural context. Our

findings also make advances in understanding the interplay of various components of parenting in linking caregiver distress to children's well-being, thus contribute the broad literature on parenting. The demonstrated interplay among cognitive, emotional and behavioral components of parenting lends support of family-based interventions for children affected by HIV/AIDS. The findings provide the specific facets of parenting that can be incorporated in an intervention for families affected by HIV/AIDS. Future studies may further explore other family-based risk and protective factors among this disadvantaged child group. The potential variables to be studied include household financial stability, household burden, caregivers' health status, and the family dynamic.

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References

1. Pedersen S, Revenson TA. Parental illness, family functioning, and adolescent well-being: A family ecology framework to guide research. *Journal of Family Psychology*. 2005; 19(3):404–419. [PubMed: 16221021]
2. Chi P, Li X. Impact of parental HIV/AIDS on children's psychological well-being: A systematic review of global literature. *AIDS and behavior*. 2013; 17(7):2554–74. [PubMed: 22972606]
3. Richter, LM.; Naicker, S. A review of published literature on supporting and strengthening child-caregiver relationships (Parenting). USAID's AIDS Support and Technical Assistance Resources, AIDSTAROne, Task Order 1; Arlington, VA: 2013.
4. Spies R, et al. Linkages between HIV/AIDS, HIV/AIDS-psychoses and parenting: A systematic literature review. *Vulnerable Children and Youth Studies*. 2014; 9(2):174–92.
5. Hong Y, et al. Care arrangements of AIDS orphans and their relationship with children's psychosocial well-being in rural China. *Health Policy and Planning*. 2011; 26(2):115–123. [PubMed: 20587602]
6. Lachman JM, et al. Positive parenting for positive parents: HIV/AIDS, poverty, caregiver depression, child behavior, and parenting in South Africa. *AIDS Care*. 2014; 26(3):304–13. [PubMed: 23930647]
7. Murphy DA, et al. Anxiety/stress among mothers living with HIV: effects on parenting skills and child outcomes. *AIDS care*. 2010; 22(12):1449–1458. [PubMed: 20824552]
8. Richter LM, et al. Strengthening families to support children affected by HIV and AIDS. *AIDS Care*. 2009; 21:3–12. [PubMed: 22380973]
9. Pelton J, Forehand R. Orphans of the AIDS epidemic: an examination of clinical level problems of children. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2005; 44(6):585–91. [PubMed: 15908841]
10. Murphy DA, Marelich WD. Resiliency in young children whose mothers are living with HIV/AIDS. *AIDS Care*. 2008; 20(3):284–291. [PubMed: 18351474]
11. Cluver LD, et al. AIDS-orphanhood and caregiver HIV/AIDS sickness status: Effects on psychological symptoms in South African youth. *Journal of Pediatric Psychology*. 2012; 37(8): 857–867. [PubMed: 22313551]
12. Dix T, Meunier LN. Depressive symptoms and parenting competence: An analysis of 13 regulatory processes. *Developmental Review*. 2009; 29(1):45–68.
13. Murphy DA, et al. Family routines and parental monitoring as protective factors among early and middle adolescents affected by maternal HIV/AIDS. *Child Development*. 2009; 80(6):1676–1691. [PubMed: 19930345]

14. Anderson LS. Predictors of parenting stress in a diverse sample of parents of early adolescents in high-risk communities. *Nursing Research*. 2008; 57(5):340. [PubMed: 18794718]
15. Rogers H, Matthews J. The parenting sense of competence scale: Investigation of the factor structure, reliability, and validity for an Australian sample. *Australian Psychologist*. 2004; 39(1): 88–96.
16. Gelkopf M, Jabotaro SE. Parenting style, competence, social network and attachment in mothers with mental illness. *Child & Family Social Work*. 2013; 18(4):496–503.
17. Oyserman D, et al. Parenting Self-Construals of Mothers With a Serious Mental Illness: Efficacy, Burden, and Personal Growth. *Journal of Applied Social Psychology*. 2004; 34(12):2503–2523.
18. Van Loon RA. Redefining motherhood: Adaptation to role change for women with AIDS. *Families in Society: The Journal of Contemporary Social Services*. 2000; 81(2):152–161.
19. He Z, Ji C. Nutritional status, psychological well-being and the quality of life of AIDS orphans in rural Henan Province, China. *Tropical Medicine & International Health*. 2007; 12(10):1180–1190. [PubMed: 17956500]
20. West, A.; Wedgwood, K. Children affected by AIDS, orphans and impact mitigation in China, in AIDS and social policy in China. Kaufman, A.; Kleinman, J.; Saich, T., editors. Harvard University Asia Center; Cambridge, MA: 2006. p. 243-64.
21. 2012 China AIDS Response Progress Report. 2012. Ministry of Health of People's Republic of China.
22. 2011 Estimates for the HIV/AIDS Epidemic in China. Beijing, China: 2011. Ministry of Health People's Republic of China, Joint United Nations Programme on HIV/AIDS, and World Health Organization.
23. Li X, et al. Lifetime incidence of traumatic events and mental health among children affected by HIV/AIDS in rural China. *Journal of Clinical Child and Adolescent Psychology*. 2009; 38(5):731–744. [PubMed: 20183657]
24. Fendrich M, Wessiman MM, Warner V. Screening for depressive disorder in children and adolescents: Validating the Center for Epidemiologic Studies Depression Scale for Children. *American Journal of Epidemiology*. 1990; 131(3):538–551. [PubMed: 2301363]
25. Andresen EM, et al. Screening for depression in well older adults: evaluation of a short form of the CES-D (Center for Epidemiologic Studies Depression Scale). *American Journal of Preventive Medicine*. 1994; 10(2):77–84. [PubMed: 8037935]
26. Asher SR, Hymel S, Renshaw PD. Loneliness in Children. *Child Development*. 1984; 55(4):1456–1464.
27. Rosenberg, M. Society and the adolescent self-image. Princeton, N.J: Princeton University Press; 1965.
28. Fang X, et al. Parental HIV/AIDS and psychosocial adjustment among rural Chinese children. *Journal of Pediatric Psychology*. 2009; 34(10):1053–1062. [PubMed: 19208701]
29. Radloff LS. The CES-D scale: A self-report depression scale for research in the general population. *Applied psychological measurement*. 1977; 1(3):385–401.
30. Lovibond PF, Lovibond SH. The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy*. 1995; 33(3):335–343. [PubMed: 7726811]
31. Cohen, S.; Williamson, G. Perceived stress in a probability sample of the United States. In: Spacapan, S.; Oskamp, S., editors. The social psychology of health: Claremont Symposium on applied social psychology. Sage; Newbury Park, CA: 1988.
32. Yu X, et al. Risk and protective factors in association with mental health problems among people living with HIV who were former plasma/blood donors in rural China. *AIDS Care*. 2009; 21(5): 645–54. [PubMed: 19444674]
33. Wang Z, et al. Psychometric properties of the Chinese version of the Perceived Stress Scale in policewomen. *PloS one*. 2011; 6(12):e28610. [PubMed: 22164311]
34. Boey KW. Cross-validation of a short form of the CES-D in Chinese elderly. *International Journal of Geriatric Psychiatry*. 1999; 14(8):608–617. [PubMed: 10489651]
35. Johnston C, Mash EJ. A measure of parenting satisfaction and efficacy. *Journal of clinical child psychology*. 1989; 18(2):167–175.

36. Jackson C, Henriksen L, Foshee VA. The Authoritative Parenting Index: predicting health risk behaviors among children and adolescents. *Health Education and Behavior*. 1998; 25(3):319–337. [PubMed: 9615242]
37. Quintana SM, Maxwell SE. Implications of recent developments in structural equation modeling for counseling psychology. *The Counseling Psychologist*. 1999; 27(4):485–527.
38. Muthén, LK.; Muthén, BO. *Mplus user's guide*. Fifth. Author; Los angeles, CA: 2007.
39. Ritchie J, Spencer L. *Qualitative data analysis for applied policy research. The qualitative researcher's companion*. 2002:305–329.
40. Dekovi M, et al. Tracing changes in families who participated in the home-start parenting program: parental sense of competence as mechanism of change. *Prevention science*. 2010; 11(3): 263–274. [PubMed: 20101464]
41. Petersen I, et al. Psychosocial challenges and protective influences for socio-emotional coping of HIV+ adolescents in South Africa: A qualitative investigation. *AIDS care*. 2010; 22(8):970–978. [PubMed: 20229370]
42. Pequegnat, W.; Szapocznik, J. *Working with families in the era of HIV/AIDS*. Thousand Oaks, CA: Sage Publications, Inc; 2000.

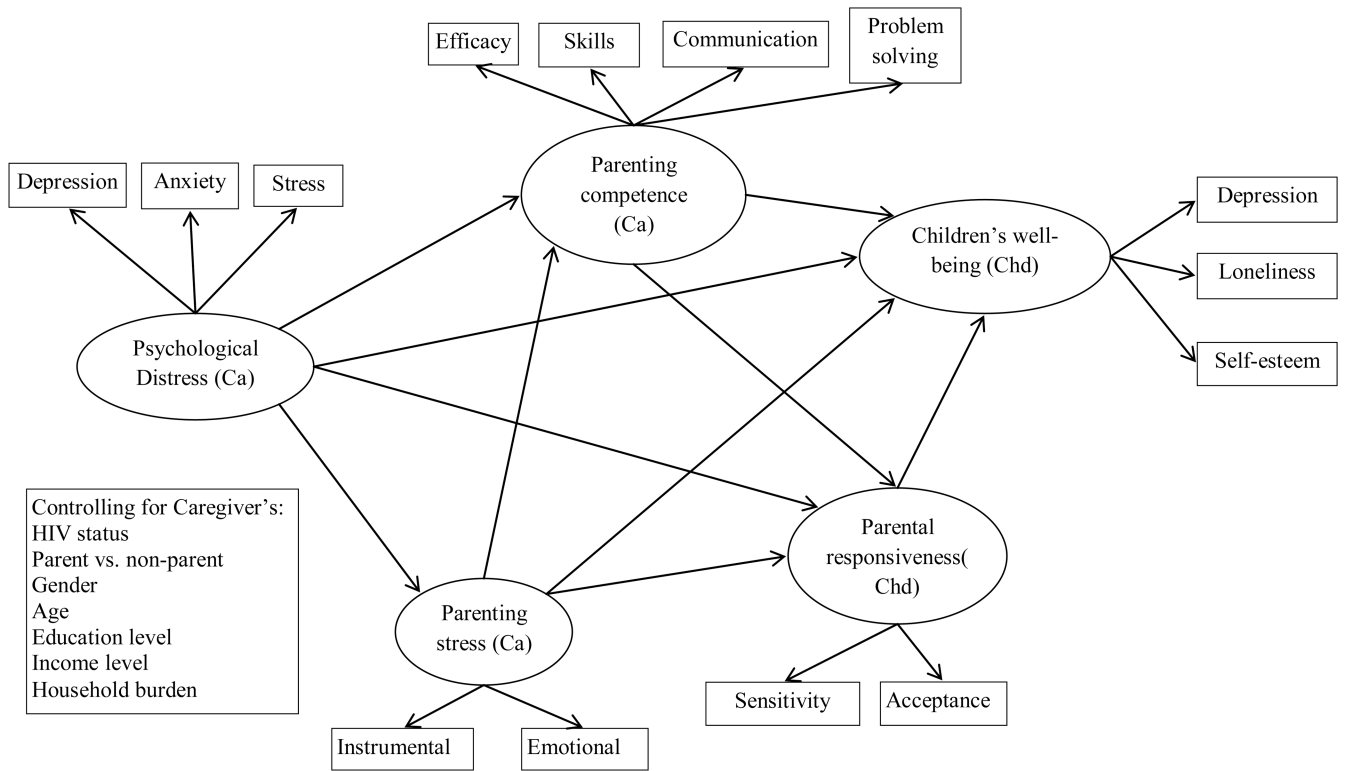


Figure 1. The Conceptual Model
Note. Ca = Caregiver report; Chd = Child report;

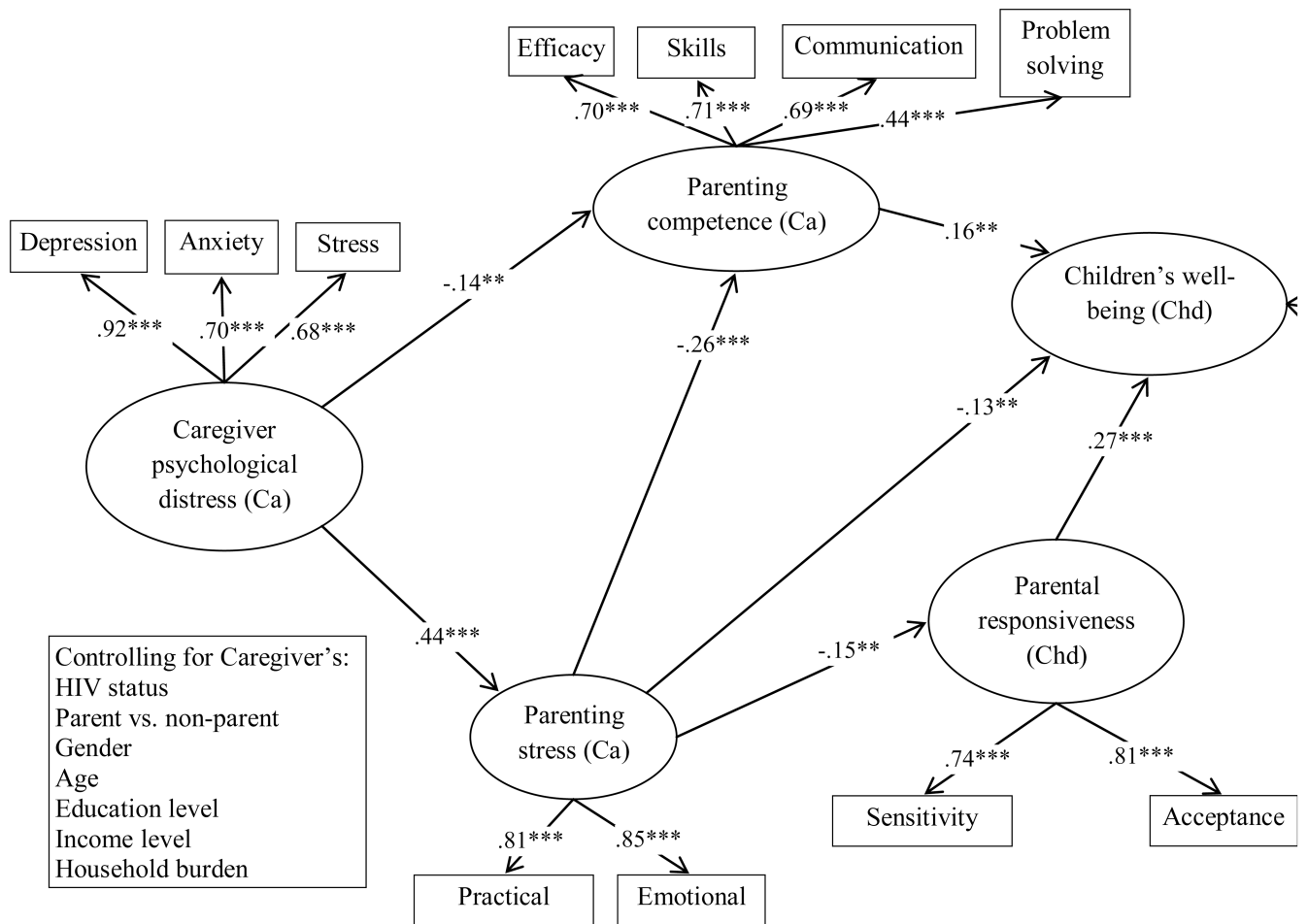


Figure 2. Final model with standardized path coefficients

Note. Children's depression and loneliness scores were reversed; Ca = Caregiver report; Chd = Child report; the model controlled all the significant effects of caregiver's demographic variables (i.e., gender, age, income, education) on all the latent variables.

Table 1

Sample characteristics

	Overall	Parent Caregiver	Non-parent Caregiver	HIV+ Caregiver	HIV- Caregiver
N	754 (100%)	574 (76.1%)	180 (23.9%)	303 (42.4%)	412 (57.6%)
Child's age	10.44 (1.97)	10.54 (1.94)	10.10 (2.00)**	10.62 (1.94)	10.34 (1.96)
Child's gender					
Boy	385 (51.1%)	299 (52.1%)	86 (47.8%)	163 (53.8%)	200 (48.5%)
Girl	369 (48.9%)	275 (47.9%)	94 (52.2%)	140 (46.2%)	212 (51.5%)
Child's type					
Having one HIV+ parent	545 (73.5%)	444 (78.4%)	101(57.4%)	205 (69.3%)	312 (76.6%)
Having HIV+ parents	108 (14.6%)	88 (15.5%)	20 (11.4%)	62 (20.9%)	39 (9.6%)
Lost one parent to HIV	66 (8.9%)	34 (6.0%)	32 (18.2%)	26 (8.8%)	37 (9.1%)
Lost both parents to HIV	23 (3.1%)	-----	23 (13.1%)	3 (1.0%)	19 (4.7%)
Caregiver's age	44.13 (10.80)	40.64 (5.46)	56.30 (15.14)*	43.13 (8.45)	45.01 (12.25)
Caregiver's gender					
Male	336 (44.6%)	258 (44.9%)	78 (43.3%)	135 (44.6%)	185 (44.9%)
Female	418 (55.4%)	316 (55.1%)	102 (56.7%)	168 (55.4%)	227 (55.1%)
Caregiver's Education level					
No schooling	74 (10.2%)	42 (7.5%)	32 (19.0%)*	35 (11.8%)	38 (9.6%)*
Elementary school	356 (49.1%)	287 (51.5%)	69 (41.1%)	162 (54.7%)	171 (43.2%)
Junior high	250 (34.5%)	202 (36.3%)	48 (28.6%)	87 (29.4%)	154 (38.9%)
Senior high and above	45 (6.2%)	26 (4.7%)	19 (11.3%)	12 (4.1%)	33 (8.3%)
Household income (RMB)					
<1000	415(58.7%)	306 (56.9%)	109 (64.5%)	183 (64.0%)	217 (55.2%)
1000-1999	205 (29.0%)	165 (30.7%)	40 (23.7%)	75 (26.2%)	122 (31.0%)
>2000	87(12.3%)	67 (12.5%)	20 (11.8%)	28 (9.8%)	54 (13.7%)

* $p < .05$,** $p < .01$,*** $p < .001$

Table 2

Psychometric properties and preliminary results of main studies variables

	# of items	Cronbach α	Score range	Overall Mean (SD)	Type of caregiver		Caregiver HIV status	
					Parent	Non-parent	HIV+	HIV-
Caregiver's well-being (Ca)								
Depression	10	.77	0-30	9.31 (4.87)	9.27(4.87)	9.46 (4.87)	10.03 (4.91)**	8.81 (4.81)
Anxiety	7	.88	0-42	8.37 (8.22)	8.28 (7.98)	8.69 (8.99)	9.36 (8.41)*	7.55 (8.00)
Stress	10	.71	0-30	12.80 (4.45)	12.84 (4.52)	12.65 (4.17)	13.32 (4.70)*	12.40 (4.30)
Parenting stress (Ca)	6	.81	1-5	2.66 (.97)	2.67 (.98)	2.62 (.91)	2.72 (.99)	2.61 (.96)
Instrumental	3	.61	1-5	2.72 (1.10)	2.72 (1.10)	2.70 (1.08)	2.79 (1.10)	2.67 (1.11)
Emotional	3	.73	1-5	2.60 (1.01)	2.62(1.02)	2.53 (.95)	2.65 (1.04)	2.57 (.99)
Parenting competence (Ca)	4	.72	1-5	3.68 (.75)	3.70 (.74)	3.61 (.76)	3.75 (.72)	3.66 (.77)
Parental responsiveness (Chd)	6	.74	1-4	2.57 (.47)	2.58 (.47)	2.56 (.46)	2.61 (.48)	2.55 (.46)
Communication	3	.52	1-4	2.56 (.71)	2.56 (.71)	2.55 (.73)	2.53 (.75)	2.59 (.70)
Acceptance	3	.60	1-4	2.61 (.74)	2.63 (.73)	2.54 (.77)	2.66 (.75)	2.59 (.74)
Children's well-being (Chd)								
Depression	8	.75	0-3	.88 (.55)	.86 (.57)	.94 (.49)	.83 (.53)	.90 (.57)
Loneliness	16	.76	1-4	2.13 (.46)	2.11 (.47)	2.20 (.45)*	2.10 (.46)	2.15 (.47)
Self-esteem	10	.62	1-4	2.72 (.44)	2.75 (.44)	2.64 (.44)*	2.76 (.43)	2.70 (.44)

* $p < .05$,** $p < .01$,*** $p < .001$

Note. Ca = Caregiver report, Chd = Child report.

Table 3

Correlations among the manifest indicator variables

	1	2	3	4	5	6	7	8	9	10	11	12	13
Caregiver distress													
1. Caregiver depression													
2. Caregiver anxiety	.65****												
3. Caregiver stress	.60****	.45****											
Parental responsiveness													
4. Sensitivity	.01	.00	-.02										
5. Acceptance	.00	.02	-.05	.60****									
Parenting stress													
6. Emotional	.35****	.22****	.29****	-.07*	-.09*								
7. Instrumental	.36****	.24****	.34****	-.09*	-.08*	.68****							
Parenting competence													
8. Efficacy	-.24****	-.14****	-.23****	.04	.05	-.23****	-.20****						
9. Skills	-.08*	-.05	-.20****	.10**	.08*	-.16****	-.15****	.49****					
10. Communication	-.11**	-.02	-.17****	.02	.06	-.14****	-.14****	.44****	.47****				
11. Problem solving	-.07	-.04	-.08*	.06	.03	.00	.03	.30****	.26****	.36****			
Child well-being													
12. Child depression	.08*	.07*	.11**	-.08*	-.14****	.13****	.11**	-.12**	-.09*	-.15****	.01		
13. Child loneliness	.11**	.12**	.06	-.18****	-.19****	.13****	.14****	-.11**	-.15****	-.09*	-.02	.43****	
14. Child self-esteem	-.02	-.05	-.06	.08*	.13****	-.05	-.06	.07	.11**	.06	.02	-.32****	-.48****

* $p < .05$,** $p < .01$,**** $p < .001$