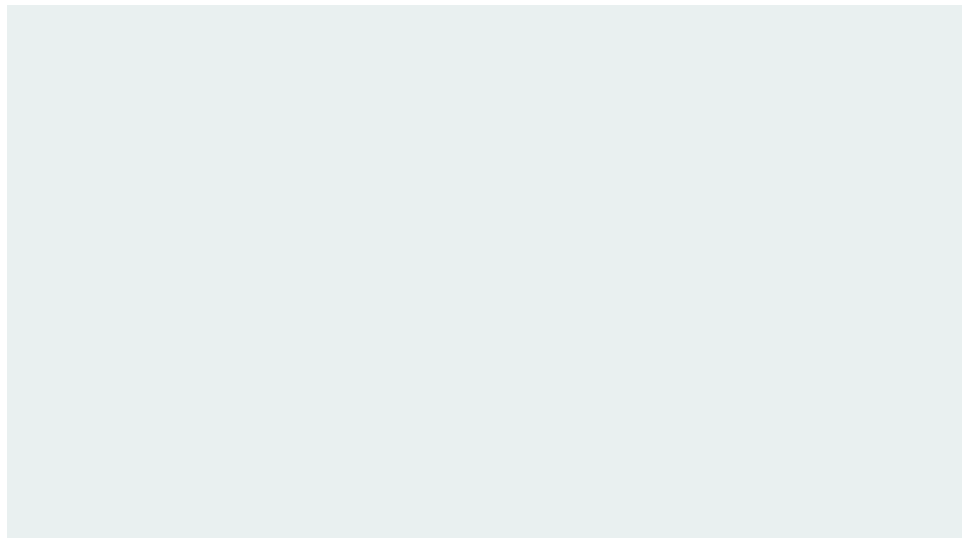
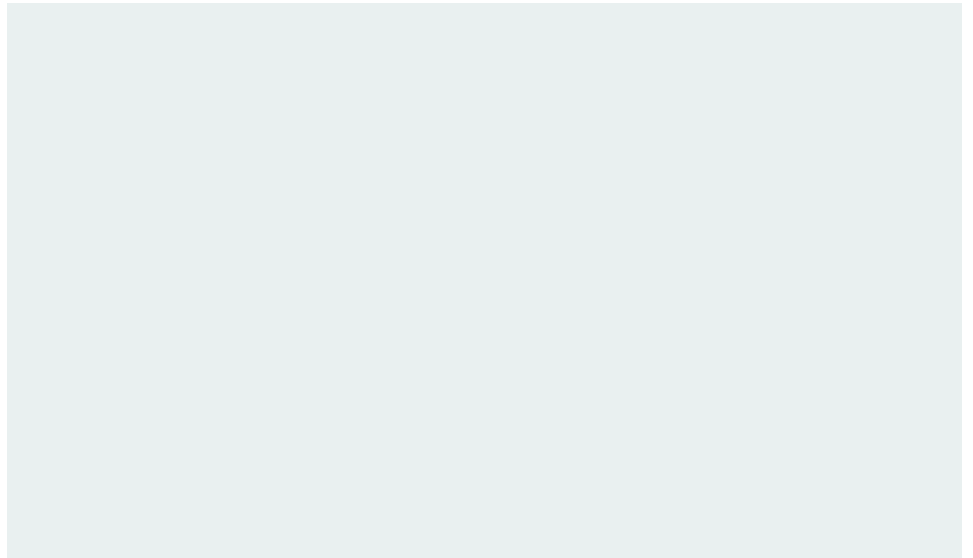




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sustainability. For example, in Sierra Leone, a small country in West Africa that has endured numerous hardships (i.e., civil war, the Ebola epidemic, and political instability), the mental health

agency that has worked with Sierra Leonean youth since 1963 (Betancourt et al., 2021). In the EPP, youth were provided with entrepreneurship and employment skills training and given a stipend to offset costs associated with business start-up. Findings from this larger study are currently under review and indicate youth who participated in the YRI + EPP reported significant improvements in depression and anxiety compared with control youth at post-intervention (Freeman et al., under review). All study procedures were approved by the respective Institutional Review Boards.

Sampling and recruitment

We recruited youth who had participated in the hybrid-implementation effectiveness trial of the YRI delivered within the EPP (Youth FORWARD/U19 MH109989) to serve as “index participants” ($N = 165$ YRI + EPP participants; $N = 165$ control participants) for a closely linked study investigating the indirect benefits of the YRI among peers and cohabitating caregivers (R01 MH117359). Youth “index participants” were recruited across three rural districts in Sierra Leone; Koinadugu, Kailahun and Kono. After providing informed consent, youth “index participants” completed a short survey in which they identified their primary cohabitating caregiver and provided contact information for this individual. Primary cohabitating caregivers were defined as the person whom youth felt emotionally closest to and was primarily responsible for looking after their well-being (Desrosiers et al., 2020), and thus family members could be nominated or other household members, such as a spouse or romantic partner. Nominated caregivers ($N = 284$) were then recruited and enrolled in the larger study investigating the indirect benefits of the YRI among peers and caregivers (R01 MH117359). To select the sub-sample of caregivers for participation in qualitative interviews in the current study, we used a multivariate sampling matrix in which caregivers were stratified based on age, gender and district of residence ($N = 20$).

Eligibility

Inclusion criteria for caregivers were that they should (a) identify as a primary adult caregiver (aged 18 or older) of a Youth FORWARD study participant; and (b) reside in the household of a Youth FORWARD participant. Exclusion criteria were (a) not residing in the household of a YRI participant; (b) severe, active suicidality or psychosis as assessed via the MINI-SCID; and (c) serious cognitive impairments that might inhibit one’s ability to comprehend informed consent and participate in the interview. Caregivers who reported active suicidality or symptoms of psychosis were referred for immediate mental health services and followed up by the study social worker. There were no risk of harm cases reported for this sub-sample of caregivers.

Data collection

Qualitative interviews with caregivers were conducted by trained research assistants using a semi-structured interview guide at two different time points. Interviews were conducted in Krio, the predominant local language, or in the local dialect that caregivers felt most comfortable speaking in if they were not fluent in Krio. Interviews focused on exploring (a) whether mental health spillover effects had occurred following youth participation in the YRI; (b) potential mechanisms through which spillover effects may have

occurred (i.e., reduced sense of caregiving burden and improved household dynamics); and (c) potential sustainment of spillover effects over time. The semi-structured guide included questions such as the following:

- 1) *H did ha i'g (a'ici a')' a'e) i' he g a affec h fel?*
- 2) *Ha e' a'iced a' cha'ge i' h' feel i'ce (a'ici a')' a'e) c' le ed he YRI g a ? If , ha cha'ge ha e' a'iced? Wh d' hi'k' feel diffe e'l ?*
- 3) *Wha , if a' , cha'ge did b e e'f (a'ici a')' a'e) a'ici a' i' i' he YRI?*
- 4) *H did ha i'g (a'ici a')' a'e) i' he g a affec h h , eh ld ela i' i' hi , be ee e e' e h li e he e? Ha e' a'iced cha'ge i' he h , eh ld? If , ha i' diffe e'?*
H a i' bef e'?

All interviews were audio-recorded. The first interview was completed at the post-YRI assessment timepoint (all youth participants had completed the YRI), between September 2019 and January 2020. A follow-up interview was completed between December 2020 and January 2021. The purpose of the two time points was to explore whether any changes had occurred over time in terms of reported spillover effects. In addition, follow-up interviews allowed the research team to assess if reported changes after the YRI had been sustained over time. Interviews ranged from 30 to 60 min in duration, and caregivers were compensated for their time via a household gift (cooking oil, soap, rice etc.) worth SLL 30,000.

Data analysis

Forty interview transcripts were first transcribed in Sierra Leonean Krio (or Mende) and translated to English with all identifying information removed. Translations were cross-checked by another native Sierra Leonean Krio speaker. A combination of grounded theory along with thematic content analysis was used for data analysis (Strauss, 1987; Anderson, 2007). In this approach, themes were derived from the data itself but guided by the research questions. Before beginning the data analysis process, two research team members read each transcript in depth and used an “open coding” method to write memos and notes on the themes and patterns emerging from the data. Next, team members discussed the themes and placed them into categories according to the research questions. Categories were encompassed in a three-level codebook, guided by the Boyatzis’ approach (Boyatzis, 1998), in which there are levels of codes, definitions and examples for each code, and inclusion and exclusion criteria for each code. The codebook was developed through an iterative process that required team members to develop and test several versions of the codebook on a subset of transcripts until the codebook was finalized. Once the codebook was finalized, inter-coder reliability was tested between the two coders on a subset of transcripts ($n = 3$) (MacPhail et al., 2016; O’Connor and Joffe, 2020). After satisfactory inter-coder reliability was reached, team members finished coding transcripts separately. All coding was completed in MaxQDA (VERBI Software, 2021). Throughout the coding process, before and after establishing inter-coder reliability, team members met weekly to discuss transcript memos and any difficulties with thematic content analysis in sections of transcripts. After coding was completed, team members used axial coding to 1(the y)-18v71411edteam between testun-181.4(hy)

Results

Nominated caregivers of YRI participants were related to participants in a variety of ways, including mothers ($N = 6$), fathers, ($N = 2$) spouses/intimate partners ($N = 7$), aunts/uncles ($N = 3$), an older friend ($N = 1$) or a sibling ($N = 1$). Ages of YRI participants ranged from 18 to 30, and ages of caregivers ranged from 24 to 58. Individuals were sampled from Kailahun, Kono and Koinadugu districts of Sierra Leone, and each YRI participant lived in the same district as their nominated caregiver. The average household size was seven members per household. Most caregivers and YRI par-

Regarding peer relationships, many caregivers expressed gratitude and relief that youth were no longer hanging around with peers perceived as bad influences, which contributed to caregivers experiencing less stress. For example, one caregiver stated, “*he e, a, d g (i h bad f i e d), he g he e; he heed ad ice. I a eall ha ab ha*” (mother of YRI participant).

Discussion

This study used a qualitative approach to better understand potential mechanisms of mental health spillover effects among cohabitating partners and caregivers of youth who participated in an evidence-based mental health intervention in rural regions of Sierra Leone. Findings show that caregivers and partners experienced an improved sense of general well-being related to improvements that they observed in youth behavior and functioning following YRI participation. Although results should be interpreted with caution given the small sample size, findings from the eight-month follow-up interviews suggest that mental health spillover effects appeared

mental health worldwide: Evidence for action. *Lancet*. (Lancet, England) 378 (9801), 1515–1525.