

# Relationships Among HIV/AIDS Orphanhood, Stigma, and Symptoms of Anxiety and Depression in South African Youth: A Longitudinal Investigation Using a Path Analysis Framework

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## Abstract

Cross-sectional research has demonstrated that HIV/AIDS orphanhood is associated with anxiety and depression and that HIV/AIDS-related stigma is a risk factor for these outcomes. This study used a longitudinal data set to determine whether relationships between HIV/AIDS orphanhood and anxiety/depression scores (measured at 4-year follow-up) operate indirectly via perceived stigma. Youths from poor communities around Cape Town were interviewed in 2005 ( $n = 1,025$ ) and followed up in 2009 ( $n = 723$ ). At baseline, HIV/AIDS-orphaned youth reported significantly higher stigma and depression scores than youth not orphaned by HIV/AIDS. At follow-up, HIV/AIDS-orphaned youth reported significantly higher stigma, anxiety, and depression scores. However, HIV/AIDS orphanhood was not directly associated with anxiety or depression. Instead, significant indirect effects (operating through perceived stigma) were obtained for both assessment periods. Results demonstrate that stigma persists across time and appears to mediate relationships between HIV/AIDS orphanhood and psychological distress. Interventions aiming to reduce stigma may help promote the mental health of HIV/AIDS-orphaned youth.

## Keywords

stigma, HIV/AIDS, orphan, anxiety, depression, South Africa

Received 1/7/13; Revision accepted 1/22/13

HIV/AIDS has resulted in a substantial increase in the number of orphans internationally, and UNICEF estimates that by 2020 40 million youth may have lost one or both parents to HIV/AIDS (Maughan Brown, 2010). Sub-Saharan Africa has been most severely affected and accounts for over 80% of HIV/AIDS-orphaned youth. By 2010, an estimated 1.9 million youth had been orphaned by HIV/AIDS in South Africa alone. (UNAIDS, 2010). Importantly, HIV/AIDS is one of the most stigmatized diseases in history (Parker & Aggleton, 2003). *Stigma* refers to an attribute that is deeply discrediting and marks the person not only as different but as bad, dangerous, or weak (Goffman, 1963). South Africa has particularly high levels of HIV/AIDS-related stigma, ranging from subtle rejection to physical assault and even murder (Skinner & Mfecane, 2004). There is a growing body of research demonstrating that HIV/AIDS-orphaned youth are at elevated risk of internalizing problems, such as anxiety and depression (Cluver & Gardner, 2007a), and that HIV/AIDS-related stigma is an important risk factor associated with mental health outcomes in this

vulnerable population (Cluver, Gardner, & Operario, 2008; Cluver & Orkin, 2009; Wang et al., 2012). This study used longitudinal data from a 4-year follow-up study to examine relationships among HIV/AIDS orphanhood, stigma, anxiety, and depression in a large sample of South African youth.

Multiple cross-sectional studies in sub-Saharan Africa have demonstrated that HIV/AIDS orphanhood is associated with emotional distress—particularly with regard to symptoms of anxiety, depression, and posttraumatic stress (Atwine, Cantor-Graae, & Bajunirwe, 2005; Bhargava, 2005; Cluver, Gardner, & Operario, 2007; Nyamukapa et al., 2008). Similar findings have been obtained in China (Fang et al., 2009; Wang et al., 2012; Zhao et al., 2007) and the United States (Forehand et al.,

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1999; Pelton & Forehand, 2005). Recent research indicates that HIV/AIDS-orphaned youth are at greater risk of these internalizing problems even when compared with youth orphaned by other causes (Cluver et al., 2007) and that these negative mental health outcomes are maintained longitudinally (over a 4-year period; Cluver, Orkin, Gardner, & Boyes, 2012). These findings have resulted in calls in the international literature for a focus on the psychosocial support needs of orphans and vulnerable children (Skinner et al., 2006). Understanding the pathways through which HIV/AIDS orphanhood affects youth mental health is crucial if appropriate services for HIV/AIDS-affected youth are to be developed and tested (Cluver & Orkin, 2009).

Recently, a developmental psychopathology framework of the psychosocial needs of children orphaned by HIV/AIDS has been proposed to guide research (Li et al., 2008). This framework is based on the social-ecological theory of Bronfenbrenner (1979) and includes general risk factors, such as poverty and lack of education (hypothesized to be important for all orphaned and vulnerable children). However, the experience of HIV/AIDS-related stigma is identified as a key distinction between HIV/AIDS-orphaned youth and youth orphaned by other causes. Using this framework as a theoretical rationale, the current study focuses on HIV/AIDS-related stigma as a potential mediator of the relationship between HIV/AIDS orphanhood and symptoms of anxiety and depression.

Research from the developed world (Antle, Wells, Goldie, DeMatteo, & King, 2001; Ingram & Hutchinson, 1999) and sub-Saharan Africa (Campbell, Skovdal, Mupambireyi, & Gregson, 2010; Greef et al., 2010; Maughan Brown, 2006) has demonstrated that being HIV/AIDS affected is associated with social rejection and exclusion. There is also qualitative evidence from South Africa that HIV/AIDS-orphaned youth experience bullying, discrimination, gossip, taunting, and verbal abuse referencing deceased parents or sick caregivers (Cluver & Gardner, 2007b). Additionally, quantitative research has demonstrated that HIV/AIDS-related stigma is a significant risk factor for the development of internalizing problems amongst HIV/AIDS-orphaned youth (Cluver et al., 2008; Cluver & Orkin, 2009; Wang et al., 2012). A South African study demonstrated that the proportion of HIV/AIDS-orphaned youth who scored in the clinical range for an internalizing disorder (anxiety, depression, or posttraumatic stress) was nearly 3 times higher when youth not only were HIV/AIDS orphaned but also experienced HIV/AIDS-related stigma (Cluver & Orkin, 2009). Similarly, a recent Chinese study reported that HIV/AIDS-related stigma was positively associated with symptoms of depression in a sample of 755 HIV/AIDS orphans. Finally, data from South Africa has demonstrated that HIV/AIDS-related stigma is a significant mediator of the relationships between HIV/AIDS orphanhood and symptoms of depression, posttraumatic stress, and peer problems (Cluver et al., 2008). However, these studies are all limited by their reliance on cross-sectional data, which preclude interpretations regarding the direction of associations, as well as potential long-term associations among

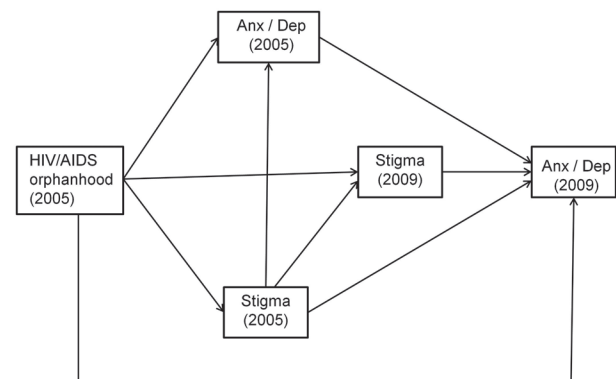
HIV/AIDS orphanhood, stigma, and youth mental health outcomes. There is thus a clear need for longitudinal data to clarify relationships among HIV/AIDS orphanhood, stigma, and psychological distress over time.

The aim of this longitudinal study was to examine relationships among HIV/AIDS orphanhood, HIV/AIDS-related stigma, and symptoms of anxiety and depression measured at 4-year follow-up (using a path analysis framework). The study aimed to extend the existing literature by (a) determining whether stigma experienced by HIV/AIDS-orphaned youth persists over time and (b) empirically testing if relationships between HIV/AIDS orphanhood and symptoms of anxiety and depression measured 4 years later operate indirectly through perceived stigma. If stigma is an important mediator of the psychological distress experienced by HIV/AIDS-orphaned youth, this will have important implications for intervention design in South Africa and would establish HIV/AIDS-related stigma reduction as a priority for future research. This may be particularly important in a context of severely constrained resources for child and adolescent mental health. Based on previous cross-sectional findings, a hypothesized model of associations among HIV/AIDS orphanhood (at baseline), HIV/AIDS-related stigma (at baseline and follow-up), and symptoms of anxiety and depression (at baseline and follow-up) was developed and is illustrated in Figure 1.

## Method

### Participants

In 2005, 1,025 youth (540 male and 485 female) from poor periurban communities around Cape Town were interviewed in a study examining psychological distress in HIV/AIDS-orphaned children (Cluver et al., 2007). All youth were Black African, and 97% were of Xhosa ethnicity. Ages ranged between 10 and 19 years. Participants were sampled from households in 10 settlements, 9 schools, 18 community-based organizations, and additional purposive sampling of street



**Fig. 1.** Hypothesized model of associations among HIV/AIDS orphanhood, stigma, and mental health outcomes. Arrows represent associations hypothesized to be statistically significant. Anxiety and depression to be modeled independently.

children and youth-headed households, aiming to incorporate groups that are often excluded from surveys. The United Nations definition of orphanhood was used—that is, the loss of one or both parents in children and adolescents prior to the age of 18 years. To exclude acute bereavement reactions, children orphaned in the previous 6 months were not interviewed. The baseline (2005) sample included 425 HIV/AIDS-orphaned youth (see Cluver et al., 2007, for a detailed description of the sample).

Youth were followed up in 2009 ( $n = 723$ , 71% retention), and for the current article, the sample is limited to youth interviewed at baseline and follow-up (see Table 1 for a summary of sample characteristics). A 4-year follow-up period was chosen to assess the long-term impacts of HIV/AIDS orphanhood on child mental health (Cluver et al., 2012). Challenges to follow-up included the demolition of an informal settlement (where 189 youth were interviewed in 2005), high mobility among orphaned youth, and the near impossibility of tracing street children after 4 years. Twelve interviews were stopped owing to participants' substance intoxication or police raids. Thirty youth were interviewed in provinces other than the Western Cape, and 3 were interviewed in prison. Overall, 477 youth had moved homes and 111 had moved city or province.

## Measures

**Determining cause of parental death.** In South Africa death certificates are an unreliable source of HIV/AIDS mortality, and clinical diagnosis is rarely available. Therefore, cause of parental death was determined using the “verbal autopsy” method (Lopman et al., 2006), based on youth responses at baseline assessment. This methodology has been validated for use in South Africa (Kahn, Tollman, Garenne, &

Gear, 2000). Determination that parental death was HIV/AIDS related required a conservative threshold of three or more HIV/AIDS-defining illnesses (e.g., oral candidiasis, HIV wasting syndrome, Kaposi's sarcoma). Cases in which the cause of death could not be determined ( $n = 81$ ) were excluded from the analyses.

**Sociodemographic information.** Information on the age and gender of youth, as well as whether they lived in informal (shack) housing, was collected so that analyses could control for this. Items were derived from the South African census and were based on youth reports.

**Stigma.** In 2005 no validated instruments to measure stigma among orphans existed. Therefore, a brief four-item scale was devised—based on the HIV stigma-by-association scale for HIV+ adolescents (Berger, Ferrans, & Lashley, 2001). Participants reported the frequency (0 = *never*, 2 = *very often*) of being teased, being treated badly, and being gossiped about because someone in their family was sick or had died. Additionally, youth reported on the extent to which these events caused distress (0 = *not at all*, 2 = *very much*). Responses to the four items were summed to give a total stigma score, which could range between 0 and 8. Internal consistency for the scale was good:  $\alpha = .83$  for the three stigma items, and  $\alpha = .88$  when including the extent of distress (Cluver et al., 2008). An extended version of this stigma scale, which has recently been validated for use with South African youth (Boyes, Mason, & Cluver, 2013), was included in the 2009 follow-up data collection.

**Anxiety.** Anxiety was measured using the Revised Children's Manifest Anxiety Scale (Reynolds & Richmond, 1978), which contains 28 anxiety-related items with *no/yes* response options. The scale shows good internal consistency ( $\alpha = .79-.85$ ;

**Table 1.** Sample Characteristics and Mean (SD) Stigma, Anxiety, and Depression Scores in 2005 and 2009 as a Function of Being HIV/AIDS Orphaned in 2005

Characteristic	Youth orphaned by HIV/AIDS at baseline ( $n = 295$ )	Youth not orphaned by HIV/AIDS at baseline ( $n = 428$ )	$F/\chi^2$	Effect size (partial $\eta^2$ )
Mean age in 2005	14.26 (2.41)	13.38 (1.98)	29.09**	.04
Male (2005)	48%	52%	0.92	—
Lives in informal dwelling	39%	27%	2.17	—
Stigma (2005)	2.42 (2.61)	0.76 (1.75)	85.61**	.11
Stigma (2009)	4.64 (5.07)	2.33 (3.61)	36.69**	.05
Anxiety (2005)	11.81 (5.36)	10.92 (5.22)	1.90	.00
Anxiety (2009)	6.04 (3.67)	4.94 (3.46)	8.76*	.01
Depression (2005)	3.27 (2.71)	2.20 (2.36)	19.69**	.03
Depression (2009)	3.86 (3.44)	2.89 (2.91)	9.00*	.01

Note:  $F$  and  $p$  values associated with univariate analyses of variance and covariance (controlling for age, gender, and formal/informal housing) or chi-square test. Anxiety scores in 2005 are based on all 28 items of the Revised Children's Manifest Anxiety Scale. Anxiety scores in 2009 are based on the 14 highest-loading items (identified after factor analyzing the 2005 data) administered at follow-up. Stigma scores in 2005 are based on four items. Stigma scores in 2009 are based on an extended scale (10 items) that has recently been validated (Boyes, Mason, & Cluver, 2013).

\* $p < .01$ . \*\* $p < .001$ .

Reynolds & Paget, 1981) and has recently been validated for use in South Africa (Boyes & Cluver, in press). Due to time constraints, only the 14 highest-loading items (after factor analyzing the 2005 data) were administered at follow up in 2009 ( $\alpha = .82$ ).

**Depression.** Depression was measured with the Child Depression Inventory–Short Form (Kovacs, 1992). This scale contains 10 items representing a range of depressive symptoms. For each item, the participant was asked to choose one statement that best reflected his or her feelings in the past 2 weeks. Items are summed to give a total depression score. The short form is highly correlated with the full version (Kovacs, 1992), has good psychometric properties ( $\alpha = .71$ – $.94$ ; Saylor, Finch, & Spirito, 1984), and has been previously used in South Africa.

## Procedure

Ethical approvals were obtained from the University of Oxford, the University of Cape Town, and the Western Cape Department of Education. Participation was voluntary, and informed consent was obtained from all youth and primary caregivers; however, other than consenting to child participation, no information was collected from caregivers. All measures were translated from English to Xhosa by two master's-level researchers and independently back-translated by a Xhosa-speaking research psychologist. Owing to low literacy rates (Mulis, Martin, Kennedy, & Foy, 2007), questionnaires were administered verbally by five interviewers. Interviewers were all local community health or social workers who had received training in working with children from poor communities and administering standardised questionnaires. The design of the overall questionnaire package was assisted by a Teen Advisory Group of 14 HIV/AIDS-affected children. The questionnaire booklet was designed in the style of a teen magazine, and it included pictures of popular music stars and cartoons. Confidentiality was maintained unless children requested assistance or were at risk of significant harm. No incentives to participate were provided, and in total, participation took 40 to 60 minutes at baseline and follow-up assessment.

## Statistical analyses

Analyses were conducted in three stages. First, we checked for any differences in sociodemographic and mental health variables between youth lost and retained at follow-up. Second, univariate analyses of covariance (controlling for age, gender, and formal/informal housing) were conducted to determine whether HIV/AIDS-orphaned youth experienced more stigma and reported more symptoms of anxiety and depression than youth not orphaned by HIV/AIDS at baseline and follow-up. Third, path analysis was employed to test the hypothesized models specifying relationships between being HIV/AIDS orphaned at baseline and stigma, anxiety, and depression

measured at baseline and follow-up (Fig. 1). Analyses were performed in AMOS 19 using maximum likelihood estimation. Standardized regression coefficients ( $\beta$ ) were estimated for all paths (adjusted for age, gender, and formal/informal housing), as well as direct and indirect effects. Model fit was evaluated using the chi-square statistic ( $\chi^2$ ), which should be nonsignificant. Additionally, root mean square error of approximation (RMSEA) and the comparative fit index (CFI) are reported. For RMSEA, a value of .05 or less indicates good fit, and a value of .08 or less indicates acceptable fit. For CFI, a value of .95 or greater indicates good fit, and a value of .90 or greater indicates adequate fit (Blunch, 2008).

## Results

### Youth lost and retained at follow-up

First, we checked for differences between youth lost and retained at follow-up. The former were more likely to be male,  $\chi^2(1) = 4.18, p = .042$ ; older,  $F(1, 1022) = 17.81, p < .001$ , partial  $\eta^2 = .02$ ; and living in informal housing,  $\chi^2(1) = 6.24, p = .01$ . Moreover, youth lost to follow-up had higher scores in 2005 for depression,  $F(1, 1022) = 26.52, p < .001$ , partial  $\eta^2 = .03$ , and anxiety,  $F(1, 1016) = 7.20, p = .013$ , partial  $\eta^2 = .01$ . Although follow-up of 71% was relatively high after 4 years for this highly mobile and at-risk population, results must be interpreted in light of the fact that some of the most vulnerable children were among those unable to be traced. Analyses in the current study were limited to the 723 youth who were assessed at both time points.

### Stigma, anxiety, and depression at baseline and follow-up

Second, mean stigma, anxiety, and depression scores (using baseline and follow-up data) were calculated for youth who were HIV/AIDS orphaned or not in 2005. After controlling for age, gender, and formal/informal housing, HIV/AIDS-orphaned children reported significantly higher levels of stigma and obtained significantly higher depression scores at both time points. The difference in anxiety scores was not significant at baseline, but HIV/AIDS-orphaned youth obtained significantly higher anxiety scores at follow-up (Table 1).

### Path analyses

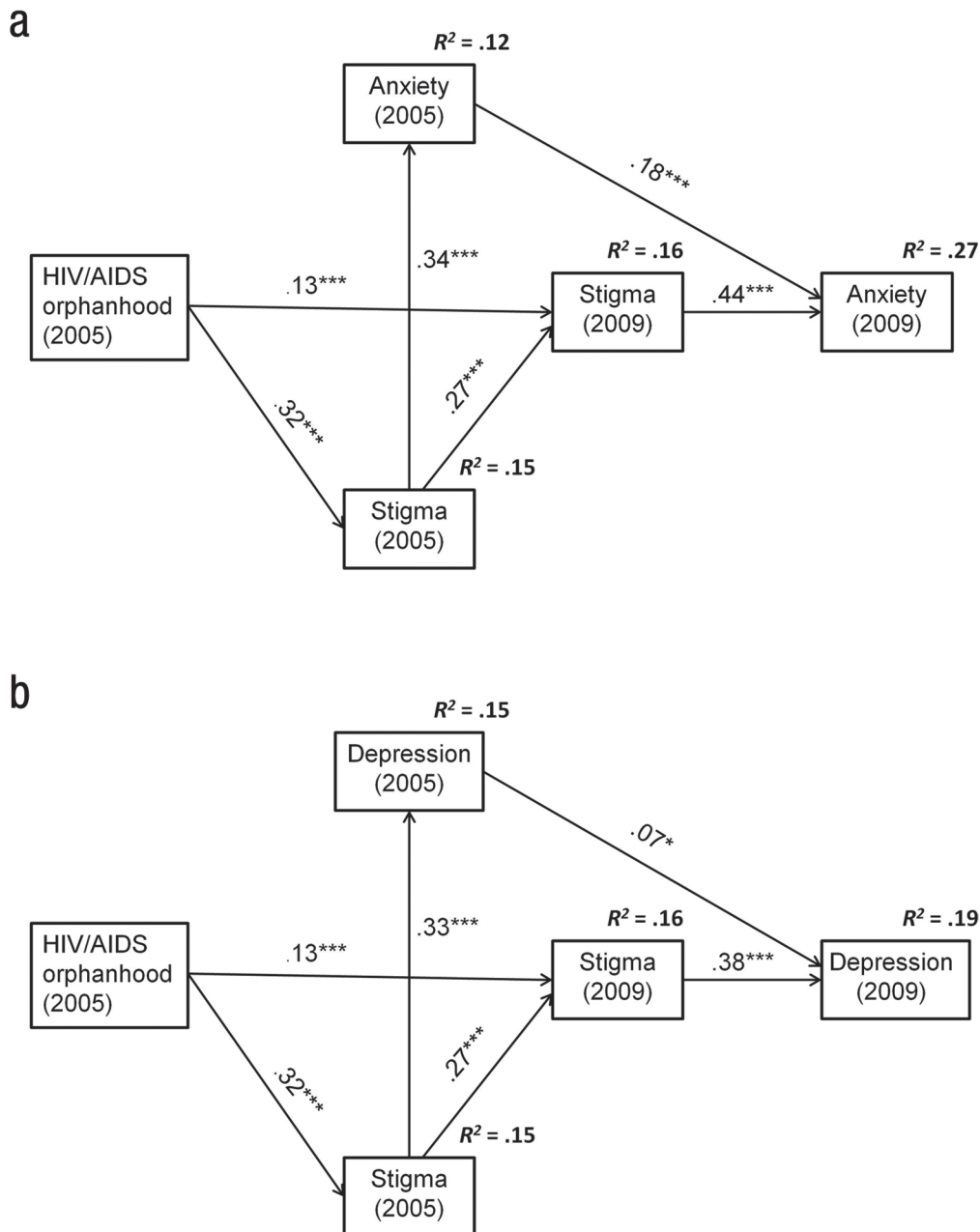
The initial hypothesized model is illustrated in Figure 1. This model was tested independently for anxiety and depression as outcomes. The hypothesized anxiety and depression models fit the data well: anxiety,  $\chi^2 = 17.09, p = .105$ , RMSEA = .028 (95% confidence interval [CI] = .000–.052), CFI = .990; depression,  $\chi^2 = 5.12, p = .276$ , RMSEA = .020 (95% CI = .000–.062), CFI = .998. However, the hypothesized direct links from HIV/AIDS orphanhood to anxiety and depression (at baseline and follow-up) were nonsignificant. Additionally, the hypothesized direct links between baseline stigma and



anxiety and depression measured at follow-up were nonsignificant. These nonsignificant links were eliminated and the revised models retained. These models have been adjusted for age, gender, and formal/informal housing.

The final path models were identical for anxiety and depression (Fig. 2) and accounted for 27% of the variance in anxiety scores and 19% of the variance in depression scores measured at follow-up. Fit statistics for both final models were good:

anxiety,  $\chi^2 = 19.78$ ,  $p = .137$ , RMSEA = .024 (95% CI = .000–.046), CFI = .991; depression,  $\chi^2 = 9.74$ ,  $p = .204$ , RMSEA = .023 (95% CI = .000–.055), CFI = .995. There was no direct effect of HIV/AIDS orphanhood on anxiety or depression measured at baseline or follow-up; however, significant indirect effects of HIV/AIDS orphanhood on baseline anxiety ( $\beta = .11$ , 95% CI = .08–.15,  $p = .002$ ) and depression ( $\beta = .11$ , 95% CI = .08–.14,  $p = .002$ ) were obtained (operating via baseline



**Fig. 2.** Final models of relationships among HIV/AIDS orphanhood, stigma, anxiety, and depression: (a) anxiety scores and (b) depression scores. Arrows represent significant associations. Standardized regression weights are reported. Models control for age, gender, and formal/informal housing.  
\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

stigma). Additionally, significant longitudinal indirect effects of HIV/AIDS orphanhood (operating via stigma experienced at baseline and follow-up, as well as baseline anxiety/depression) were obtained for scores measured at follow-up: anxiety ( $\beta = .12$ , 95% CI = .08–.16,  $p = .001$ ) and depression ( $\beta = .09$ , 95% CI = .06–.13,  $p = .001$ ).

## Discussion

The aim of the current study was to examine relationships among HIV/AIDS orphanhood, HIV/AIDS-related stigma, and symptoms of anxiety and depression measured in the context of a 4-year follow-up study. HIV/AIDS-orphaned youth reported significantly higher stigma and depression scores when measured at baseline and significantly higher stigma, depression, and anxiety scores at follow-up assessment. Additionally, significant effects of HIV/AIDS orphanhood on mental health outcomes were obtained in path analyses; however, results clearly reveal that being HIV/AIDS orphaned is not directly associated with anxiety or depression scores measured at baseline or follow-up. Rather, the impact of HIV/AIDS orphanhood on baseline anxiety and depression operates indirectly through the stigma that youth experienced at baseline. This is consistent with previous cross-sectional research (Cluver et al., 2008); however, the current study extends the literature by demonstrating that the longitudinal link between HIV/AIDS orphanhood and anxiety/depression also operates indirectly via stigma (measured at baseline and follow-up) and baseline mental health scores. Importantly, the current findings offer the first evidence (to our knowledge) that the stigma experienced by HIV/AIDS-orphaned youth is maintained over long periods and mediates relationships between HIV/AIDS orphanhood and internalising symptoms cross-sectionally and longitudinally. Moreover, the models linking HIV/AIDS orphanhood to longitudinal mental health outcomes were strikingly similar for anxiety and depression scores—demonstrating that the mediating effect of stigma is consistent across two major mental health domains.

The current findings elucidating clear links between perceived stigma and long-term mental health outcomes among HIV/AIDS-orphaned children suggest two priority areas for future research, which we believe should be pursued simultaneously. First, the current findings highlight the potential of stigma reduction programs to mitigate the psychological impacts of HIV/AIDS orphanhood in the short and long term; however, experimental intervention studies are clearly needed to demonstrate this empirically. Reducing HIV/AIDS-related stigma at a community level is complex and difficult (Cluver et al., 2008). A 2002 literature review highlighted a dearth of high-quality research on stigma reduction but did report positive impacts of community interventions, including provision of HIV-related information, group desensitisation, and increasing contact with HIV+ people (Klein, Karcher, & O'Connell, 2002). In general, research has focused on stigma directed at HIV-infected adults and children, and no studies to date have

evaluated the impact of stigma reduction on HIV/AIDS-orphaned children. Research examining causes of HIV/AIDS-related stigma (and stigma by association) within communities is needed to inform stigma reduction interventions, and resulting programs require rigorous evaluation—in terms of capacity to reduce community stigma and potential associated benefits to the well-being of HIV/AIDS-affected individuals and families.

Given the difficulty of stigma reduction at a community level and the lack of evidence for effective intervention in this area (Cluver et al., 2008; Klein et al., 2002), a second priority for research is identifying factors associated with the promotion of youth resilience in the context of exposure to HIV/AIDS-related stigma. Previous research with children who are exposed to a range of adversities has demonstrated considerable individual variation in outcomes, with some children appearing remarkably resilient even when exposed to chronic or severe stress (Rutter, 2006). Identifying modifiable individual-, familial-, and community-level factors that promote resilience for HIV/AIDS-orphaned youth will have important implications for intervention design. Ecological models of child development (Bronfenbrenner, 1979) posit cumulative and counterbalancing effects of risk and protective factors for child resilience in high risk contexts. Thus, by identifying factors that could buffer the impacts of stigma-related adversity, we can promote positive mental health among a group of youth exposed to parental death and discrimination.

A number of limitations of the current study should be noted. First, although follow-up of 71% was relatively high, results must be interpreted in light of the fact that some of the most vulnerable children were among those unable to be traced. Second, the Children's Depression Inventory–Short Form (Kovacs, 1992) has not been psychometrically validated in South African samples; however, it has been used extensively in South African studies, and the reliability of the scale in the current study approached traditional guidelines for acceptability ( $\alpha = .67$  at baseline,  $\alpha = .69$  at follow-up). Third, the current study was unable to conduct HIV testing, and the HIV status of the participants is unknown. There is evidence that HIV infection is associated with emotional distress; however, most distress occurs after a diagnosis has been made (Rochat et al., 2006), and because of the low testing rates in South Africa, most participants would be unaware of their HIV status. Future research should collect information on HIV status to determine whether this has an impact on relationships obtained between stigma and psychological distress in HIV/AIDS-orphaned youth. Finally, designs relying exclusively on self-report are at risk of method overlap bias. Specifically, youth who are anxious or depressed may feel more isolated and threatened and thus perceive higher levels of stigma (Cluver et al., 2008). However, perceived stigma is inherently subjective and can be measured only by self-report. To limit method overlap bias, stigma items focused as much as possible on specific acts (e.g., being teased; Cluver et al., 2008). Additionally, the use of longitudinal data reduces this problem to an

extent, given that baseline mental health and stigma scores are controlled for when predicting stigma, anxiety, and depression measured at follow-up.

Notwithstanding these limitations, the current study provides the first longitudinal evidence that the associations between HIV/AIDS orphanhood and anxiety/depression operate indirectly via HIV/AIDS-related stigma (at baseline and follow-up) and baseline mental health. These findings are consistent with previous research (Cluver et al., 2008; Cluver & Orkin, 2009; Wang et al., 2012) but overcome the limitations of cross-sectional data. It is crucial that attempts be made to address the psychological problems of HIV/AIDS-orphaned youth, and the current findings have implications for policy and practice. HIV/AIDS-orphaned youth experience substantial levels of stigma, which persists over long periods. Interventions attempting to reduce stigma directed at HIV/AIDS-orphaned youth need to be designed and rigorously tested, because this may improve the mental health of HIV/AIDS-affected youth. However, there is a growing body of literature demonstrating that HIV/AIDS orphanhood is associated with negative outcomes across a variety of domains (including poverty and education) and that risk factors may operate in a cumulative manner (Cluver & Orkin, 2009). This complexity suggests that multilevel strategies are required to support HIV/AIDS-affected youth; however, stigma reduction should be an essential component of future intervention efforts.

### Acknowledgments

The authors wish to thank the fieldwork team. Thanks also to Cape Town Child Welfare, Western Cape Education Department, Pollsmoor Prison, the Homestead Shelter, and all the participants and their families.

### Declaration of Conflicting Interests

The authors declared that they had no conflicts of interest with respect to their authorship or the publication of this article.

### Funding

This study was supported by grants from the Nuffield Foundation and the Economic and Social Research Council (UK).

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