Child and Caregiver Concordance of Potentially Traumatic Events Experienced by Orphaned and Abandoned Children

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Abstract

Exposure to trauma is associated with significant emotional and behavioral difficulties among children (Perepletchikova & Kaufman, 2010). Overall, reports of trauma and violence experienced

by children are discrepant from those of their caregivers (Lewis et al., 2012). Even less is known about the extent of concordance between orphans and their caregivers. This study examines the correlates of concordance in reported traumatic experiences between 1,269 orphaned and abandoned children (OAC) and their caregivers. The OAC lived in family-settings in 5 low and middle income countries and were part of a longitudinal study, "Positive Outcomes for Orphans" (POFO) that enrolled children aged 6 to 12 at baseline. By examining concordance with respect to specific types of trauma reported, this study expands the understanding of who reports which types of traumas experienced by orphaned and abandoned children, thereby improving the potential to provide targeted interventions for children who have experienced such events. In this study, children and caregivers were asked separately if the child had experienced different types of potentially traumatic events. Children were significantly more likely to report physical abuse, sexual abuse and family violence than were caregivers. Caregivers were significantly more likely than children to report natural disasters and accidents. High levels of concordance were found in the reporting of wars, riots, killings, and deaths in the family.

The impacts of trauma on behavior and mental health are profound, and highly effective interventions targeting sequelae of childhood trauma are currently being developed for use in low resource areas. Findings from this study demonstrate that it is feasible to conduct screening for potentially traumatic events utilizing child self-report in resource limited settings and that child self-report is crucial in evaluating trauma, particularly family violence and physical or sexual assault.

Background

Childhood exposure to trauma creates profound emotional and behavioral sequelae and impacts overall well-being (Perepletchikova & Kaufman, 2010). Recent studies of orphaned and abandoned children in low-and middle income countries (LMICs) demonstrate that orphaned children are at higher risk than those not orphaned for experiencing potentially traumatic events (PTEs) due to lack of adequate adult protection (Ahmad, et al., 2005; Cluver, Fincham & Seedat, 2009; Cluver & Gardner, 2006; Cluver, Gardner & Operario, 2007).

Detecting children's exposure to different types of traumatic events poses a significant clinical challenge, as there are marked discrepancies between reports of children and their caregivers (Lewis et al., 2012; Yule & Canterbury, 1994). Caregivers may significantly under-report the behavioral effects of such trauma (Almqvist and Brandell-Forsberg, 1997). Obtaining accurate reports of exposure among orphans and vulnerable children in low-resource settings is an even greater challenge, as little is known about discrepancies between reports of caregivers and orphans in these settings.

In the Positive Outcomes for Orphans (POFO) study, Whetten et al (2011) describe rates of potentially traumatic events (PTEs) and associated emotional and behavioral difficulties

among orphaned and abandoned children (OAC) in five LMICs. Ninety-eight percent of children surveyed reported having experienced PTEs in addition to the loss of a parent or abandonment, and more than half had experienced four or more such events. Higher numbers of PTEs were linked to statistically significant increases in emotional and behavioral difficulties. Such difficulties in children can make advancement in school, creation of positive social networks, and employment more challenging (Rapport et al, 2001).

Screening for a condition is generally recommended when there is a reasonable likelihood that the condition screened for will result in negative outcomes, is highly prevalent in a population, and if care alternatives are available (Raffle & Gray, 2007). Given the detrimental impact of PTEs on children's well-being, mental health, and future ability to succeed (Schilling et al., 2007, Spertus et al., 2003), that OACs are particularly vulnerable to exposure to PTEs (Whetten et al., 2011), and that effective, feasible treatment options for mental health sequelae of PTEs are being developed in and for low-resource settings (Gupta & Zimmer 2008, Ertl et al., 2011, Bolton et al., 2003, Bolton et al., 2007), developing accurate screening techniques for trauma exposure in these populations is critical. In addition to enhancing the ability to screen and enroll children into programs that treat the anxiety and depression that may result from PTEs, screening at the individual and population levels may also result in primary prevention by identifying high risk families and/or communities in need of intervention or child protection. Effective treatment, such as group interpersonal psychotherapy or cognitive behavioral therapy (CBT), tested among trauma-exposed children (Patel et al., 2010; Bolton et al., 2003; Bolton et al., 2007; Patel et al., 2007; Layne et al., 2008) in LMICs relies on having knowledge of the potentially traumatic events to which the child was exposed.

Traditionally, caregiver report has been the primary source of information regarding a child's exposure to PTEs. Including reports from children rather than relying on reports from caregivers alone yields a more comprehensive assessment of children's exposure to violence (Kolko, Kazdin & Day 1996). Previous studies evaluating concordance between caregivers and children have found discrepancies in reports of domestic violence (Knutson et al., 2009, Thomson et al., 2002); the child's age and gender are significant associated with greater reporting of PTEs by children (Kuo et al., 2000). The clinical significance of this study is that it evaluates variability in concordance patterns between caregiver and child reports in a multi-year study of vulnerable children situated in low resource settings.

Study Participants

Details of the POFO study's sampling strategy and the demographic characteristics of participating caregivers and children have been reported elsewhere (The Positive Outcomes for Orphans Research Team, 2010; Whetten et al., 2009). Here, we describe elements of the sampling approach most germane to this analysis.

Six sites were chosen: Battambang District, Cambodia; Addis Ababa, Ethiopia; Hyderabad, India; Dimapur and Kohima Districts in Nagaland, India; Bungoma District, Kenya; and Kilimanjaro Region, Tanzania. A two-stage random sampling survey methodology was

employed to obtain a sample of 1,480 OAC aged 6–12 at baseline who resided in family dwellings. The definition of an orphaned child for this study included both single and double orphans, consistent with the definition developed and used by UNICEF and other global policy makers (UNICEF, 2012). To be considered abandoned for purposes of this study, children had to have been left by both parents with caregivers reporting that they had no knowledge of the parents' whereabouts and had no expectation of parental return. The sampling strategy in each study area involved the selection of 50 sampling areas ("clusters") with five OAC randomly selected per cluster. Geographic or administrative boundaries were used to define sampling areas. Up to five eligible children were selected in each cluster either at random, from available lists, or through a household census. In households with multiple age-eligible children, the child whose first name started with the earliest letter of the alphabet was selected.

To provide a qualitative reference group, 301 children who were not orphaned or abandoned at baseline were enrolled into the study. For each cluster of five OAC, one household without OAC was randomly selected from which a dyad of one child aged 6–12 and his/her primary caregiver was enrolled. At each site, study enrollment and data collection were conducted over a 6 to 8 month period between May 2006 and February 2008.

Procedures

Every enrolled child and self-identified primary caregiver dyad was contacted twice yearly for a period of up to 3 years. Children's exposure to PTEs were assessed annually by caregiver report, and, starting from age 10, also by child self-report. The primary source of information for this manuscript is caregiver and child information from the 3-year follow-up assessment.

Measures

The measures utilized in this study have been validated in numerous countries and cultural contexts. Focus groups and pilot interviews were conducted to test measures in all study settings to ensure that concepts were understood similarly across sites. Assessment tools were translated and back-translated, and were field-tested by trained local interviewers fluent in both English and the local language.

Potentially Traumatic Events

The Life Events Checklist (LEC) is a list of experienced or witnessed events that have been found to be predictive of the diagnoses of posttraumatic stress disorder (PTSD), anxiety, and depression (Gray et al., 2004). The measure was created by the National Center for PTSD to facilitate the diagnosis of PTSD (Gray, et al., 2004) and is one of the most frequently used instruments by researchers for PTE exposure (Elhai et al., 2005). The LEC assesses exposure to potentially traumatic events including natural disasters, witnessing someone hurt or killed, experiencing physical or sexual assault, or being forced to leave home. Caregivers and children ages 10 and older were asked if the child had ever witnessed or experienced each type of event, and, if yes, whether the event had occurred more than once. On follow-up, an additional question was included about whether the event(s) happened more than one

year ago, less than one year ago, or both. Children were reported as having experienced a PTE if either the caregiver or child reported a PTE at any point prior to or during the 3-year study period.

One PTE, "hearing about a family member who died," was not included in this analysis because a positive response was nearly ubiquitous among the children surveyed. The item "had a brother or sister die" was also excluded because it could not be determined whether the event had been witnessed by the child. There were 19 remaining PTEs which were grouped into 6 conceptually related clusters for analysis: witnessing family death; physical or sexual abuse; witnessing family violence; being forced to leave home; war, riots or killings; and disasters or accidents. PTEs have been grouped similarly in other studies of childhood and adult PTEs (Mugavero et al., 2006). In addition, parental death and abandonment were included as separate PTE categories. As study inclusion criteria included having experienced parental death or abandonment, all OAC included in this study necessarily had experienced at least one PTE.

Wealth Index

The World Bank's Child Needs Assessment (CNA) Toolkit (World Bank, 2008) was used to assess household characteristics. This measure was administered to all participating caregivers at baseline, and selected elements were asked at annual follow-up assessments. In addition, on at least one of the annual follow-up assessments an asset checklist, several elements of which have been used by Demographic and Health Surveys (DHS), conducted in over 90 countries, in the construction of Wealth Indices (Rutstein & Johnson, 2004), was administered to all caregivers. Using elements of the asset checklist and the CNA Toolkit that were comparable to variables used in the construction of DHS wealth indices, a wealth index was constructed for each participating POFO household (The Positive Outcomes for Orphans Research Team, 2010).

Analysis

Wilcoxon signed rank tests for paired samples were used to determine the statistical significance of discordance between the reporting of potentially traumatic events by children and caregivers. Bivariate probit models were constructed to investigate the predictors of reports of different types of PTE by OAC and their caregivers. The extent of correlation between the two outcomes is given by the correlation coefficient, 'rho', with the associated Wald test statistic testing the null hypothesis of zero correlation between the two reports. Robust clustered (at the site level) standard errors were used in all regressions. All models included site fixed effects.

Regression models were conducted for four of the five trauma categories: disasters and accidents, war and riots, physical and sexual abuse, family violence, and family death. The category 'forced to leave home' was not included as it was commonly experienced by children across the study sites and therefore provided insufficient variation. We present only models for PTEs in which significant discordance was observed.

Results

The gender distribution of the children is 46% female and 54% male participants (Table 1). Nearly one-fifth (19%) of the children are double orphans while more than half are paternal orphans (55%). Grandparents care for nearly one-fifth of the children (19%), and other relatives and non-relatives care for slightly more than one-third (36%). The vast majority of caregivers are female (85%), and most are widowed (58%). The sample is predominantly (69%) urban living (Table 1).

The overall prevalence of having reported experiencing physical or sexual abuse is 26%; severe family violence is 16%; war, riots or killings is 17%, family death other than the death of the parent is 57%; and natural disasters or severe accidents is 14% (Table 2). Examining differences in mere proportions of reporting without accounting for the effect of demographic characteristics, it appears children are more likely to report physical or sexual abuse (p=0.0273) while caregivers are more likely to report disasters or accidents (p=0.003) and family death (p=0.0001).

We further examine the differences in reporting through regression models that take into account the effect of demographic characteristics. Table 3 and Table 4 provide the primary results of the bivariate probit regression models for those categories of PTEs where significant discordance was found either in the descriptive statistics or regressions. Table 3 illustrates that the older the child, the less likely the caregiver is to report incident physical or sexual abuse (p <0.05). Further, the wealthier the household, the less likely the child is to report physical or sexual abuse that had been reported by the caregiver (p<0.001). The caregiver is less likely to report female and older children witnessing family violence (p<0.05; p<0.001) and when they are the grandparent (p<0.001) or widowed (p<0.05). When the caregiver is not related to the child, the child reports significantly less family violence (p<0.05).

Caregivers are significantly more likely to report incident disasters and accidents, (Table 4) and this difference is larger when the caregiver is not related to the child (p <0.01), widowed (p <0.01), or of "other" marital status (e.g. never married or divorced; p <0.01).

In the categories of disasters and accidents (Correlation statistic =0.58; Wald X^2 statistic = 65.94) and family death (Correlation statistic =0.44; Wald X^2 statistic = 40.58), reports of trauma by the caregiver and the child are highly correlated (Table 4). The correlations for disasters and accidents and family death are contrary to the results from the descriptive statistics shown in Table 2, which compares PTEs reported by children and their caregivers without controlling for the effect of demographic variables.

In the category of family violence, contrary to the high correlation in Table 2, there appears to be significantly less correlation (Correlation statistic =0.28; Wald X^2 statistic = 3.86; p = 0.049) after controlling for demographic characteristic (Table 3). In the physical or sexual abuse trauma category (Table 3) there is low correlation (Correlation statistic =0.12; Wald X^2 statistic = 0.46) between the reports of PTEs by children and their caregivers after controlling for demographic characteristics in the regression (as seen in Table 2). Among predictors of reports of family violence (Table 5 provides a summary of the test results from

Table 3), the effect of the gender of the caregiver, marital status of the caregiver, the age of the caregiver, and the household's location in a rural vs. urban areas differ between the two types of reports.

In the category of war, riots or killings (Table 6), there is significant concordance (Correlation statistic = .59; Wald X^2 statistic = 58.59; p < 0.001). Caregivers who were older, or were taking care of older children were less likely to report such PTEs while children living in urban areas and with caregivers who are not married and not widowed are less likely to report such PTEs.

Sensitivity Analyses

To check the sensitivity of estimates from the main regression, the same model was run after restricting the data in the following ways: a) With only previous rounds of interviews that included the full set of trauma-related questions, i.e. 1-year follow-up and 2-year follow-up interviews; (b) First-time interviewees in the 1-year and 3-year follow-up rounds; and c) Interviewees who were part of both the 1-year follow-up and the 3-year follow-up.

Sensitivity analyses (results available on request) indicate that the significance of predictors remains consistent across rounds for each trauma category and the extent of concordance across trauma categories is consistent with that found in the main regression results. The correlation coefficients from regressions with different samples at the 3-year follow-up are reported for each trauma category in Table 7.

Discussion

This study demonstrates that concordance between childrens' and caregivers' reports are significantly lower in certain types of PTEs – those that may either be associated with fear or shame responses on the part of the caregiver (i.e., physical / sexual abuse and witnessing family violence).

In the simple descriptive analyses in Table 1 where we do not adjust for different demographic characteristics, we find that there are larger differences in the reports of PTEs related to witnessing disasters and accidents or family deaths. However, after adjusting for demographic characteristics and obtaining regression-based measures of concordance (as seen in Table 4), we do not find any significant differences in the reports by children and caregivers of PTEs related to witnessing disasters and accidents or family deaths. The difference between child and caregiver in the reports of these PTEs (of witnessing disasters and accidents or family deaths) seen in the initial descriptive analyses in Table 1 is then significantly associated with specific demographic characteristics after controlling for which, the differences are no longer present. The relevant demographic characteristics are those for which the coefficients of are significantly different between the two types of reports in Table 4 (columns with the Chi-sq test results) – specifically, they are the age and gender of the child, the caregiver's relationship to the child, the caregiver's marital status (widowed and other) and urban location of residence.

Since we do not assess whether the PTEs occurred at the current location of care or in a previous setting, it is possible that current caregivers are simply unaware of some PTEs. This then may also contribute to lower levels of concordance for PTEs. Consequently, obtaining reports from multiple sources, especially directly from children, regarding exposure to specific types of trauma is crucial from a policy and programmatic standpoint. Through this study, we demonstrate that conducting such interviews is feasible across a variety of settings in low and middle income countries that vary widely with respect to cultural, political, and historical backgrounds.

The child's age, gender and the marital status of the caregiver are significant predictors of differences between reports of PTEs of physical / sexual abuse and family violence by the child and the caregiver. These findings point to the need to target older children and female children in screening for exposure to PTEs and to develop improved opportunities for OAC to disclose PTE exposure. Larger-scale screening may identify more OACs at risk for sequelae of trauma including emotional and behavioral difficulties. Conducing screening on a large scale without targeting specific demographic groups may help to reduce stigma by normalizing the disclosure of PTE exposure and may reduce some of the shame and fear associated with disclosure.

There are several limitations of this study. Reporting bias of PTEs is likely in the direction of underreporting, which could alter the estimated effects of PTEs on emotional and behavioral difficulties and overestimate the concordance between child and caregiver. While exposure to different types of PTEs was assessed, this study does not look at the total number of PTEs children were exposed to and whether this has a relationship with disclosure or concordance of reporting between child and caregiver. With respect to traumatic events that typically occur in the home environment including physical or sexual abuse and family violence, we did not assess if these exposures occurred in the current care setting or in previous care settings. Whether the child was living with the current caregiver would certainly impact the concordance in trauma reporting, either positively as the caregiver is aware of PTEs in the child's life, or negatively if there is abuse or family violence in the care setting potentially involving the caregiver and associated with shame and fear of disclosure.

Orphanhood is associated with serious mental health sequelae including anxiety, depression, behavioral difficulties, and suicidal ideation. OACs are at increased risk of exposure to additional PTEs, which further heighten the risk of mental health symptomatology. Psychosocial interventions to protect OACs from further exposure to PTEs and mental health care for those exposed to PTEs may protect these children from further PTEs and attenuate the effects of trauma on emotional well-being, affording them more opportunities to succeed in school, work, and relationships, and in becoming healthy and productive adults. As such interventions are being developed it is important to ensure that PTE exposure is accurately assessed by incorporating caregivers' PTE reports but also providing children with the opportunity to report certain types of trauma in the absence of their caregiver. This study demonstrates that children are able to report these PTEs in a wide variety of settings and are willing to do so when asked by trained interviewers.

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Table 1

Demographic Characteristics

Total Sample Size of Child-Caregiver Pairs	1269
Child Gender	%
Percent Female	46.49%
Percent Male	53.51%
Child Orphan Status	
No Dead Parent	10.01%
Maternal Orphan	16.00%
Paternal Orphan	55.08%
Both Parents Dead	18.91%
Child and Caregiver Relationship	
Biological Parent	46.89%
Grandparent	17.10%
Other	36.01%
Caregiver's Gender	
Percent Female	85.42%
Percent Male	14.58%
Caregiver Marital Status	
Married	24.27%
Widowed	57.68%
Other	18.05%
Residential Location	
Rural	31.36%
Urban	68.56%

Table 2

Frequency of Reports of Trauma (3-year follow-up) by Report Type (N=1269 child-caregiver pairs)

Trauma Type	Either the caregiver or child or both reported PTE	Trauma incidence[a]	Both Reported PTE	Caregiver only Reported PTE	% All Trauma Reported by Caregiver[b]	Child only Reported PTE	% All Trauma Reported by Child[c]	Z-score from Wilcoxon Signed Rank Test[d]	p-value of Z-score
Physical or Sexual Abuse	326	26%	60	115	54%	151	65%	−2.207[*]	0.027
Family violence	208	16%	34	81	55%	93	61%	−0.910	0.363
War, Riots, Killings	210	17%	108	44	72%	58	79%	−1.386	0.166
Family death	726	57%	371	214	81%	141	71%	3.874[**]	0.000
Disasters or Accidents	180	14%	39	92	73%	49	49%	3.621[**]	0.003

[a] Trauma Incidence = (Both Report Trauma + Report by Caregiver Only + Report by Child Only) / Total Sample Size of Child-Caregiver Pairs

[b] % All Trauma Reported by Caregiver = (Both Report Trauma + Report by Caregiver Only) / (Both Report Trauma + Report by Caregiver Only + Report by Child Only)

[c] % All Trauma Reported by Child = (Both Report Trauma + Report by Child Only) / (Both Report Trauma + Report by Caregiver Only + Report by Child Only)

[d] Null Hypothesis Test of Caregiver Report = Child Report

[*] p<0.05.

[**] p<0.01

Table 3

Bivariate Probit Models of Cumulative Trauma: 3-year follow-up

Variable	Physical or Sexual Abuse			Family Violence		
	Caregiver Report	Self Report	Chi-Sq Test[a]	Caregiver Report	Self Report	Chi-Sq Test[a]
	Coefficient (SE)		Chi-Sq	Coefficient (SE)		Chi-Sq
Child is Female	−0.134 (0.145)	−0.127 (0.147)	0.01	−0.225* (0.094)	−0.153 (0.096)	0.65
Age of child	−0.058* (0.025)	0.035 (0.035)	3.73*	−0.091*** (0.021)	0.055 (0.029)	47.98***
Caregiver is Grandparent (vs. Biological Parent)	−0.123 (0.097)	0.071 (0.153)	1.11	−0.581*** (0.160)	−0.097 (0.109)	3.8*
Caregiver is Other (not a grandparent and not a biological parent vs. Biological Parent)	−0.116 (0.219)	−0.124 (0.249)	0.00	−0.353 (0.333)	−0.507* (0.229)	0.12
Orphan Status: No Dead Parent (vs. Both Parents Dead)	−0.074 (0.129)	−0.069 (0.181)	0.00	0.124 (0.166)	−0.129 (0.081)	2.24
Orphan Status: Maternal Orphan (vs. Both Parents Dead)	0.003 (0.099)	−0.079 (0.223)	0.19	0.084 (0.226)	0.023 (0.186)	0.04
Orphan Status: Paternal Orphan (vs. Both Parents Dead)	−0.342 (0.254)	−0.164 (0.359)	0.43	0.478 (0.401)	0.212 (0.351)	0.59
Caregiver is Female	−0.040 (0.068)	−0.007 (0.134)	0.04	0.194 (0.141)	−0.131 (0.126)	8.24***
Caregiver is Widowed (vs. Married)	−0.113 (0.151)	−0.094 (0.156)	0.01	−0.269* (0.132)	−0.176 (0.164)	0.12
Caregiver is Any Other Marital Status (vs. Married)	0.073 (0.143)	0.154 (0.145)	0.10	0.095 (0.143)	−0.279 (0.201)	4.18**
Age of caregiver	0.0002 (0.003)	−0.0001 (0.004)	0.01	0.004 (0.004)	−0.011 (0.007)	2.8*
Wealth Index	0.182 (0.197)	−0.140*** (0.041)	2.42	0.152 (0.147)	−0.022 (0.075)	1.10
Urban Location	0.154 (0.245)	−0.109 (0.119)	0.76	0.135 (0.100)	−0.306 (0.208)	5.75**
Site Fixed Effects	Yes	Yes		Yes	Yes	
Log Pseudo-Likelihood	−816.84			−589.49		
Rho	0.12			0.28		
Wald (Chi-sq) Test Rho = 0	0.46			3.86		
N	1025			1025		

Robust clustered standard errors in parentheses;

*
p<0.05,

**
p<0.01,

***
p<0.001

[a] Test statistic of equality of coefficients across models

Table 4

Bivariate Probit Models of Cumulative Trauma: 3-year follow-up

Variable	Disasters or Accidents			Family Death		
	Caregiver Report	Self Report	Chi-Sq Test[a]	Caregiver Report	Self Report	Chi-Sq Test[a]
	Coefficient (SE)		Chi-Sq	Coefficient (SE)		Chi-Sq
Child is Female	−0.112 (0.091)	−0.088 (0.108)	0.07	−0.070 (0.083)	0.064 (0.046)	5.48**
Age of child	−0.094*** (0.027)	0.046 (0.024)	15.24***	−0.009 (0.019)	0.062*** (0.013)	11.43***
Caregiver is Grandparent (vs. Biological Parent)	0.014 (0.109)	0.008 (0.274)	0.00	−0.071 (0.150)	−0.192 (0.156)	5.35**
Caregiver is Other (not a grandparent and not a biological parent vs. Biological Parent)	−0.164 (0.241)	−0.513*** (0.127)	1.74	−0.233 (0.137)	−0.172 (0.122)	0.12
Orphan Status: No Dead Parent (vs. Both Parents Dead)	0.058 (0.178)	−0.106 (0.107)	0.51	0.979*** (0.101)	0.477 (0.297)	2.53
Orphan Status: Maternal Orphan (vs. Both Parents Dead)	0.131 (0.166)	−0.112 (0.231)	1.56	0.884*** (0.229)	0.525 (0.288)	1.54
Orphan Status: Paternal Orphan (vs. Both Parents Dead)	0.0560 (0.274)	0.021 (0.170)	0.01	0.385* (0.188)	0.365 (0.288)	0.01
Caregiver is Female	−0.002 (0.162)	−0.153 (0.163)	0.78	−0.100 (0.213)	−0.409*** (0.099)	2.62
Caregiver is Widowed (vs. Married)	−0.073 (0.062)	−0.310** (0.095)	10.98***	−0.176 (0.139)	−0.0223 (0.160)	0.58
Caregiver is Any Other Marital Status (vs. Married)	0.082 (0.128)	−0.613** (0.195)	9.52***	−0.139 (0.077)	−0.208 (0.177)	0.18
Age of caregiver	−0.002 (0.006)	−0.017 (0.010)	2.51	−0.002 (0.005)	−0.007 (0.005)	1.85
Wealth Index	0.003 (0.078)	−0.239 (0.127)	2.71	−0.069 (0.058)	−0.0307 (0.084)	0.16
Urban Location	0.053 (0.126)	−0.195 (0.131)	2.22	0.118 (0.069)	−0.255 (0.150)	4.07**
Site Fixed Effects	Yes	Yes		Yes	Yes	
Log Pseudo-Likelihood	−584.44			−1235.40		
Rho	0.58			0.44		
Wald (Chi-sq) Test Rho = 0	65.94***			40.58***		
N	1025			1025		

Robust clustered standard errors in parentheses;

*
p<0.05,

**
p<0.01,

***
p<0.001

[a]Test statistic of equality of coefficients across models

Table 5

Comparison of Predictors Across Bivariate Probit Models (in Table 3)

Variable	Physical or Sexual Abuse			Family Violence		
	Association with…		Consistency of associations across reports	Association with…		Consistency of associations across reports
	Caregiver report	Child report		Caregiver report	Child report	
Child Characteristics						
Female gender	Null	Null	Consistent	**Negative**	Null	Consistent
Age of child	**Negative**	Null	**Inconsistent**	**Negative**	Null	**Inconsistent**
Caregiver is Grandparent (vs. Biological Parent)	Null	Null	Consistent	**Negative**	Null	**Inconsistent**
Caregiver is Other (not a grandparent and not a biological parent vs. Biological Parent)	Null	Null	Consistent	Null	**Negative**	Consistent
Caregiver Characteristics						
Caregiver is Female	Null	Null	Consistent	Null	Null	**Inconsistent**
Caregiver is Widowed (vs. Married)	Null	Null	Consistent	**Negative**	Null	Consistent
Caregiver is Any Other Marital Status (vs. Married)	Null	Null	Consistent	Null	Null	**Inconsistent**
Age of caregiver	Null	Null	Consistent	Null	Null	**Inconsistent**
Household Characteristics						
Wealth Index	Null	**Negative**	Consistent	Null	Null	Consistent
Urban Location	Null	Null	Consistent	Null	Null	**Inconsistent**

Table 6

Bivariate Probit Models of Cumulative Trauma: 3-year follow-up

Variable	War, Riots or Killings		
	Caregiver Report	**Self Report**	**Chi-Sq Test**[a]
Child is Female	**Coefficient (SE)**		**Chi-Sq**
	0.170 (0.238)	−0.036 (0.096)	1.46
Age of child	−0.074** (0.0223)	0.021 (0.033)	3.06*
Caregiver is Grandparent (vs. Biological Parent)	0.322* (0.138)	0.014 (0.173)	3.87**
Caregiver is Other (not a grandparent and not a biological parent vs. Biological Parent)	0.053 (0.059)	−0.432* (0.190)	4.04**
Orphan Status: No Dead Parent (vs. Both Parents Dead)	0.188 (0.343)	0.143 (0.078)	0.02
Orphan Status: Maternal Orphan (vs. Both Parents Dead)	−0.044 (0.266)	−0.180 (0.219)	0.09
Orphan Status: Paternal Orphan (vs. Both Parents Dead)	−0.185 (0.333)	−0.035 (0.188)	0.12
Caregiver is Female	−0.0004 (0.178)	−0.155 (0.255)	0.22
Caregiver is Widowed (vs. Married)	0.324* (0.128)	−0.231 (0.196)	5.53**
Caregiver is Any Other Marital Status (vs. Married)	0.202 (0.186)	−0.700*** (0.149)	8.26**
Age of caregiver	−0.018** (0.006)	−0.013 (0.007)	0.22
Wealth Index	−0.213 (0.133)	−0.106 (0.111)	0.32
Urban Location	−0.273* (0.117)	−0.370** (0.129)	1.63
Site Fixed Effects	Yes	Yes	
Log Pseudo-Likelihood	−430.03		
Rho	0.59		
Wald (Chi-sq) Test Rho = 0	58.59***		
N	1025		

Robust clustered standard errors in parentheses;

*
p<0.05,

**
p<0.01,

***
p<0.001

[a]Test statistic of equality of coefficients across models

Table 7

Correlation Coefficients by Model at the 3-year follow-up

Model Type	Disasters / Accidents	War / Riots / Killings	Physical / Sexual Abuse	Family Violence	Family Death
Full Sample	.58[**]	.59[**]	0.12	.28[*]	.44[**]
First-time Interviews	.57[**]	.55[**]	0.03	0.16	.4[**]
Interviewed in both 1-year & 3-year follow-ups	.55[**]	.56[**]	0.11	0.17	.51[**]

[*]
p<0.05.

[**]
p<0.01