

Caregiving Stress and Adjustment Problems of Kenyan Orphans Raised by Grandmothers

Paul Odhiambo Oburu^{a,b,*}

^a Göteborg University, Göteborg, Sweden

^b Maseno University, Kisumu, Kenya

The present study compared levels of caregiving stress among 115 biological mothers and 134 grandmothers raising their orphaned grandchildren. The associations between parenting stress and adjustment difficulties exhibited by children raised by these two groups of caregivers were also assessed. Full-time caregiving grandmothers reported elevated levels of stress more than did the biological mothers. A significant negative association was found between child maladjustment and caregiving stress. Caregivers' experienced stress was linked to advanced age and extensive, new adoptive roles now occupied by grandmothers. There was no evidence suggesting that these orphaned children were less well adjusted when compared to children still living with their own birth parents. Copyright © 2005 John Wiley & Sons, Ltd.

Key words: caregiving stress; adoptive grandmothers; biological mothers; orphaned children; child adjustment

INTRODUCTION

Many Kenyan societies, like several others in sub-Saharan Africa, have witnessed an exponential increase in the number of orphans (i.e. children below 15 years with one or both parents dead, Central Bureau of Statistics, 1999). From a figure of 2.8 million children in 1990, UNICEF estimated the current number of sub-Saharan African orphans largely due to HIV/AIDS related deaths of their parents, to be 14 million (or 12% of all children still under the age of 15, compared to 7% for Asia, and 5% for Latin America and the Caribbean, UNICEF, 1999, 2002a). This crisis has resulted in rapid and dramatic changes in caregiving and family life, with many grandmothers having to care for their orphaned grandchildren. The aim of the current study was to investigate the parenting stress of these Kenyan grandmothers, and to examine links with their orphaned children's social-emotional adjustment.

*Correspondence to: Department of Psychology, Box 500, SE 405 30, Göteborg, Sweden. E-mail: poburu@yahoo.com

The Orphan Crisis and its Impact on Grandmothers

In sub-Saharan Africa, the regions that have been most affected by the HIV/AIDS crisis are the impoverished rural and major urban areas of Eastern and Southern African countries, where by 2010 the number of orphans is expected to exceed 25 million—over 15% of all children under 15 (UNAIDS, 2003; UNICEF, 2002b). In Kenya, the Central Bureau of Statistics estimated that about 2 million (16%) of the 12 million Kenyan children below the age of 15 were total orphans at the end of 2002 (Central Bureau of Statistics, 1999).

In Kenya and many other sub-Saharan countries, the absence of elaborate state-based social institutions to take in the constantly increasing number of orphans, prevailing poverty, and weakened familial support structures predispose most of these children to stay with elderly grandmothers, or to live alone in their parents' homes (Nyambedha *et al.*, 2003a). When compared to those who are still living with their own biological parents, orphans are more likely to be discriminated against and excluded in the provision of limited food and services because of the caregiving burden that they bring to prospective adopters' homes, and the magnitude of the orphan crisis in communities where families have been affected (Forsythe and Rau, 1996).

Earlier sub-Saharan African studies (e.g. Barnett and Blaikie, 1992; Hunter and Williamson, 2000; Ankrah, 1993; Ntozi, 1997; Sengendo and Nambi, 1997; Mukwaya, 1999; Nyambedha *et al.*, 2003a) indicated that orphans were more likely to experience problems that could compromise their socio-emotional development, compared to children still living with their parents. Apart from being denied the closeness of biological family life, these authors have noted that some of these orphans venture onto the streets for lack of alternative accommodation. Furthermore, a majority of orphans engage in hazardous labour in order to survive, because they live with caregivers who are either too old or too young to adequately provide for their needs (Hunter and Williamson, 2000; Mukwaya, 1999; Yamba, 2003).

Orphans experience persistent poverty because most of the elderly and impoverished grandmothers who are willing to adopt them are widows without employment or property (Mukwaya, 1999; Yamba, 2003). These grandmothers may be overwhelmed by the additional caregiving responsibility, at a time when they are distressed by the multiple deaths in their own families. Their ability to support their orphaned grandchildren may be limited further still by their advanced age, lack of assistance from relatives who are equally affected, and losses of income and personal freedom following the deaths of their own children (Nyambedha *et al.*, 2003b; Hunter and Williamson, 2000).

There are potential psychological costs for these adopting grandmothers. In many traditional African societies, the presumed rewards for successful child rearing and an ideal life course role model for women at old age are guaranteed assistance from ones' own children, and freedom from primary caregiving responsibilities (Catell, 1993; Makoni and Ferreira, 2002). Instead, elderly grandmothers who are primarily responsible for caring for their grandchildren face extensive caregiving and disruptions in their ideal life course roles (Makoni and Ferreira, 2002). This could be linked to elevated levels of experienced stress and increased perception of child adjustment difficulties (e.g. Dubowitz *et al.*, 1994; Edwards, 1998). Thus, one of the aims of the current study was to examine the levels of parenting stress of grandmothers caring for their orphaned grandchildren, compared to mothers raising their own biological children.

Family Structure, Caregiving Stress and Child Adjustment

Despite the numerous problems that potentially compromise the social-emotional development of orphans in Africa (see Ankrah, 1993; Ntozi, 1997; Sengendo and Nambi, 1997; Forehand *et al.*, 1999; Mukwaya, 1999; Yamba, 2003), studies focusing on the effects of family disruptions on the adjustment of children raised by grandmothers have obtained mixed results. Some investigators have reported that orphaned children were at greater risk of developing adjustment problems (e.g. Poe, 1998; Dubowitz *et al.*, 1994; Henggerler, 1989; Rickel and Allen, 1987), but others (e.g. Jones, 1992, 1996; Jones and Hansen, 1996; Inglehart, 1994) have indicated that a large number of children raised in two-generation grandparents' homes were well-adjusted, as long as their caregivers did not experience stressors arising from poverty (Jones and Hansen, 1996). It is clear that more research needs to be done in order to clarify why mixed results have been obtained in previous studies.

Studies of non-African populations have shown that child maladjustment is greater in households facing family instability (i.e. HIV/AIDS related parental deaths; Forehand *et al.*, 1999) and elevated levels of caregiving stress (e.g. Gallagher, 2002; Dunn *et al.*, 1998). One implication of these previous investigations is that the care provided by highly stressed and impoverished Kenyan grandmothers could be detrimental to the socio-emotional development of total orphans that they have adopted. One mechanism in the presumed link between poverty, experienced stress and child maladjustment is that elevated levels of caregiving stress and financial difficulties increase caregiver perception of negative child adjustment (e.g. Dubowitz *et al.*, 1994; Edwards, 1998; Dunn *et al.*, 1998; McMunn *et al.*, 2001; Daly and Glenwick, 2000; Jones and Hansen, 1996).

Caregiver advanced age, elevated levels of experienced stress and poverty have also been associated with caregivers' inability to provide stable and consistent family environments necessary for positive child adjustment (Jones and Hansen, 1996). Previous investigations (e.g. Dubowitz *et al.*, 1994; Edwards, 1998) also reported a potential bi-directional relationship between elevated levels of caregiving stress and children's psychosocial adjustment difficulties. Caregivers high in stress reportedly perceive their children to be maladjusted (e.g. Dubowitz *et al.*, 1994; Edwards, 1998), while child adjustment difficulties are also associated with a rise in caregiving stress (e.g. Gallagher, 2002).

However, very little of this kind of research has examined these developmental processes in African families. The majority of prior studies that assessed the socio-emotional development of children raised by grandmothers were mainly based on samples drawn from US, Britain and Canada which have been less affected by the HIV/AIDS orphan crisis (e.g. Jones, 1992, 1996; Jones and Hansen, 1996; Henggerler, 1989; Rickel and Allen, 1987). Others (e.g. McMunn *et al.*, 2001; Dunn *et al.*, 1998) have focused on adverse effects of divorce and single parenthood on externalizing behaviours of children in the care of their own biological parents. A review of documented sub-Saharan African studies that assessed links between caregiving stress and the socio-emotional adjustment of orphaned children revealed a general lack of relevant research. Most of the previous studies of African families focused on the problems experienced by orphans and their caregiving grandmothers, and did not compare the development of orphans and non-orphans (e.g. Ankrah, 1993; Ntozi, 1997; Sengendo and Nambi, 1997).

The research design in the current study was intended to assess the links between caregiver stresses, variations in family contexts (i.e. normalcy of caregiving within the life course role context, Catell, 1993; Makoni and Ferreira, 2002; Moen *et al.*, 1995), and children's own socio-emotional development. From the reviewed literature, it is clear that more research is needed on these developmental processes in African populations. Such research is required, in order to test whether existing findings based on European and North American samples generalize to African populations. In addition, with the growing crisis in family structure and care for orphans in sub-Saharan Africa, this research could inform social policy experts and practitioners about possible mechanisms for prevention of child maladjustment and required intervention programs in this population.

Study Aims

The focus of the current study was to determine whether extensive caregiving roles linked to full-time adoptive responsibilities currently assumed by grandmothers were associated with elevated levels of caregiving stress and orphaned children's adjustment difficulties. The specific aims of the current study were to examine the levels of parenting stress found among grandmothers raising their orphaned grandchildren, and to compare their parenting stress level to that of biological parents living in the same communities. We statistically controlled for caregiver age in the analyses. In addition, we also assessed the adjustment of the orphans, and estimated the association between parenting stress and maladjustment among these Kenyan children.

METHOD

Sample

The participants resided within the mainly rural administrative divisions of Kasipul and West Karachuonyo in the Rachuonyo district of Nyanza province, Kenya. People belonging to the Luo ethnic group predominantly occupy the district. We focused on recruiting families in these rural areas occupied by the Luo people because traditional extended three-generation family networks were common there, and HIV/AIDS prevalence rates were high (over 30%; Nyambedha *et al.*, 2001; 2003a, b).

Until the HIV/AIDS orphan crisis in Africa, the Luo lived within self-reliant patrilineal extended three-generational families consisting of grandparents, married sons and their children. Traditional values of sharing available resources and reciprocal assistance to those in need ensured that orphans were taken care of well within their respective patrilineal clans in these multi-generational family networks.

However, with the growing crisis, two-generation families consisting of grandparents and their dead children's orphans are becoming common. These family or clan-based Luo welfare structures are weakening due to the higher prevalence of HIV/AIDS related mortality, widespread impoverishment and decreasing traditional solidarity (Grigorenko *et al.*, 2001; Nyambedha *et al.*, 2001; 2003a). A more detailed ethnographic characterization of the traditional Luo family structures and the emerging non-conventional familial patterns can be obtained from Ocholla-Ayayo (1976), Nyambedha *et al.* (2001; 2003a) and Grigorenko *et al.* (2001).

Eight sub-locations (each consisting of several clans or villages of individuals with common ancestry; Nyambedha *et al.*, 2003a) and 16 primary schools within the two administrative divisions were selected at random. A list of grandmothers caring for orphaned grandchildren was developed using information provided by teachers, religious leaders, local agents of the government and community based non-governmental organizations providing HIV/AIDS related care. Thirty full-time caregiving grandmothers of orphans were randomly chosen from each of the selected 16 schools. One hundred and thirty-four grandmothers were then chosen from a population of 480 using the SPSS random sampling technique. All of them agreed to participate in the study. The other group consisted of 115 biological mothers randomly selected from the first three adjacent homesteads of the chosen grandmothers. These two groups of caregivers lived with their children and grandchildren in the same homesteads.

Biological mothers (mean age = 37 years, S.D. = 8.01, Range = 23–54) lived within three-generation family contexts, unlike grandmothers (mean age = 66 years, S.D. = 10.4, Range = 40–85) who raised their dead sons' (68%) and daughters' (32%) children in two-generation families. One hundred and sixteen (85%) of these grandchildren lost both parents, 15 (11%) had one ailing biological parent, and the remaining 5 (4%) were children neglected by surviving parents.

Most of the grandmothers were illiterate (83%), relied on peasant farming (77%, 18% were in business, 4% were formally employed and 1% obtained remittances from relatives), and cared for children as young as 2 years to as old as 16 years ($M = 9.4$, S.D. = 2.8). Just over half (57%) were married. The more educated biological mothers (26% had between 4–7 years of basic formal learning and 55% had high school and over education; 19% were illiterate) were more likely to be married (88%), were caring for younger children ($M = 7.2$, S.D. = 2.4, Range = 2–10), and were involved in a wider range of income generating activities (30% were peasants, 37% were in business and 33% were formally employed). All of the grandmother vs. mother group differences described here were significant at $p < 0.01$ (based on chi-square tests or between subjects ANOVA tests).

Measures

Demographic information was obtained through a structured interview that determined the age and relationship of the caregivers to the target children, levels of educational attainment, current marital status, family sources of income, gender, age and factor(s) leading to the children's adoptions. We also assessed caregiving stress and children's socio-emotional adjustment.

Parenting Stress

Abidin's (1990) 36-item Parenting Stress Index Short Form (PSI-SF) was used to assess caregiving stress linked to parental distress, child difficulty and caregiver-child dysfunctional interactions. Parental distress measures stress related to caregiver perceptions of own incompetence, role restrictions and relationship problems (i.e. 'I often have the feeling that I cannot handle things very well'). Child difficulty assesses children's behavioural manageability (i.e. 'My child has turned out to be more of a problem than I expected'). Parent-child dysfunctional interaction measures the quality of the current caregiver-child relationship (i.e. 'My child rarely does things that make me feel good'). These items are rated on a 5-point Likert scale ranging from 1 = 'strongly agree', 2 = 'agree', 3 = 'not sure',

4 = 'disagree' and 5 = 'strongly disagree' (Abidin, 1990). We reverse-scored these items, whereby higher scores indicated more distress. For the purposes of analyses in the current study, we used the total PSI-SF score (a sum of all 36 items across the three sub-scales; $\alpha = 0.67$). This total score has a potential range from 36 to 180. This total score was used because of prior evidence (e.g. Rodriguez and Green, 1997) suggesting that the total score captures experienced stress more thoroughly than the individual sub-scale scores.

Child Socio-emotional Adjustment Problems

Emotional and behavioural symptoms of maladjustment were assessed using the Strengths and Difficulty Questionnaire (SDQ; Goodman, 1997). Caregivers and teachers were asked to rate children using five SDQ subscales (of 5 items each) that assess prosocial behaviours (i.e. shares readily with other children), hyperactivity (i.e. restless, overactive, cannot stay still for long), emotional problems (i.e. 'often unhappy, downhearted or tearful'), conduct problems (i.e. 'often has temper tantrums or hot temper') and peer problems (i.e. 'rather solitary, tends to play alone'). For a detailed list of the subscale items, see McMunn *et al.* (2001) and Goodman (1997).

The SDQ is rated on a three-point Likert scale ranging from 0 = 'not true', 1 = 'somewhat true', to 2 = 'certainly true'. For the purposes of the current study, we used the SDQ Total Problems score (comprised of 20 items, five each from the hyperactivity, conduct, emotional, and peer problems subscales, and excluding the prosocial behaviour sub-scale; Goodman, 1997). The potential range of scores varies from 0 to 40, and the scale $\alpha = 0.75$ for caregiver ratings and 0.77 for teacher ratings. Because the caregivers and teachers completed identical items and their ratings were substantially correlated ($r = 0.67, p < 0.01$), we averaged teacher and caregiver ratings, a strategy that yields a more reliable total score (Goodman, 1997). On this total problems scale, a score of 17 or more suggests evidence of clinically relevant child maladjustment.

Procedure

Data were collected on two occasions by the author (a native speaker of the Luo language) and two pre-trained assistants recruited from the same community as the participants. During the initial session, informed verbal consent, time and date for the second interview schedule, and demographic information were obtained from participants willing to take part in the project. Confidentiality assurances and purposes of the research were explained to them. The intention was to avoid generating suspicions or lead them into believing that they had to be paid in order to participate in the study. Data obtained from the preliminary session were used to select in advance the SDQ version to be used during the second visit (because the SDQ has age specific versions, i.e. 3–4 and 5–16 years; Goodman, 1997). The SDQ and PSI-SF were administered during the second data collection session.

RESULTS

The goal of the current study was to assess and describe the level and variation of experienced stress (i.e. PSI score) among full-time caregiving grandmothers, and to compare them to mothers in biological families. We also sought to examine the

links between elevated levels of caregiving stress and child maladjustment (i.e. SDQ score). We compared the adjustment levels of orphans and children still living with their birth parents, and also contrasted caregiving stress experienced by biological mothers and grandmothers in order to assess the possibility that among orphans and elderly caregiving grandmothers, disruptions in ideal life course roles could be linked to elevated levels of experienced stress and increased perception of child adjustment difficulties (e.g. Dubowitz *et al.*, 1994; Edwards, 1998).

Results from a between-group one-way ANOVA indicated that the grandmothers experienced significantly more caregiving stress (PSI score, $M = 126$, $S.D. = 20$, range = 75–153) than the biological mothers ($M = 97$; $S.D. = 16$; range = 62–130), $F(1, 247) = 160$, $p < 0.001$. Pearson's correlations indicated that PSI scores were higher for caregivers who were older, in both groups of families (grandmothers, $r = 0.26$, $p < 0.01$; mothers, $r = 0.24$, $p < 0.05$). The grandmother vs mother group difference in PSI scores remained after caregiver age was statistically controlled using analysis of covariance (ANCOVA), $F(1, 244) = 13.4$, $p < 0.001$. The child SDQ score was significantly associated with caregiver age ($r = 0.26$ for the grandmothers and $r = 0.23$ for mothers; $p < 0.01$). The associations between the SDQ and PSI scores ($r = -0.67$ for grandmothers and $r = -0.33$ for mothers; $p < 0.01$) also were statistically significant.

In contrast to the expectation that caregivers high in stress (and especially the grandmother group) would be more likely to rate their children or grandchildren as being maladjusted, the mean SDQ score for both the grandmothers ($M = 11.42$, $S.D. = 4.07$) and mothers ($M = 15.60$, $S.D. = 4.6$) were within the normal/borderline range (i.e. below a score of 17: Goodman, 1997). In a between-group ANCOVA (controlling for caregiver age), the main effect of caregiver type on child SDQ scores was not significant, $F(1, 244) = 2.1$, $p = 0.15$.

The results described above suggest that the grandmothers reported elevated levels of experienced stress compared to the biological mothers. However, the non-significant main effect of caregiver type (grandmother vs mother) on child adjustment when caregiver age was controlled was an indication that other factors apart from caregiver type were likely responsible for the obtained negative correlation between caregiving stress and perceived child adjustment difficulties.

To estimate variance accounted for and to test for caregiver group differences, two separate hierarchical regression models were estimated. In the first model, we predicted variance in PSI scores from caregiver type (coded grandmother = -1, mother = +1), SDQ scores, and the two-way interaction between caregiver type and SDQ score. In the second model, we predicted variance in SDQ scores from caregiver type, PSI scores, and the two-way interaction between caregiver type and PSI score. These models were estimated with caregiver age as a covariate. The PSI and SDQ scores were standardized prior to computing interaction terms for the models. We explored the two-way interactions so as to determine whether the associations between PSI and SDQ scores differed significantly across caregiver types.

In the first step of the model predicting PSI scores, the main effects of caregiver type, age, and child SDQ scores were estimated. Significant effects ($p < 0.001$) included caregiver type, $\beta = -0.27$, caregiver age, $\beta = 0.21$, and SDQ scores, $\beta = -0.41$. In the second step of the model, we entered the two-way interaction between caregiver type and SDQ score, and it was significant, $\beta = 0.19$, $p < 0.001$. This indicated that the caregiver type difference in the correlation between PSI and SDQ scores as reported above ($r = -0.67$ for

grandmothers, $r = -0.33$ for mothers) was statistically significant. The full model accounted for 60% of the variance in PSI scores, $F(4,242) = 93.2, p < 0.001$.

In the first step of the model predicting SDQ scores, the main effects of caregiver type, age, and PSI scores were tested. PSI score was the only significant predictor, $\beta = -0.58, p < 0.001$. In the second step of the model, the two-way interaction between caregiver type and PSI score was estimated; it was not significant. The full model accounted for 41% of the variance in SDQ scores, $F(4, 242) = 43.2, p < 0.001$.

DISCUSSION

The primary focus of the present investigation was to assess caregivers' stress and perceptions of the adjustment of orphaned children who were adopted by their grandmothers. Our main expectation was the fostering grandmothers who were occupying caregiving roles that were not typical (Nyambedha *et al.*, 2003a) would experience elevated levels of stress, compared to biological mothers involved in caregiver roles that were normative for their age group and the broader social structure of their culture. We also anticipated that the adoptive grandmothers would report that their grandchildren were more maladjusted, compared to the children being raised by their own birth parents. Our finding that the grandmothers experienced significantly higher levels of stress than the biological mothers was consistent with these expectations, and partly in line with results obtained from previous studies (e.g. Daly and Glenwick, 2000; Kelley, 1993; Nyambedha *et al.*, 2003a).

The higher levels of stress among fostering grandmothers was probably linked to their having to assume extensive caregiving roles at a time when they were advanced in age and therefore lacking the physical abilities required of caring for young children (Kelley, 1993; Nyambedha *et al.*, 2003a). In addition, greater stress could have been linked to the complicated life transitions that they were expected to make, from being the main *recipients* of social welfare benefits in the family and community, to being the *providers* of assistance when they assumed full-time caregiving responsibilities (Nyambedha *et al.*, 2003a).

Although our results showing higher caregiving stress for those occupying non-normative grandparenting roles were consistent with the results of some previous studies (e.g. Kelley, 1993; Kelley and Damato, 1995), the anticipated positive correlation between higher stress and more perceived child adjustment problems was not found. In contrast to our expectation, grandmothers did not rate their children as more maladjusted than their less stressed biological mother counterparts. This result is not consistent with previous investigations showing that elevated levels of caregiving stress increase the likelihood that elderly caregivers will report their grandchildren to be less well adjusted (e.g. Forehand *et al.*, 2002a, b; Jones, 1992; 1996; Jones and Hansen, 1996). However, it should be noted that we controlled for caregiver age in these analyses, because the grandmothers obviously were older (on average) than the biological mothers. Interestingly, when we ran analyses while not controlling for caregiver age, grandmothers did report higher levels of maladjustment in their grandchildren compared to biological mothers—a result that is more consistent with these previous studies.

In general, the caregiving grandmothers provided positive assessments of their grandchildren's adjustment. This could be linked to their selflessness to adopt orphans at a period when their genealogical prosperity is threatened and others

are not willing to adopt their grandchildren (e.g. Catell, 1993; Nyambedha *et al.*, 2001; 2003a; Kilbride, 1985; Forsythe and Rau, 1996). Studies that have assessed generational support in Kenyan societies (e.g. among the Gusii of Western Kenya, Håkanson and Levine, 1997; Kilbride, 1985; Catell, 1993), and other studies carried out in similarly collectivistic communities with non-state family based social welfare systems (e.g. Hareven, 1994), suggest that when the well-being or survival of socially interdependent family units are threatened by unanticipated events, higher levels of stress do not necessarily predispose caregiving women to project their negative psychological well-being onto their perceptions of and interactions with their children.

For example, Kilbride (1985) and Nyambedha *et al.* (2003b) reported that moral obligations probably made grandmother caregivers sacrifice their own self-interests, aspirations or ideal life courses (e.g. having non-restrictive caregiving roles in old age) for the common good of their own families or larger community. These authors also noted that grandmothers did this, irrespective of the stresses linked with the assumption of burdensome parenting duties. Stress related research (for a review see George, 1993; Catell, 1993; Nyambedha *et al.*, 2003b) and studies that have used a life course role-based context approach to ageing (e.g. George, 1993; Moen *et al.*, 1992; Hareven, 1994; Kilbride, 1985; Catell, 1993) suggest that apart from life stresses and interrupted life transitions, there are multiple other determinants of psychological well-being such as cultural factors, coping efforts and social support.

According to Catell (1993), although full-time adoptive responsibilities are usually very burdensome to elderly grandmothers who are operating under severe economic constraints, these responsibilities also produce contrasting feelings of burden and self-pride. In line with these relevant studies cited above, adoptive grandmothers who come to accept their reversed roles may do so out of pride and self-respect, and desire not to be viewed as neglectful of their destitute, orphaned grandchildren (Nyambedha *et al.*, 2001, 2003a). This may moderate the adverse effects of caregiving stress in these grandmothers (Catell, 1993; Nyambedha *et al.*, 2001, 2003a; Burton, 1992), and could possibly explain why we found a significant negative correlation between higher levels of stress and lower child behavioural problems (SDQ) scores.

The conclusion that we draw from our study is that the observed variation in caregiving stress, and the negative correlation with child maladjustment, arises from non-normative and burdensome roles occupied by elderly caregiving grandmothers. Findings from this study contribute to our understanding of Kenyan orphaned children's adjustment, in that there does not seem to be strong evidence for negative effects when grandmothers raise them. Our findings however should be considered within the context of several methodological limitations. For example, our reliance on self-reports and the cross-sectional nature of the data prevent us from drawing inferences about causality linking child maladjustment and caregiver stress. The study also should be interpreted in light of concerns that the scales used were developed for European American samples of biological parents, and may yield results that are not consistent when used in studying other populations. Instruments specifically developed for elderly caregivers are still very limited (Trockmann *et al.*, 1997), and we have found no evidence that such instruments have ever been used to study African populations. Consequently, the generalizability of our results, especially the unexpected negative correlation between PSI and SDQ scores, should be carefully considered.

Another caveat is that we did not assess the amount of time that had elapsed since the children had become orphaned (see Forehand *et al.*, 1998, 1999). It is possible that the adoptive grandmothers had in fact experienced very high levels of stress, and the children very high levels of maladjustment, in the time immediately following the death of the children's parents, but that these increases dissipated over time (Nyambedha *et al.*, 2003a, b). We thus suggest that future studies should address this point as well as the other limitations noted above. Doing so may point to clearer indicators of the inferred resiliency among these orphaned children and their adoptive grandmothers who are caring for them under very stressful circumstances.

On the basis of our findings, we recommend that adoption of orphaned children can still be carried out within the familiar patrilineal grandparent kin structure. Arrangements should however be made to limit the stress linked to socio-economic disadvantage encountered by elderly grandmothers when they assume full-time adoptive responsibilities.

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