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Effects of a Community-Based Multicomponent Positive Psychology Intervention on Mental Health of Rural Adults in Ghana

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Background: There is growing evidence that positive psychology interventions (PPIs) enhance positive mental health and lead to a decrease in symptoms of psychopathology. This study examines the effectiveness of a 10-week multicomponent PPI (the *Inspired Life Program*; ILP) in promoting positive mental health and reducing symptoms of depression and negative affect in a sample of rural poor adults in Ghana. **Methods:** Using a quasi-randomized controlled trial design, participants from four rural poor communities were randomly allocated to intervention (n = 40) or control (n = 42) conditions. The intervention group participated in the 10-week ILP. Both groups completed a battery of mental health measures, including the Mental Health Continuum-Short Form, at pre-intervention, immediately after the intervention, and at 3 months follow-up. Hierarchical linear modeling was applied to evaluate whether the intervention was effective. **Results:** There was a greater improvement in positive mental health, with a marked reduction in symptoms of depression in the intervention group compared to the control group, immediately and 3 months after the intervention. There were also larger increases in the proportion of flourishers in the intervention group compared to the control group, immediately and three months after the intervention. **Conclusions:** The observed effects of the ILP intervention program suggest that group-based PPIs can promote

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positive mental health and buffer against psychopathology among people living in rural poor communities in sub-Saharan Africa.

Keywords: community-based mental health intervention, Ghana, inspired life program, positive psychology intervention, quasi-randomized controlled trial, rural poor adults

INTRODUCTION

There is a growing research interest in a more positive approach to mental health and in the supposition that individuals and groups possess an inherent drive toward growth and fulfillment (Guo, Tomson, Keller, & Söderqvist, 2018; Hendriks, Schotanus-Dijkstra, Hassankhan, de Jong, & Bohlmeijer, 2019; Schotanus-Dijkstra, Pieterse, Drossaert, Walburg, & Bohlmeijer, 2019). Historically, traditional public mental health interventions that are effective in alleviating mental illness do not, in the strictest sense, necessarily promote positive mental health and mental well-being (Keyes, 2005). Recent efforts at mental health promotion align with the competence enhancement model which focuses on building strengths, competencies, and resources (Barry & Jenkins, 2007), rather than exclusively with the risk-reduction model (Mrazek & Haggerty, 1994). Presently, mental health is conceptualized as a complete state where individuals exhibit both the presence of mental health as well as the absence of mental illness (Keyes, 2002, 2014), rather than just the absence of psychopathological symptoms. The dual-continua model hypothesizes that positive mental health correlates with, but is distinct from, mental illness (Keyes, 2005)—and that the absence of mental illness does not necessarily imply the presence of positive mental health and mental well-being (Keyes, 2005; Westerhof & Keyes, 2010).

Several meta-analyses show that positive psychology interventions (PPIs) can improve emotional and psychological well-being (see Bolier et al., 2013; Hendriks et al., 2019; Weiss, Westerhof, & Bohlmeijer, 2016). A wealth of studies also exists that evaluate PPIs across diverse contexts and populations (Bolier et al., 2013; Page & Vella-Brodrick, 2013; Ruini & Ryff, 2016; Weiss et al., 2016). For instance, PPIs have been implemented to enhance employee well-being and performance at the workplace (Kaplan et al., 2014), foster family communication and well-being (Ho et al., 2016), improve social and emotional skills, attitudes, behavior, and academic performance among high school students (Shankland & Rosset, 2017), improve life satisfaction and overall mental health in a non-clinical adult sample (Proyer, Gander, Wellenzohn, & Ruch, 2015), and promote well-being and reduce distress in a clinical sample of adults (Chakhssi, Kraiss, Sommers-Spijkerman, & Bohlmeijer, 2018).

Although there exists research in other settings that suggests that PPIs can have positive impacts on the mental health of individuals (see Friedman et al.,

2019; Friedman et al., 2017; Hendriks et al., 2019; Pretorius, Venter, Temane, & Wissing, 2008; Weiss et al., 2016), the majority of interventions have focused on healthy urban populations (Addley et al., 2014; Page & Vella-Brodrick, 2013) and clinical populations (Chakhssi et al., 2018; Macaskill, 2016) rather than on non-clinical, but low-income rural populations. There are limited impact evaluations of well-being interventions in Africa (e.g. Pretorius et al., 2008; Rugira, Nienaber, & Wissing, 2015; Teodorczuk, Guse, & du Plessis, 2019; Van Zyl & Rothmann, 2012), particularly in the Ghanaian context, but the evidence that does exist suggests positive trends that are worth exploring further.

This study investigates the effectiveness of a 10-week multicomponent PPI, the *Inspired Life Program* (ILP), in promoting the mental health and reducing self-reported symptoms of depression and negative affect in a non-clinical, rural Ghanaian adult sample. Although previous research has examined group-based well-being interventions in developing countries (e.g. Bonthuys, Botha, Nienaber, Freeka, & Kruger, 2011; Rugira et al., 2015; Teodorczuk et al., 2019; Van Zyl & Rothmann, 2012), as far as can be established, there is a lack of research examining the effectiveness of a PPI group-based intervention model in Ghana.

The ILP differs from the existing PPI programs in that it offers a multicomponent PPI (mPPI) at a group level for a rural poor, non-English speaking sample. Given that a group-based model is more cost-effective (since the costs of mental health professionals are distributed across several people, rather than a single individual), a successful intervention could have important policy implications, in that it would offer a cheaper alternative to delivering mental health improvements. Nonetheless, there is ample evidence to support both individualized (e.g. Sin & Lyubomirsky, 2009; Weiss et al., 2016) and group-based (e.g. Chi, Sha, Yip, Chen, & Chen, 2016; Paul-Ebhohimhen & Avenell, 2009) intervention approaches as effective approaches for promoting mental health and functional outcomes. Furthermore, unlike previous studies (e.g. Bonthuys et al., 2011; Rugira et al., 2015), the ILP was formulated based on principles and constructs from two models: Keyes's model of mental health (Keyes, 2002, 2005)—to promote positive mental well-being and flourishing, and Beck's cognitive-behavioral model (Beck, 1991, 2011)—to advance positive thought patterns and behavioral change of the general population, including individuals dwelling in rural and resource-limited contexts.

The Theoretical Orientation of the ILP Intervention

Keyes's model of mental health consists of three dimensions: emotional, psychological, and social well-being. While the emotional well-being dimension comprises self-reported life satisfaction and positive affect, the psychological well-being dimension emphasizes an individual's optimal functioning, such as their sense of purpose in life and self-acceptance (Ryff, 1989). Keyes (1998) conceptualized social well-being as the evaluation of a person's circumstance and

functioning in society and embraces both psychological/personal and social dimensions. Constructs and principles from Keyes's model have been utilized to formulate several well-being interventions (e.g. Ryff, 2014; Weiss et al., 2016). The cognitive-behavioral therapy (CBT) model is a structured, time-limited, problem-focused, and goal-oriented model that describes the relationship between an individual's thought processes (cognitions), feelings (emotions), and behavioral reactions in the onset and maintenance of psychological disorders or problem behaviors (Beck, 1991, 2011). Previous studies have adapted principles and constructs of CBT into Positive CBT (PCBT) and have provided elaborate strategies and guidelines for utilising PCBT to explore and build abilities, strengths, and positive behavioral change, by itself, or in combination with other PPIs, as opposed to focusing on their limitations and the deficiencies of people (Bannink, 2012; Kuyken, Padesky, & Dudley, 2009).

The Present Study

This study set out to evaluate the effectiveness of a 10-week group-based mPPI (the *Inspired Life Program*; ILP) in promoting (positive) mental health and reducing self-reported symptoms of depression and negative affect. Two hypotheses were examined based on the goals of the study and on the findings of previous mPPI studies (e.g. Bolier et al., 2013; Hendriks et al., 2019; Weiss et al., 2016). First, we hypothesized that program (ILP) participants would report greater improvements in the primary outcome (i.e. positive mental health) immediately after, and at 3 months post-intervention, relative to the control comparison group. Second, we hypothesized that ILP participants would report greater improvements in the secondary outcomes (i.e. higher levels of self-efficacy, positive affect, frequency of positive thoughts, and satisfaction with life; and lower levels of negative affect and depressive symptoms) immediately after and at 3 months post-intervention, relative to the control group.

METHOD

Study Design

We applied a quasi-randomized controlled trial to evaluate the ILP program. Four rural poor communities within the Sunyani West District (SWD) were randomly selected and matched based on household income levels, location, community population, and gender. One of each pair was randomly assigned to intervention or control conditions. Individuals who provided informed consent to participate in the study were thereafter randomly selected into an intervention (n = 40) or an assessment-only control (n = 42) group (Figure 1). Two participants in the intervention group relocated from the community during the study

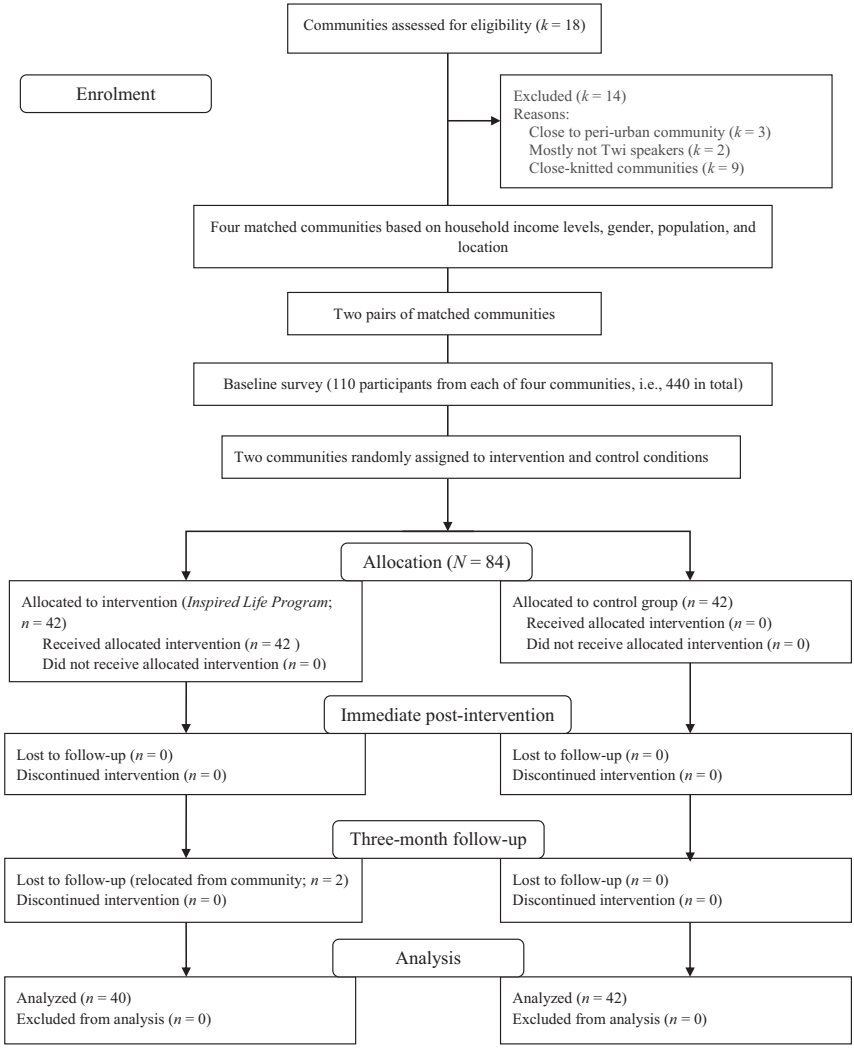

FIGURE 1. CONSORT flow diagram displaying the recruitment, intervention evaluation, and analysis process.

period and were lost to follow-up. Pre-, post-intervention, and 3 months follow-up evaluations were conducted to assess the effectiveness of the PPI program. This study was considered a quasi-randomized controlled trial since we applied true random assignment (Shadish, Cook, & Campbell, 2002) to assign one of each paired community to the intervention or control condition, and quasi-

random assignment (Lavis, Barnighausen, & El-Jardali, 2017) to automatically assign participants to the condition that their communities were randomly assigned. It was also not possible for researchers to be blinded to participants' group allocation because they were actively involved in the supervision of the program administration—nor was it possible to blind participants to group allocation, as whole communities were assigned to either condition.

Participants and Context

The study recruited adults of both genders, aged from 18 to 60 years, who were residing in four randomly selected rural poor communities within the SWD of the Brong Ahafo region of Ghana. The SWD, one of the 27 districts in the Brong Ahafo region, has several rural poor communities with individual earnings ranging from US$1.25 or less a day (classified as ultra-poor) to US$1.90 a day (categorized as poor) (Cooke, Hague, & McKay, 2016; Ghana Statistical Service (GSS), Ghana Health Service (GHS), & Inner City Fund International, 2015; World Bank, 2017). There are poor road networks connecting most of these communities. The only social amenities in most communities are public toilets and basic (primary) schools. Residents are native Twi-speakers who are mainly peasant farmers and traders of farm products and share similar socioeconomic characteristics (Ghana Statistical Service et al., 2015). Rural communities are often characterized by poverty and underdevelopment with higher levels of psychological distress and ill health (Khumalo, Temane, & Wissing, 2012).

Power Analysis

Although the study did not adopt a pure RCT design, a power calculation was done a priori to increase the analytical precision of the primary outcome. Based on previous studies (e.g. Bolier et al., 2013; Perugini, Gallucci, & Costantini, 2018; Weiss et al., 2016), a power analysis was conducted in G*Power (Faul, Erdfelder, Buchner, & Lang, 2009) to determine a sufficient sample size using an alpha of 0.05, an effect size of 0.70, and a power of 0.80. Taking into account a loss of power resulting from a drop-out rate of no more than 15 per cent, a minimum of 80 participants was needed (distributed equally over both conditions) to detect a statistical difference in the primary outcome (i.e. positive mental health).

Procedure

Ethical approval for this study was obtained from the Health Research Ethics Committee (HREC) of the North-West University (NWU-00109-17-S1), South Africa, and the Noguchi Memorial Institute for Medical Research Institutional Review Board (NMIMR-IRB) of the University of Ghana (NMIMR.IRB CPN

OO7/17-18), Ghana. Permissions were also sought from the Regional and District Health Directorates of the SWD. The chief and elders of each community also granted permission before the study commenced. A 2-week pilot session was carried out with 20 participants drawn from the target population to test the concepts, solicit feedback, adapt the interventional activities to the preferences and needs of the target participants, and make final revisions to the program manual prior to implementation. Study objectives were thoroughly explained to all selected individuals who were also assured of confidentiality before they were recruited. Written informed consent was obtained from all participants prior to recruitment. Participants for the program evaluation were part (a subsample) of a previous baseline survey, which was conducted to validate the measures. All participants were informed of their right to withdraw their participation up to the point of data analysis, without any consequences. The processes instituted to ensure the anonymity of data were discussed with them.

The services of a clinical psychologist were made available in the unlikely event that a participant experienced any intense negative feelings or thoughts during the interviews, discussions at sessions, or when identifying or challenging unhelpful/negative thoughts. Consented individuals were recruited into the intervention or control conditions. Participants in the intervention group participated in the 10-week ILP program. Post-intervention assessments were conducted with both groups immediately after the end of the program and at 3-months follow-up. Mental health measures were interviewer-administered with previously Twi-translated and validated versions of the scales, which are reported in other manuscripts (Appiah, Wilson-Fadiji, Schutte, & Wissing, 2020). Data were collected using the SurveyCTO software.

Community and Participant Randomisation. Using a computer-generated number sequence created with Excel, we randomly selected four communities from a list of 18 obtained from the SWD Assembly. The selected communities were matched on income levels, location (at least 10 kilometers apart to prevent contamination), the population of the community, and gender. One of each paired community was randomly assigned to either the intervention or control condition, through balloting using pre-generated codes by an independent person who was not involved in the study. A sample of 110 participants was previously recruited from each of the four communities at baseline for the purpose of scale validation. This sample will be called the "validation sample" in the current paper, and will be referred to where the psychometric properties of the outcome measures are briefly mentioned in the Measures section. Detailed results for the validation studies of the outcome measures are reported in Appiah et al. (2020). Within each community, a total of 21 consented individuals were randomly selected from the 110 participants in the validation sample coming from that community, recruited, and assigned to their respective conditions using a computer-generated number sequence created with Excel. The computerized random

number generator created with Excel is an automated process with no interference from the researchers. Participants were recruited at their homes and were invited to attend the 10-week ILP intervention program. Figure 1 shows the flow chart of the recruitment, intervention, evaluation, and analysis process.

Measures

Participants in the validation sample, which included participants who finally participated in the intervention, completed a battery of questionnaires measuring mental health and mental illness. The selected measures have shown promise in previous African studies (e.g. Bonthuys et al., 2011; Rugira et al., 2015; Teodorczuk et al., 2019; Van Zyl & Rothmann, 2012), are all relatively short, and together assess facets relevant to the evaluation of well-being in the African context.

Mental Health Continuum-Short Form (MHC-SF; Keyes, 2005; Keyes et al., 2008). The primary outcome was positive mental health, which was assessed with the 14-item MHC-SF. The MHC-SF measures various facets of well-being and diagnoses positive mental health along a continuum from languishing to flourishing. The items of the MHC-SF are sub-categorized into three subscales: emotional well-being (three items), social well-being (five items), and psychological well-being (six items). Participants indicate how often they experienced a set of feelings in the past month, ranging from 0 (*never*) to 5 (*every day*). Mean scores for the total and subscales are computed where higher scores indicate higher well-being. Applying the criteria of Keyes et al. (2008), participants are categorized as flourishing if they respond with a 4 (*almost every day*) or 5 (*every day*) to at least one of the three emotional well-being items and at least six of the 11 items of positive functioning (social and psychological well-being subscales combined); as languishing if they respond with a 0 (*never*) or 1 (*once or twice*) to one of the three emotional well-being items and six of the 11 items of positive functioning; and otherwise as having moderate mental health. The MHC-SF has demonstrated high validity and subscale reliability scores (Cronbach's alpha) of .90 for the emotional well-being subscale, .78 for the social well-being subscale, and .85 for the psychological well-being subscale in a sample of French-speaking Canadian young adults (Doré, O'Loughlin, Sabiston, & Fournier, 2017). Earlier, Khumalo, Temane, and Wissing (2011) found a Cronbach's alpha of .84 among a sample of Setswana-speaking South Africans. For the validation sample of the current study, a three-factor bifactor exploratory structural equation modeling (ESEM) model fitted the data well (comparative fit index [CFI] = 0.997; root mean square error of approximation [RMSEA] = 0.024), with omega reliability coefficients for the general mental health factor of 0.97, and 0.51, 0.57, 0.41 for the emotional, social, and psychological well-being subscales, respectively (Appiah et al., 2020). Note that Appiah

et al. (2020) reported the omega coefficient rather than the Cronbach's alpha coefficient which is commonly reported in psychological studies, since it is widely recognized that omega is superior when scales are multidimensional (cf. Gignac, 2014). Perreira et al. (2018) suggest that omega reliability coefficients of 0.50 and above represent satisfactory reliability for bifactor models. CFI-values above 0.95 support model fit and RMSEA-values below 0.08 indicate reasonable fit, with values below 0.05 indicating good fit (Byrne, 2016).

We also collected data on outcomes closely associated with psychological well-being that were also included in previous related studies. These secondary outcomes include frequency of positive thoughts, positive–negative affect balance, self-efficacy, self-reported levels of depressive symptoms, and satisfaction with life.

Affectometer 2 (AFM2; Kammann & Flett, 1983). The AFM2 measures general happiness or a general sense of well-being. In the AFM2, psychological well-being is measured on an affective level by determining the balance between negative and positive affect (Kammann & Flett, 1983). The AFM2 consists of two 10-item subscales: Positive Affect (AFM-PA) and Negative Affect (AFM-NA) with affect balance indicated by PA minus NA (PNB). This study focused on the AFM-PA and AFM-NA scores. The scale has five ordinal response levels (*not at all*, *occasionally*, *some of the time*, *often*, *all of the time*), where higher scores of AFM-PA and lower scores of AFM-NA denote positive mental health (Kammann & Flett, 1983). Wissing, Wissing, Du Toit, and Temane (2008) found support for the validity of the AFM2 in a South African context, with Cronbach's alpha scores of .64 and .79 for the AFM-PA and AFM-NA, respectively. For the validation sample in the current study, a two-factor bifactor ESEM model best fitted the data. An omega reliability coefficient of 0.88 for the global factor and 0.43 and 0.72 for the AFM-PA and AFM-NA subscales, respectively, were found for the current sample (Appiah et al., 2020).

Automatic Thoughts Questionnaire–Positive-22 (ATQ-P-22; Ingram & Wisnicki, 1988). The ATQ-P is a 30-item self-report scale assessing the frequency of positive thoughts. Respondents rate each item on a 5-point Likert scale according to how frequently each thought or a similar thought has occurred to them during the past week (*1 = never*, *3 = sometimes*, *5 = all the time*). There are four subscales: (i) Daily functioning (ATQ-PD), (ii) Self-evaluation (ATQ-PS), (iii) Other evaluation of self (ATQ-PO), and (iv) Future expectations (ATQ-PF). A total automatic positive thoughts score (ATQP-T) is determined by adding the scores of all the items. Responses are rated from 1 (*never*) to 5 (*all the time*). The ATQ-P was found to be valid with Cronbach's alpha of .88, .85, .78, .80, and .80 for ATQ-PD, ATQ-PS, ATQ-PO, ATQ-PF, Positive Social Functioning (ATQ-PSF) subscales, respectively, and .94 for the ATQP-T in an adult Dutch population (Boelen, 2007). For the validation sample of the current study,

a 22-item four-factor bifactor ESEM model and a 22-item five-factor ESEM model showed superior fit to the data. For the current study, the total score of the 22-item scale, which we call the ATQ-P-22, was used (CFI = 0.974, RMSEA = 0.050). The global factor in the 22-item four-factor bifactor ESEM analysis attained a high omega reliability coefficient of 0.98, and we therefore focused on the total score for the purpose of this study (Appiah et al., 2020).

Generalized Self-Efficacy Scale (GSES; Schwarzer & Jerusalem, 1995). The GSES is a 10-item self-report questionnaire that assesses optimistic self-beliefs to cope with a variety of difficult demands in life. Responses to items are measured on a 6-point scale ranging from 1 (*not true at all*) to 4 (*exactly true*). The total score is calculated as the sum of all items. The total score ranges between 10 and 40, with higher scores indicating more self-efficacy. Bonsaksen, Kottorp, Gay, Fagermoen, and Lerdal (2013) found the GSES to be valid and reliable with a Cronbach's alpha coefficient of .93 for the GSES. For the validation sample of the current study, a one-factor model with the residuals of items 4 and 5 correlated showed superior fit to the data (CFI = 0.961; RMSEA = 0.077). An omega reliability coefficient of 0.97 has been established for the current sample (Appiah et al., 2020).

Patient Health Questionnaire-9 (PHQ-9; Kroenke, Spitzer, & Williams, 2001). The PHQ-9 is a brief, nine-item scale that includes only the depression-related items from the PHQ. The PHQ-9 is used to make a tentative diagnosis of depression and to monitor depression severity and response to treatment in the past 2 weeks. Responses are on a 4-point Likert scale, and range from 0 (*not at all*) to 3 (*nearly every day*), with higher scores indicating higher severity of depression. Kroenke et al. (2001) found Cronbach's alpha values of between .86 and .89 for the PHQ-9. The PHQ-9 has proven to be a valid and reliable tool for use in an African context, with Cronbach's alpha of .78 (Adewuya, Ola, & Afolabi, 2006). For the current sample, a two-factor ESEM model was supported (CFI = 0.990; RMSEA = 0.031), with omega reliability coefficients of 0.76 and 0.69 for the somatic symptoms (PHQ-9-S) and nonsomatic/affective symptoms (PHQ-9-N) subscales, respectively, distinguished by Krause, Saunders, Bombardier, and Kalpakjjan (2011) and Subotić et al. (2015) (Appiah et al., 2020).

Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). The five-item SWLS assesses global cognitive judgments of one's life satisfaction. The scale is rated on a 7-point Likert that ranges from 1 (*strongly disagree*) to 7 (*strongly agree*). Scores range from 5 to 35, with higher scores indicating higher levels of life satisfaction. A score of 20 represents a neutral point at which the respondent is equally satisfied and dissatisfied (Diener et al., 1985). Wissing and Van Eeden (2002) obtained sufficient reliability levels with a range of (α = .70–.86) and found the SWLS to be valid in an African context.

A one-factor CFA model with the residuals of items 4 and 5 correlated displayed good fit to the data from the validation study of the current study (CFI = 0.988; RMSEA = 0.069). An omega reliability coefficient of 0.87 was found (Appiah et al., 2020).

The ILP Intervention

The ILP consists of a 10-week, 2-hour, once-weekly intervention program formulated and pilot-tested by the authors. The manualized protocol with its formulation process, structure, and implementation strategies is reported in another manuscript (Appiah et al., 2020). Sessions were facilitated by trained psychology graduates with 42 randomly selected participants, in groups of approximately 10, through small-group discussions and activities. Sessions were structured to include mini-lectures, focus group discussions, skill demonstrations, and brief exercises (with breakout sessions). Session themes, goals, and outlines were written (in the Twi native language of participants) and displayed on a flip chart at each session. Sessions were designed to stimulate interactive discussions where participants took turns to share their views and ask questions. Each session consisted of three parts: first, a review of the previous session and a discussion of home assignments; second, a discussion of the theme and contents of the current session and a breakout activity; and third, an overview of key lessons and discussion of home assignments for the following session. There were plenary and breakout sections where facilitators guided participants through specific exercises to provide them with hands-on experience of key lessons. The program focused on the following themes, sequentially, titled as (1) introduction to the ILP; (2) I accept myself; (3) I am kind and compassionate; (4) my nourished relationships; (5) my meaningful life; (6) fruitful living; (7) reaching beyond; (8) resilient mindset; (9) I am in control; and (10) joining the dots.

Overall, the intervention focused on building participants' skills in self-worth and self-acceptance, purposeful and meaningful living, positive relationships, self-efficacy, personal growth, kindness and compassion, coping skills, time management and goal setting skills, cognitive restructuring, and positive thinking. Sessions were held at suitable facilities in each community. Each session lasted for about 120 minutes. The program implementation was guided by a program manual and supervised by a clinical psychologist who also held dress rehearsal sessions for facilitators before the implementation of each session. The ILP intervention program was developed by the authors of this study, who are experienced researchers with training in clinical and health psychology, health promotion, community-based mental health intervention research, and statistical data analysis. A brief description of the intervention sessions is presented in Table 1.

TABLE 1
Session-by-session Description of the *Inspired Life Program* (ILP) for Rural Adults

Session	Theme	Focus	Brief description of activities
1	Introduction to ILP	Introduction, setting group guidelines, listening skills, facets of well-being	1. Establish rapport; open discussion of session agenda; structure of sessions; mutually set group rules. 2. Open discussion about positive mental health; facets of well-being; open sharing of experiences and application in daily lives; group and breakout session exercises.
2	I Accept Myself	Recognize one's strengths and accept weaknesses and work to improve one's self	1. Review previous session and homework; open discussion and sharing of one's strengths and weaknesses. 2. Open discussion about how to foster a positive attitude toward the self; acknowledge and accept multiple aspects of the self, including good and bad qualities; feels positive about past life; group and breakout session exercises.
3	I am Kind and Compassionate	Promote a sense of self-compassion and kindness and how to foster these	1. Review previous session and homework; open discussion about what compassion and kindness mean to them; open sharing of case scenarios where kindness and compassion are demonstrated; group and breakout session exercises. 2. Open discussion about importance of self-compassion and kindness; ways of showing kindness and compassion to self and others.
4	My Nourished Relationships	To explore the features of positive relationships and increase awareness of different ways our responses can affect them	1. Review previous session and homework; open discussion about features of positive (quality) relationship; the dynamics of human relationships; group and breakout session exercises. 2. Open sharing of various ways and actions that support and improve the quality of relationships.
5	My Meaningful Life	To promote a sense of meaning and purpose in life	1. Review previous session and homework; open discussion about meaningful and purposeful life; values and personal goals; goals in life and a sense of direction; engagements that bring meaning to

TABLE 1 *(CONTINUED)*

Session	Theme	Focus	Brief description of activities
			present and past life; group and breakout session exercises. 2. Open sharing of life goals and pursuits that bring meaning to their present and past life; aims and objectives for living.
6	Fruitful Living	Develop a sense of and skills in managing everyday circumstances and challenges	1. Review previous session and homework; open discussion about the benefits of goal setting; the SMART method of goal setting; group and breakout session exercises. 2. Open discussion about "time robbers" and time management and benefits of effective time management. Demonstration of "*The Rock in a Jar*" phenomenon; open sharing of significance; open discussion of its application to life.
7	Reaching Beyond	Enhance skills in the dimension of self-improvement (personal growth)	1. Review previous session and homework; open discussion about personal growth and development; benefits of self-improvement; group and breakout session exercises. 2. Open discussion about characteristics of strong personal growth (feeling of continued development, seeing self as growing and expanding, open to new experiences; a sense of realising one's potential; etc.).
8	Resilient Mindset	Develop problem-solving and stress coping skills that promotes flourishing	(1) Review previous session and homework; open discussion about coping skills that promote flourishing; characteristics of resiliency; group and breakout session exercises. (2) Open discussion of the six-step problem-solving process; open sharing about strategies that can be adopted to tackle everyday challenges; effective coping skills.
9	I am in Control	Understand the relationship between thoughts, feelings, and behavior and	1. Review previous session and homework; open sharing about how daily experiences shape well-being; relationships between events, thoughts, feelings, behavior; pictorial

TABLE 1 *(CONTINUED)*

Session	Theme	Focus	Brief description of activities
		identify and challenge unhelpful thoughts that interrupt positive experiences	demonstration of how events/ situations lead to the exhibition of a behavior; group and breakout session exercises. 2. Open group discussion to identify the event, thoughts, associated feelings, and behavior from a case scenario; open discussion and sharing about understanding and challenging unhelpful thinking patterns (The Worry Tree Method).
10	Joining the Dots	Recap key lessons of all sessions; celebrate achievements, and end training	1. Review previous session and homework; open discussion about key lessons through the various sessions; open sharing about how these skills and knowledge would impact well-being and productivity; group and breakout session exercises. 2. Open discussion about the easiest, less easy topics/skills, and most memorable session; open sharing about (group) experiences through the sessions; facilitators establish the techniques that participants have learned for increasing well-being. 3. Celebration and certification.

Facilitators

The ILP sessions were facilitated by two psychology graduates who received extensive training on the ILP program manual. The facilitators were native Twi-speakers and had prior experience as lay counselors on two community-based participatory mental health intervention projects where they led behavior-change skills training to groups of participants in low-income Ghanaian settings in Twi.

Data Analysis

All analyses were done with the Statistical Package for the Social Sciences (SPSS; version 26.0). Descriptive statistics of means, standard deviations, frequencies, and percentages were used to summarize the characteristics of the sample, including age, gender, marital status, and educational level. A *t*-test (in the case of age) or chi-square test (in the case of gender, marital status, and educational level) was done to test whether the intervention and control groups differed on the demographic variables.

To evaluate the effectiveness of the intervention, a two-way ANOVA-type hierarchical linear modeling (HLM) analysis was performed for each outcome variable using the Linear Mixed Model procedure in SPSS (McCoach, 2010). This multilevel analysis allowed us to statistically account for the dependency within the data caused by the fact that participants in the intervention and control groups were each nested within two communities/sites and by the fact that repeated measures were obtained for the same participants over time. The assumption of HLM that outcome variables are normally distributed was verified using the Shapiro-Wilk test of normality. Restricted maximum likelihood (REML) estimation was applied and the covariance structure was set to be unstructured. There were no missing data. The communities were the primary units of measurement, while the secondary units of analysis were the participants within the communities. Measurement occasion (baseline/immediate post-intervention/3-month follow-up), condition (intervention/control), and the interaction of measurement occasion and condition (measurement occasion × condition) were used as fixed factors. For interpretation, the focus was on the interaction effect, since checking if the outcome variable varied between intervention and control groups across the measurement occasions would inform us whether the intervention had an effect.

Post-hoc tests were performed to explore whether intervention and control groups differed at baseline, immediate post-intervention, and 3-month follow-up, where the Sidak correction was applied to correct for multiple comparisons. Post-hoc tests were also done to compare baseline scores with immediate post-intervention scores, baseline scores with 3-month follow-up scores, and immediate post-intervention scores with 3-month follow-up scores, where the Bonferroni correction was applied to correct for multiple comparisons. Statistical significance was established at $p < .05$. For the post-hoc tests, effect sizes were computed and interpreted using Cohen's criteria ($d = 0.2$ small; 0.5 medium; 0.8 large; Cohen, 1988; Cohen, Cohen, West, & Aiken, 2003). Finally, the prevalence levels of positive mental health were established, over time, using Keyes's criteria for categorisation (Keyes, 2005).

RESULTS

Demographic Characteristics of the Sample

Descriptive statistics of the demographic variables are summarized in Table 2. Mean ages were similar for the intervention (IG: $M = 37.8$, $SD = 10.7$) and the control group (CG: $M = 37.7$, $SD = 10.2$). There were more males in the control group (IG = 46.2%; CG = 53.8%), but the difference was not statistically significant. The majority of the participants in the control group were married (IG = 38.7; CG = 61.3%) and had a primary school level of education

TABLE 2
Sample Characteristics and Tests for Differences between Intervention and Control Groups (N = 82)

Characteristics	Intervention Group (n = 40) (M ± SD; range) or [n (%)]	Control Group (n = 42) (M ± SD; range) or [n (%)]	t or χ^2 test score	p-value
Age (years)	37.8 ± 10.7; 19–59	37.7 ± 10.2; 18–58	0.027	.979
Gender			0.205	.650
Male	18(45.0)	21(50.0)		
Female	22(55.0)	21(50.0)		
Marital status			6.581	.010
Married/Co-habiting	27(67.5)	38(90.5)		
Single/Divorced/Widowed	13(32.5)	4(9.5)		
Educational level			4.497	.480
None	11(27.5)	12(28.6)		
Primary	11(27.5)	13(31.0)		
Junior high	11(27.5)	11(26.2)		
Secondary	2(5.0)	4(9.5)		
Tertiary	0(0.0)	1(2.4)		
Other	5(12.5)	1(2.4)		

Note: M = Mean; SD = Standard deviation.

(IG = 45.8%; CG = 54.2%). The IG and CG differed only significantly on marital status, with 67.5% of the participants in the IG being married/co-habitating, and 90.5% of the participants in the CG being married/co-habitating.

Primary Outcome

Table 3 presents the estimated mean scores, variances, and associated statistics from the HLM analyses for the primary and secondary outcome measures. Post-hoc tests comparing the intervention and control groups as well as the measurement occasions are shown in Tables 4 and 5, respectively.

For the primary outcome of the intervention, positive mental health, there was a significant measurement occasion × condition interaction effect, $F(2, 160) = 25.355$, $p < .001$. This indicates a differential change in positive mental health by condition across time. In post-hoc tests, we found large effects sizes when the intervention and control groups were compared at immediate post-intervention ($d = 0.95$) and 3-month follow-up ($d = 0.86$). From the estimated mean scores in Table 3 it is clear that ILP participants reported on average higher levels of positive mental health than control group participants at these time points, although these differences did not reach statistical significance. Note that the difference between the intervention and control groups' mean scores resulted in a medium effect size ($d = 0.58$) at baseline, but upon examination of

TABLE 3
Results of the Two-way ANOVA-type Hierarchical Linear Modeling Analysis: Estimated Mean Scores; Variances, and *p*-values

	Estimated mean scores						Estimates of covariance parameters			$F(df_1, df_2)$; p		
	Baseline		Immediate post-intervention		3-month follow-up							
Outcome variable	I	C	I	C	I	C	Residual	Community	Participant x Community	Measurement occasion	Condition	Measurement occasion x Condition
Primary Outcome Measure												
MHC-Total	30.000	38.510	55.775	41.939	57.650	45.058	127.432	79.630	6.526	$F(2,160) = 54.858$; $p < .001$	$F(1,1.998) = 0.435$; $p = .577$	$F(2,160) = 25.355$; $p < .001$
MHC-EWB	4.450	5.058	10.750	6.701	11.450	6.534	10.447	4.663	2.350	$F(2,160) = 44.195$; $p < .001$	$F(1,1.996) = 1.568$; $p = .337$	$F(2,160) = 17.307$; $p < .001$
MHC-SWB	10.450	13.753	19.475	15.158	20.075	17.039	19.223	9.357	3.376	$F(2,160) = 50.025$; $p < .001$	$F(1,1.995) = 0.185$; $p = .709$	$F(2,160) = 17.745$; $p < .001$
MHC-PWB	15.100	19.701	25.550	20.082	26.125	21.487	25.529	13.679	0.824	$F(2,160) = 38.167$; $p < .001$	$F(1,1.997) = 0.238$; $p = .674$	$F(2,160) = 25.071$; $p < .001$
Secondary Outcome Measures												
SWLS	10.325	20.242	18.675	16.218	18.675	13.908	21.903	10.317	11.359	$F(2,160) = 4.383$; $p = .014$	$F(1,1.996) = 0.072$; $p = .814$	$F(2,160) = 58.313$; $p < .001$

TABLE 3 *(CONTINUED)*

Outcome variable	Estimated mean scores						Estimates of covariance parameters			$F(df_1, df_2)$; p		
	Baseline		Immediate post-intervention		3-month follow-up							
	I	C	I	C	I	C	Residual	Community	Participant x Community	Measurement occasion	Condition	Measurement occasion x Condition
AFM-PA	18.350	22.730	27.025	21.206	26.475	22.420	20.437	10.205	5.110	$F(2,160) = 18.824$; $p < .001$	$F(1,1.995) = 0.311$; $p = .633$	$F(2,160) = 29.786$; $p < .001$
AFM-NA	13.625	18.052	13.125	15.719	13.250	13.719	20.776	0.107	7.146	$F(2,160) = 5.541$; $p = .005$	$F(1,2.019) = 7.853$; $p = .106$	$F(2,160) = 3.870$; $p = .023$
GSES	27.179	28.643	33.825	26.768	33.437	30.662	31.952	7.666	5.505	$F(2,156.245) = 10.394$; $p < .001$	$F(1,1.994) = 0.439$; $p = .633$	$F(2,156.245) = 11.238$; $p < .001$
ATQ-P-22	63.600	79.924	88.450	72.233	90.050	73.757	138.437	83.057	50.436	$F(2,160) = 17.651$; $p < .001$	$F(1,1.998) = 0.332$; $p = .623$	$F(2,160) = 52.358$; $p < .001$
PHQ-9-S	4.300	3.289	2.500	2.551	3.075	3.265	3.390	0.193	1.023	$F(2,160) = 9.736$; $p < .001$	$F(1,1.968) = 0.221$; $p = .685$	$F(2,160) = 2.609$; $p = .077$
PHQ-9-N	6.050	3.949	2.475	3.902	2.550	3.616	7.326	2.744	3.321	$F(2,160) = 12.987$; $p < .001$	$F(1,1.991) = 0.006$; $p = .947$	$F(2,160) = 10.534$; $p < .001$

Note: MHC-Total = Mental Health Continuum-Short Form (Total Scale); MHC-EWB = Emotional Well-being; MHC-SWB = Social Well-being; MHC-PWB = Psychological Well-being; SWLS = Satisfaction with Life Scale; AFM-PA = Affectometer (Positive Affect); AFM-NA = Affectometer (Negative Affect); GSES = General Self-Efficacy Scale; ATQ-P-22 = Automatic Thought Questionnaire–Positive (Reduced 22-item version); PHQ-9-S = Patient Health Questionnaire–9 (Somatic symptoms subscale); PHQ-9-N = Patient Health Questionnaire–9 (Nonsomatic/affective symptoms subscale); I = Intervention group; C = Control group; *df* = Degrees of freedom.

TABLE 4
Results of Two-way ANOVA-type Hierarchical Linear Modeling Analysis: Post-hoc Tests and Effect Sizes Comparing Intervention and Control Groups

	Baseline		Immediate post-intervention		3-month follow-up	
Outcome variable	p	d	p	d	p	d
Primary Outcome Measure						
MHC-Total	.448	0.58	.263	0.95	.297	0.86
MHC-EWB	.814	0.15	.205	0.97	.150	1.18
MHC-SWB	.404	0.58	.301	0.76	.437	0.54
MHC-PWB	.345	0.73	.281	0.86	.342	0.73
Secondary Outcome Measures						
SWLS	.090	1.50	.543	0.37	.289	0.72
AFM-PA	.313	0.73	.214	0.97	.342	0.68
AFM-NA	.008	0.84	.070	0.49	.711	0.09
GSES	.674	0.22	.123	1.05	.447	0.41
ATQ-P-22	.219	0.99	.222	0.98	.220	0.99
PHQ-9-S	.195	0.47	.941	0.02	.782	0.09
PHQ-9-N	.351	0.57	.502	0.39	.608	0.29

Note: MHC-Total = Mental Health Continuum-Short Form (Total Scale); MHC-EWB = Emotional Well-being; MHC-SWB = Social Well-being; MHC-PWB = Psychological Well-being; SWLS = Satisfaction with Life Scale; AFM-PA = Affectometer (Positive Affect); AFM-NA = Affectometer (Negative Affect); GSES = General Self-Efficacy Scale; ATQ-P-22 = Automatic Thought Questionnaire–Positive (Reduced 22-item version); PHQ-9-S = Patient Health Questionnaire–9 (Somatic symptoms subscale); PHQ-9-N = Patient Health Questionnaire–9 (Nonsomatic/affective symptoms subscale); d = Cohen's d effect size.

the estimated mean scores in Table 3 it is apparent that, at this time point, the control group had a higher estimated mean score than the intervention group.

Post-hoc comparisons of measurement occasions showed a statistically significant increase in average positive mental health for the ILP participants, with moderate to large effect sizes when baseline and immediate post-intervention scores ($p < .001$, $d = 1.76$) and baseline and 3-month follow-up scores ($p < .001$, $d = 1.89$) were compared. On the contrary, for the control group, there was no statistically significant increase from baseline to immediate post-intervention, as evidenced by a small effect size ($p = .498$, $d = 0.24$). From baseline to 3-month follow-up there was a statistically significant increase with medium effect size ($p = .26$, $d = 0.45$), but this was considerably smaller than for the intervention group. When the mean scores for immediate post-intervention and 3-month follow-up were compared, the differences were not statistically significant for the intervention or control groups ($p = 1.000$), and effect sizes were small ($d < 0.21$).

Similar patterns were observed for the subdimensions of positive mental health: emotional, social, and psychological well-being. The interaction between

TABLE 5
Results of Two-way ANOVA-type Hierarchical Linear Modeling Analysis: Post-hoc Tests and Effect Sizes Comparing Measurement Occasions

	Intervention group						Control group					
	B vs. P		B vs. F		P vs. F		B vs. P		B vs. F		P vs. F	
	p	d	p	d	p	d	p	d	p	d	p	d
Primary Outcome Measure												
MHC-Total	<.001	1.76	<.001	1.89	1.000	0.13	.498	0.24	.026	0.45	.622	0.21
MHC-EWB	<.001	1.51	<.001	1.68	1.000	0.17	.063	0.39	.114	0.35	1.000	0.04
MHC-SWB	<.001	1.60	<.001	1.70	1.000	0.11	.432	0.25	.002	0.58	.153	0.33
MHC-PWB	<.001	1.65	<.001	1.74	1.000	0.09	1.000	0.06	.322	0.28	.613	0.22
Secondary Outcome Measures												
SWLS	<.001	1.26	<.001	1.26	1.000	0.00	<.001	0.61	<.001	0.96	.075	0.35
AFM-PA	<.001	1.45	<.001	1.36	1.000	0.09	.373	0.25	1.000	0.05	.660	0.20
AFM-NA	1.000	0.09	1.000	0.07	1.000	0.02	.061	0.44	<.001	0.82	.138	0.38
GSES	<.001	0.99	<.001	0.93	1.000	0.06	.416	0.28	.348	0.30	.008	0.58
ATQ-P-22	<.001	1.55	<.001	1.67	1.000	0.12	<.001	0.58	.019	0.41	.738	0.17
PHQ-9-S	<.001	0.84	.010	0.57	.493	0.27	.204	0.34	1.000	0.01	.232	0.33
PHQ-9-N	<.001	0.98	<.001	0.96	1.000	0.02	1.000	0.01	1.000	0.09	1.000	0.08

Note: MHC-Total = Mental Health Continuum-Short Form (Total Scale); MHC-EWB = Emotional Well-being; MHC-SWB = Social Well-being; MHC-PWB = Psychological Well-being; SWLS = Satisfaction with Life Scale; AFM-PA = Affectometer (Positive Affect); AFM-NA = Affectometer (Negative Affect); GSES = General Self-Efficacy Scale; ATQ-P-22 = Automatic Thought Questionnaire–Positive (Reduced 22-item version); PHQ-9-S = Patient Health Questionnaire–9 (Somatic symptoms subscale); PHQ-9-N = Patient Health Questionnaire–9 (Nonsomatic/affective symptoms subscale); B = Baseline; P = Immediate post-intervention; F = 3-month follow-up; *d* = Cohen's *d* effect size.

measurement occasion and condition was significant in all cases, suggesting a differential change in all subdimensions by condition across time. Post-hoc tests comparing intervention and control groups revealed higher mean scores for the intervention group at immediate post-intervention and 3-month follow-up. These differences were in no instance statistically significant, but medium to large effect sizes (d = 0.54–1.18) pointed to the practical significance of the differences. At baseline, differences were not statistically significant and effect sizes ranged from small to medium (d = 0.15–0.73), but at this stage the control group attained higher mean scores. Post-hoc tests comparing measurement occasions revealed, for the intervention group, statistically significant increases in all subdimensions of positive mental health from baseline to immediate post-intervention and from baseline to 3-month follow-up, supported by large effect sizes. For the control group, the increases were mostly not statistically significant and with small effect sizes, and in the cases where the increases were significant, it was substantially smaller than for the intervention group. No significant changes were

found for the intervention or control groups from immediate post-intervention to 3-month follow-up.

Secondary Outcomes

For the secondary outcome variables, the interaction between measurement occasion and condition was significant, except for the PHQ-9-S subdimension (p = .08). This suggests a differential change across time by condition, with the exception of the PHQ-9-S subdimension.

Upon examination of the estimated mean scores in Table 3, the intervention group displayed better mental health than the control group at immediate post-intervention and 3-month follow-up (i.e. higher mean scores on the SWLS, AFM-PA, GSES, ATQ-P-22; and lower mean scores on the AFM-NA, PHQ-9-S, and PHQ-9-N). Results for post-hoc tests in Table 4 revealed that none of these differences were statistically significant, but small to large effect sizes were observed for all variables except for satisfaction with life and depression at immediate post-intervention (d = 0.02–1.05), and negative affect, generalised self-efficacy, and depression at 3-month follow-up (d = 0.09–0.99). For all variables, except negative affect, the control group displayed better mental health at baseline compared to the intervention group. The difference at baseline was statistically significant for negative affect, and the effect sizes ranged from small to large (d = 0.22–1.50).

When comparing the measurement occasions, estimated mean scores in Table 3 show that, for the intervention group, mental health improved for all secondary variables from baseline to immediate post-intervention, and from baseline to 3-month follow-up. Post-hoc tests (Table 5) revealed that these changes were statistically significant and were supported by large effect sizes (d = 0.084–1.45) for all variables except negative affect. A similar pattern was not observed for the control group, where mean scores indicated improved mental health from baseline to immediate post-intervention/3-month follow-up for some variables (e.g. self-efficacy), and decreased mental health for other variables (e.g. satisfaction with life). From the post-hoc tests it is evident that these changes were often not statistically significant with varying effect sizes. Except for the generalised self-efficacy variable for the control group, no other variable in the intervention or control group showed significant changes between post-intervention and 3-month follow-up.

Prevalence of Positive Mental Health

Table 6 presents the prevalence levels of positive mental health over time, as measured by the MHC-SF. A large proportion of participants (77.5%) in the intervention group were flourishing at 3-month follow-up, compared to the control group (38.1%). While no participant in the intervention group was

TABLE 6
Frequencies for Prevalence of Mental Health for Intervention and Control Groups

	Intervention Group (n = 40)			Control Group (n = 42)		
Prevalence of mental health	Pre-test	Immediate post-intervention	3-month follow-up	Pre-test	Immediate post-intervention	Three-month follow-up
Flourishing (%)	25.0	57.5	77.5	21.4	28.6	38.1
Moderately mentally healthy (%)	27.5	42.5	22.5	54.8	66.7	57.1
Languishing (%)	47.5	0.0	0.0	23.8	4.8	4.8

languishing at immediate post-intervention and 3-month follow-up, about 5 per cent of participants in the control group were languishing at both time points. Overall, there was a 32.5 per cent gain in the proportion of flourishers from baseline to immediate post-intervention and another 20 per cent from immediate post-intervention to 3-month follow-up among the intervention group, as against only 7.2 per cent and 9.5 per cent at immediate post-intervention and 3-month follow-up, respectively, for the control group.

DISCUSSION

This exploratory study is one of the first to prospectively test the immediate- and medium-term effects of an mPPI on adults in a rural poor African setting. We conducted a quasi-randomized controlled trial to evaluate whether the ILP intervention improved positive mental health functioning and decreased mental health difficulties (self-reported depressive symptoms and negative affect) among an adult sample living in four rural poor communities in the middle belt of Ghana. Both hypotheses evaluating the effectiveness of the ILP intervention were supported. As predicted, program participants reported greater improvement in positive mental health, satisfaction with life, generalized self-efficacy, positive affect, and positive thoughts as well as a reduction in self-reported symptoms of depression and negative affect, immediately after the intervention and at 3-month follow-up compared to the control group. Although findings were not always statistically significant, medium to large effect sizes were often observed. Findings further demonstrated that the proportion of flourishers increased more for the ILP intervention group than for the control group.

Considering the estimated mean scores and resulting effect sizes, we found that the ILP was generally effective in promoting positive mental health and lowering depressive symptoms and negative affect when the intervention and control groups were compared at immediate post-intervention and 3-month follow-up,

and when scores at immediate post-intervention and 3-month follow-up were compared with baseline scores. Of note, although the services of a clinical psychologist were also made available to the control group throughout the assessment interviews and during the two interactive group sessions held to discuss ways to promote their mental health after the follow-up assessment, yet the intervention group performed better on all outcomes measured.

These findings were mostly statistically significant when comparisons were carried out across time within the intervention group, but not when intervention and control groups were compared at the two post-intervention measurement occasions. These findings are somewhat comparable to results from previous mPPIs that reported large effects (e.g. Afonso, Bueno, Loureiro, & Pereira, 2011; Green, Oades, & Grant, 2006; Hendriks et al., 2019; Page & Vella-Brodrick, 2013; Rashid, 2014; Schotanus-Dijkstra et al., 2019; Stein, Corte, Chen, Nuliyalu, & Wing, 2013; Weiss et al., 2016). Compared to a study that evaluated a group well-being intervention to increase psychological well-being within a rural community setting in South Africa (Bonthuys et al., 2011), our study demonstrated larger effect sizes on the mental health outcomes, with larger margins of reduction in symptoms of depression and negative affect. Although participants in Bonthuys et al.'s (2011) study share similar sociodemographic characteristics with participants in this study, the constructs used in the intervention formulation, the structure and strategies of application of sessions, and duration of the sessions differ in many ways. Our results also yielded significantly larger effect sizes than have been reported in recent meta-analyses (e.g. Bolier et al., 2013; Weiss et al., 2016).

A surprising finding of the current study was that there were no statistically significant or clinically relevant changes from post-intervention to follow-up in both groups. The non-significant finding for the intervention group, for instance, might be a result of the positive skewness in favor of the control group at baseline which leaves little room for growth. An important practical implication of this finding is that program participants did not experience a decline in mental health from immediate post-intervention to 3-month follow-up. Overall, the lack of statistically significant results could be attributed to the application of corrections in the HLM analysis, which might have complicated the emergence of significant results. Of note, recent research recommends that studies that compare outcomes between two groups should report an appropriate estimate of effect size (practical relevance) rather than rely solely on the statistical significance of the outcomes (see Dunkler, Haller, Oberbauer, & Heinze, 2020).

The results of this study should be interpreted with care since the observed differences at baseline and the quasi assignment of whole community members to conditions, for example, have the potential to limit the generalisability of the findings. Nonetheless, considering that this is common in similar studies, this does not affect the comparability of our results to previous studies. This also challenges researchers to revisit and strengthen the research design protocols and

processes that adapt to the distinct demands of community-based participatory research while also maintaining the integrity of the research of mental health interventions in rural poor, close-knit communities in Africa.

Several factors may have accounted for the large effects found in this current study. First, it could be that participation in the ILP, being the first of its kind for participants, afforded them unprecedented stimulating group interaction and peer-learning experience. This experiential learning might have provided participants the opportunity for self-examination and reflection while engaging with facilitators and group members to discuss important issues that affected their daily lives. Second, the theories underlying the ILP have empirical support for the promotion of mental health. For instance, a wealth of research (see Hendriks et al., 2019; Page & Vella-Brodrick, 2013; Smith & Hanni, 2019; Weiss et al., 2016) has shown that intentional activities, such as those included in the ILP, have the potential to alter moods and improve well-being and mental health, more generally. A possible conceptual implication of these findings is that the principles and constructs of the two models used in this study have universal applicability—at least in promoting positive mental health in the current sample, as was also previously reported (e.g. Bolier et al., 2013; Hendriks et al., 2019; Weiss et al., 2016). The larger effect sizes found in the current study compared to previous findings reported in meta-analyses could also be partly explained by the use of an assessment-only control group, rather than treatment as usual (see Sin & Lyubomirsky, 2009).

The collectivistic cultural orientation and synergistic nature of the Ghanaian people (see Gyekye, 2003, 2013; Sarpong, 2002) may have contributed to the large impact of the intervention. It was observed that participants willingly shared and cited their personal experiences during discussions, wherein members took turns to also offer their views and drew lessons from the shared experiences. Such collectivism might have maintained the high interest and actuated the practicality of the discussions. The high level of interactivity could also be partly explained by the facilitators' familiarity with the culture of the participants and by the effort they made to make the program contents understandable for the participants.

Another strength of the intervention program is the homework assigments given to participants at the end of each session. To anchor the lessons from each session for participants' long-term recall and application, short but practicable home assignments were discussed at the end of each session. Often, participants were required to discuss these assignments with friends or relatives and to share outcomes with the group at the beginning of each session. This finding supports previous research that suggests that intentional activities promote well-being (e.g. Bolier et al., 2013; Hendriks et al., 2019; Weiss et al., 2016), and can enhance the application and integration of lessons and exercises into daily lifestyles (Page & Vella-Brodrick, 2013; Smith & Hanni, 2019). Homework

assignments have been neglected in most mental health interventions (Kazantzis et al., 2016).

Furthermore, the high levels of enthusiasm and interactivity among participants suggest that the group-based model could be a viable approach in delivering mental health interventions in collectivistic societies that is worth further examination. This high level of interactivity, nonetheless, may be partly due to the courteous and respectful nature of facilitators' engagement with participants. From the practical and policy perspectives, the ILP intervention could be integrated into existing community-based health promotion programs being organized by the District Health Directorates, as well as into agri-coaching programs being organized for rural farmers by the Agricultural Extension Units at the district levels.

There is a large body of evidence that supports the efficacy of mental health interventions formulated with constructs from positive psychology (PP) and cognitive-behavioral intervention (CBI) principles for vulnerable adult populations (DiNapoli, Pierpaoli, Shah, Yang, & Scogin, 2017; Weiss et al., 2016). The ILP was formulated based on PP and CBI models, whose principles and constructs have been extensively integrated and applied in several PPIs (Bolier et al., 2013; Friedman et al., 2017; Hendriks et al., 2019; Sin & Lyubomirsky, 2009). Carefully conducted RCTs have shown that practicing positive thinking, positive self-appraisal, and setting and acting on life goals have significant positive effects on well-being (Chakhssi et al., 2018; Weiss et al., 2016). It may be possible that our intervention, founded on these selected theoretical frameworks, produced a ripple and domino effects in our sample, given their cultural and socioeconomic circumstances.

The present study differs from the existing interventions along a few key dimensions. First, there is limited research regarding the efficacy of PPIs in a rural poor population of society. The majority of interventions explicitly test PPIs among a cohort of the population drawn from high-income urban and educational settings (e.g. Bolier et al., 2013; Friedman et al., 2017; Weiss et al., 2016). The level of poverty and the low level of well-being experienced by participants before the program commenced may have contributed to the large effects of the ILP intervention. Second, this study is one of the first to be conducted with a sample drawn from a more collectivistic oriented society (see Gyekye, 2003, 2013; Sarpong, 2002). The cultural context of the participants also presented a distinctive positive influence that facilitated the intervention process, as evidenced by the high enthusiasm and participants' inclination to share their personal experiences with others. Although previous well-being interventions have reported similar large effects (e.g. Afonso et al., 2011; Green et al., 2006; Hendriks et al., 2019; Page & Vella-Brodrick, 2013; Rashid, 2014; Schotanus-Dijkstra et al., 2016; Stein et al., 2013), the participants in these studies were largely drawn from high-income, urban, and more individualistic-oriented Western settings.

Our finding on the proportion of flourishers at 3-month follow-up is among the highest according to the available literature. For instance, the 77.5 per cent of flourishers at follow-up (up from 25% at baseline) among the intervention group is only comparable to Gilmour's (2014) 76.9 per cent reported for a national survey of Canadians aged 15 or older in 2012. It is worth mentioning that participants in the above study did not take part in any form of intervention program. The proportion of flourishers found in this present study is considerably higher than the 54.4 per cent flourishers found among adolescents from the West of Scotland (Bower, 2017) and the 49.3 per cent reported for American college students (Keyes et al., 2012). The increase in the proportion of flourishers from baseline to follow-up in our study is somewhat comparable to a previous study that examined the effect of a 9-week comprehensive positive self-help intervention with email support on well-being and flourishing (see Schotanus-Dijkstra et al., 2016). Three months after the intervention, the percentage of flourishers in the email support group increased from 7 to 30 per cent, and further to 34 per cent after 6 months, compared to the wait-list control group.

Study Limitations

Although the program demonstrated significant improvements on various dimensions of positive mental health on the primary and secondary outcomes, findings should be interpreted with some caution. Firstly, this study recruited participants from different but closely related communities. This minimized the potential for contamination, which is common with community-based RCTs. Despite the fact that the communities were randomly selected and matched, which is typical of cluster RCT (cRCT), the intervention and control groups involved participants from only two communities each. Ideally, many more communities would be needed in the intervention and control clusters as required when implementing the cRCT design. We recommend that future studies use restricted randomisation with a larger number of matched or stratified communities to increase the analytical precision and remove bias.

Second, despite our attempts to match communities, differences in baseline scores were found. This is often the case when conducting RCTs at the community level (Krauss, 2018; Solomon, Cavanaugh, & Draine, 2009), but also less often at the individual level (Deaton & Cartwright, 2017; Saint-Mont, 2015). Differences in baseline scores on the outcome variables are accounted for in the HLM analyses. Thirdly, our sample appeared to consist of highly motivated participants who were willing to offer two hours of their time each week to attend the 10-week program, considering that 93 per cent of participants attended all sessions. The intervention may not present a similar magnitude of effect for individuals who cannot afford the time or are less motivated to participate consistently through all sessions.

Fourth, it is important to note that two subscales (MHC-PWB and AFM-PA) had relatively low reliability scores and findings for these subscales should be

interpreted with caution. Since the findings were interpreted in combination with findings for other scales and subscales and showed similar trends, we presented them in the paper, but we emphasize this cautionary note. Fifth, it is noteworthy to emphasize the sample characteristics of this present study. Participants comprised adult residents from four remote rural communities who were also classified as extremely poor or ultra-poor (Cooke et al., 2016; Ghana District League Table, 2016; Ghana Statistical Service et al., 2015). In future studies we intend to introduce brief booster sessions at post-interventions to refresh participants' memories and evaluate the long-term effect of the intervention.

Lastly, an assessment-only control condition design was used in the present study to determine whether the novel ILP intervention is more effective than no treatment at all in this non-clinical sample. Two 2-hour weekly group sessions were held with the control group to discuss context-relevant ways to promote their mental health a week after the follow-up assessment. Based on the findings of the present study, a high-powered, cluster randomized wait-list controlled trial is being designed to further examine the immediate and long-term effects of the ILP.

Study Implications

This study provides additional evidence to suggest that mental well-being (positive mental health) can be increased through small-group discussions and intentional activities facilitated and supervised by trained personnel. Our findings provide important theoretical contributions towards the development and evaluation of PPIs for vulnerable groups in the African context. The gains in the proportion of flourishers following the intervention provide evidence for the importance of investing in and promoting public mental health, particularly for adult residents of rural and resource-limited communities. Results suggest that the development of strengths-based interventions and the practicality of methods to promote positive mental health in vulnerable populations at the group level may be possible in practice and have significant policy implications for public mental health and social care in Ghana.

CONCLUSIONS

There are few interventions that specifically target positive mental health among rural poor adults. This exploratory study is the first to evaluate the effectiveness of the ILP, a 10-week, structured, group-based mPPI specifically designed for rural poor adults. Besides significantly promoting participants' well-being, general self-efficacy, satisfaction with life, and positive thoughts, the ILP also reduced symptoms of depression and negative affect. Our findings provide preliminary support for the potential effectiveness of the ILP and offer a promising start for further development of strengths-based interventions to promote positive mental health in adults in rural Ghana, and sub-Saharan Africa more generally.

We recommend that findings of this exploratory study be interpreted with adequate caution, given the specific geographical location of the study, the moderate sample size, and the other methodological concerns discussed in the study limitation. Based on the outcome and field experiences, further studies are being planned to evaluate the ILP in similar population groups. Furthermore, a qualitative dataset is being analysed to explore individual participants' experiences and perspectives of the ILP and to uncover the underlying mechanisms and circumstances that supported the positive changes.

We conclude that the development and evaluation of context-specific positive interventions could be an important step towards the promotion of mental health of the population involved, given the increasing inequality and high prevalence of poverty in many areas of Ghana (Molini & Paci, 2015). The ILP, and similar strengths-based interventions, delivered through small-group discussion and activity sessions to adults with low literacy and socioeconomic status at the community level, could be effective in improving the mental health of adults in rural settings in Ghana. The ILP could also complement existing social intervention efforts, such as the Livelihood Empowerment Against Poverty (Handa et al., 2013), while also contributing towards empowering and improving the overall health and human development agenda of adults living in rural and resource-poor communities in developing countries.

AUTHOR CONTRIBUTIONS

RA, AWF, MPW, and LS conceived and designed the study. RA took the lead in formulating the ILP, with AWF, MPW, and LS supervising the process and making inputs. RA supervised the implementation of the ILP, the collection and capturing of the data, and the preparation of the data for analysis. LS supervised the data analysis conducted by an external statistical consultant. RA drafted the manuscript, with AWF, LS, and MPW giving input at all stages of the manuscript's development which was then incorporated into the text by RA. The study forms part of the doctoral thesis of the first author.

CONFLICT OF INTEREST

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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REFERENCES

Addley, K., Boyd, S., Kerr, R., McQuillan, P., Houdmont, J., & McCrory, M. (2014). The impact of two workplace-based health risk appraisal interventions on employee lifestyle parameters, mental health and work ability: Results of a randomized controlled trial. *Health Education Research*, *29*(2), 247–258. https://doi.org/10.1093/her/cyt113.

Adewuya, A.O., Ola, B.A., & Afolabi, O.O. (2006). Validity of the patient health questionnaire (PHQ-9) as a screening tool for depression amongst Nigerian university students. *Journal of Affective Disorders*, *96*(2), 89–93. https://doi.org/10.1016/j.jad.2006.05.021.

Afonso, R.M., Bueno, B., Loureiro, M.J., & Pereira, H. (2011). Reminiscence, psychological well-being, and ego integrity in Portuguese elderly people. *Educational Gerontology*, *37*(12), 1063–1080. https://doi.org/10.1080/03601277.2010.500585.

Appiah, R., Wilson-Fadiji, A., Schutte, L., & Wissing, M.P. (2020). Factorial validity of the Twi versions of five measures of mental health and well-being in Ghana. *Plos One*.

Bannink, F. (2012). *Practicing positive CBT: From reducing stress to building success*. Chichester, West Sussex: Willey-Blackwell.

Barry, M.M., & Jenkins, R. (2007). *Implementing mental health promotion*. Oxford: Elsevier.

Beck, A.T. (1991). *Cognitive therapy and the emotional disorders*. New York: Penguin.

Beck, J.S. (2011). *Cognitive behavior therapy: Basics and beyond* (2nd edn.). New York: Guilford Press.

Boelen, P.A. (2007). Psychometric properties of the Dutch version of the Automatic Thoughts Questionnaire–Positive (ATQ–P). *Cognitive Behaviour Therapy*, *36*(1), 23–33. https://doi.org/10.1080/16506070600874315.

Bolier, L., Haverman, M., Kramer, J., Westerhof, G.J., Riper, H., Smit, F., & Bohlmeijer, E. (2013). Positive psychology interventions: A meta-analysis of randomized controlled studies. *BMC Public Health*, *13*, https://doi.org/10.1186/1471-2458-13-119.

Bonsaksen, T., Kottorp, A., Gay, C., Fagermoen, M.S., & Lerdal, A. (2013). Rasch analysis of the general self-efficacy scale in a sample of persons with morbid obesity. *Health and Quality of Life Outcomes*, *11*, 1–11. https://doi.org/10.1186/1477-7525-11-202.

Bonthuys, A., Botha, K.F.H., Nienaber, A.W., Freeka, F.E., & Kruger, A. (2011). The effect of the Lifeplan® programme on the psychological well-being of a rural

community in South Africa. *South Africa Journal of Psychology*, *21*(3), 421–428. https://doi.org/10.1080/14330237.2011.10820476.

Bower, R. (2017). *Psychometric evaluation of the Mental Health Continuum-Short Form (MHC-SF) with adolescents living in the West of Scotland*. Doctoral dissertation, University of Glasgow. Retrieved from: http://theses.gla.ac.uk/8438

Byrne, B.M. (2016). *Structural equation modeling with AMOS: Basic concepts, applications, and programming* (3rd edn.). New York: Routledge.

Chakhssi, F., Kraiss, J.T., Sommers-Spijkerman, M., & Bohlmeijer, E.T. (2018). The effect of positive psychology interventions on well-being and distress in clinical samples with psychiatric or somatic disorders: A systematic review and meta-analysis. *BMC Psychiatry*, *18*, 211. https://doi.org/10.1186/s12888-018-1739-2.

Chi, Y., Sha, F., Yip, P., Chen, J., & Chen, Y. (2016). Randomized comparison of group versus individual educational interventions for pregnant women to reduce their secondhand smoke exposure. *Medicine*, *95*(40), e5072. https://doi.org/10.1097/MD.0000000000005072.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. New York: Routledge Academic.

Cohen, J., Cohen, P., West, S.G., & Aiken, L.S. (2003). *Applied multiple correlation/regression analysis for the behavioral sciences*. Mahwah, NJ: Lawrence Erlbaum Associates.

Cooke, E., Hague, S., & McKay, A. (2016). The Ghana poverty and inequality report: Using the 6th Ghana living standards survey. http://africainequalities.org/wp-content/uploads/2016/07/Ghana_Poverty_and_Inequality_Analysis_FINAL_Match_20161.pdf (accessed 2 May 2019).

Deaton, A., & Cartwright, N. (2017). Understanding and misunderstanding randomized controlled trials. *Social Science & Medicine*, *210*, 2–21. https://doi.org/10.1016/j.socscimed.2017.12.005.

Diener, E., Emmons, R.A., Larsen, R.J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment*, *49*(1), 71–75. https://doi.org/10.1207/s15327752jpa4901_13.

DiNapoli, E.A., Pierpaoli, C.M., Shah, A., Yang, X., & Scogin, F. (2017). Effects of home-delivered cognitive behavioral therapy (CBT) for depression on anxiety symptoms among rural, ethnically diverse older adults. *Clinical Gerontology*, *40*(3), 181–190. https://doi.org/10.1080/07317115.2017.1288670.

Doré, I., O'Loughlin, J.L., Sabiston, C.M., & Fournier, L. (2017). Psychometric evaluation of the Mental Health Continuum-Short Form in French Canadian young adults. *Canadian Journal of Psychiatry*, *62*(4), 286–294. https://doi.org/10.1177/0706743716675855.

Dunkler, D., Haller, M., Oberbauer, R., & Heinze, G. (2020). To test or to estimate? *P*-values versus effect sizes. *Transplant International*, *33*(1), 50–55.

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, *41*(4), 1149–1160. https://doi.org/10.3758/BRM.41.4.1149.

Friedman, E.M., Ruini, C., Foy, R., Jaros, L., Sampson, H., & Ryff, C.D. (2017). Lighten UP! A community-based group intervention to promote psychological well-being in

older adults. *Aging & Mental Health*, *21*(2), 199–205. https://doi.org/10.1080/13607863.2015.1093605.

Friedman, E.M., Ruini, C., Foy, R., Jaros, L., Love, G., & Ryff, C.D. (2019). Lighten UP! A community-based group intervention to promote eudaimonic well-being in older adults: A multi-site replication with 6 month follow-up. *Clinical Gerontology*, *2*(4), 387–397. https://doi.org/10.1080/07317115.2019.1574944.

Ghana Statistical Service (GSS), Ghana Health Service (GHS), & ICF International (2015). *Ghana demographic and health survey 2014*. Rockville, MD: GSS, GHS, and ICF International.

Gignac, G.E. (2014). On the inappropriateness of using items to calculate total score reliability via coefficient alpha for multidimensional scales. *European Journal of Psychological Assessment*, *30*(2), 130–139. https://doi.org/10.1027/1015-5759/a000181.

Gilmour, H. (2014). Positive mental health and mental illness. *Health Reports*, *25*(9), 3–9.

Green, L.S., Oades, L.G., & Grant, A.M. (2006). Cognitive-behavioral, solution-focused life coaching: Enhancing goal striving, well-being, and hope. *Journal of Positive Psychology*, *1*(3), 142–149. https://doi.org/10.1080/17439760600619849

Guo, C., Tomson, G., Keller, C., & Söderqvist, F. (2018). Prevalence and correlates of positive mental health in Chinese adolescents. *BMC Public Health*, *18*, 263. https://doi.org/10.1186/s12889-018-5133-2.

Gyekye, K. (2003). *African cultural values: An introduction*. Accra, Ghana: Sankofa Publishing.

Gyekye, K. (2013). *Philosophy, culture and vision: African perspectives: Selected essays*. Accra, Ghana: Sub-Saharan Publishers.

Handa, S., Park, M., Osei, R., Osei-Akoto, I., Davis, B., & Diadone, S. (2013). *Livelihood empowerment against poverty program impact evaluation*. Chapel Hill, NC: Carolina Population Center, University of North Carolina at Chapel Hill.

Hendriks, T., Schotanus-Dijkstra, M., Hassankhan, A., de Jong, J., & Bohlmeijer, E. (2019). The efficacy of multi-component positive psychology interventions: A systematic review and meta-analysis of randomized controlled trials. *Journal of Happiness Studies*, *21*(1), 357–390. https://doi.org/10.1007/s10902-019-00082-1.

Ho, H.C.Y., Mui, M., Wan, A., Ng, Y.-L., Stewart, S.M., Yew, C., … Chan, S.S. (2016). Happy Family Kitchen II: A cluster randomized controlled trial of a community-based family intervention for enhancing family communication and well-being in Hong Kong. *Frontiers in Psychology*, *7*, 638. https://doi.org/10.3389/fpsyg.2016.00638.

Ingram, R.E., & Wisnicki, K.S. (1988). Assessment of positive automatic cognition. *Journal of Consulting and Clinical Psychology*, *56*(1), 898–902. https://doi.org/10.1037/0022-006X.56.6.898.

Kammann, R., & Flett, R. (1983). Affectometer 2: A scale to measure current level of general happiness. *Australian Journal of Psychology*, *35*(2), 259–265. https://doi.org/10.1080/00049538308255070.

Kaplan, S., Bradley-Geist, J.C., Ahmad, A., Anderson, A., Hargrove, A.K., & Lindsey, A. (2014). A test of two positive psychology interventions to increase employee well-being. *Journal of Business and Psychology*, *29*(3), 367–380. https://doi.org/10.1007/s10869-013-9319-4.

Kazantzis, N., Whittington, C.J., Zelencich, L., Norton, P.J., Kyrios, M., & Hofmann, S.G. (2016). Quantity and quality of homework compliance: A meta-analysis of relations with outcome in cognitive behavior therapy. *Behavior Therapy*, *47*(5), 755–772. https://doi.org/10.1016/j.beth.2016.05.002.

Keyes, C.L.M. (1998). Social well-being. *Social Psychology Quarterly*, *6*, 121–140. https://doi.org/10.2307/2787065

Keyes, C.L.M. (2002). The mental health continuum: From languishing to flourishing in life. *Journal of Health and Social Behavior*, *43*(2), 207–222. https://doi.org/10.2307/3090197.

Keyes, C.L.M. (2005). Mental illness and/or mental health? Investigating axioms of the complete state model of health. *Journal of Consulting and Clinical Psychology*, *73*(4), 539–548. https://doi.org/10.1037/0022-006X.73.3.539.

Keyes, C.L.M., Eisenberg, D., Perry, G., Dube, S.R., Kroenke, K., & Dhingra, S.S. (2012). The relationship of level of positive mental health with current mental disorders in predicting suicidal behavior and academic impairment in college students. *Journal of American College Health*, *60*(2), 126–133. https://doi.org/10.1080/07448481.2011.608393.

Keyes, C.L.M., Wissing, M., Potgieter, J.P., Temane, Q.M., Kruger, A., & Van Rooy, S. (2008). Evaluation of the mental health continuum short form (MHC-SF) in Setswana-speaking South Africans. *Clinical Psychology & Psychotherapy*, *15*(3), 181–192. https://doi.org/10.1002/cpp.572.

Khumalo, I.P., Temane, Q.M., & Wissing, M.P. (2011). Well-being in the Batswana cultural context: Constructs and measures. *Journal of Psychology in Africa*, *21*(2), 277–286.

Khumalo, I.P., Temane, Q.M., & Wissing, M.P. (2012). Socio-demographic variables, general psychological well-being and the mental health continuum in an African context. *Social Indicators Research*, *105*(3), 419–442. https://doi.org/10.1007/s11205-010-9777-2.

Krauss, A. (2018). Why all randomised controlled trials produce biased results. *Annals of Medicine*, *50*(4), 312–322. https://doi.org/10.1080/07853890.2018.1453233.

Kroenke, K., Spitzer, R.L., & Williams, J.B.W. (2001). The PHQ-9: Validity of a brief depression severity measure. *Journal of General Internal Medicine*, *16*(9), 606–613. https://doi.org/10.1046/j.1525-1497.2001.016009606.x.

Kuyken, W., Padesky, C.A., & Dudley, R. (2009). *Collaborative case conceptualisation: Working effectively with clients in cognitive-behavioral therapy*. New York: Guilford Press.

Lavis, J.N., Bärnighausen, T., & El-Jardali, F. (2017). Quasi-experimental study designs series—paper 11: Supporting the production and use of health systems research syntheses that draw on quasi-experimental study designs. *Journal of Clinical Epidemiology*, *89*, 92–97.

Macaskill, A. (2016). Review of positive psychology applications in clinical medical populations. *Healthcare (Basel)*, *4*(3), 66. https://doi.org/10.3390/healthcare4030066.

McCoach, D.B. (2010). Hierarchical linear modeling. In G.R. Hancock & R.O. Mueller (Eds.), *The reviewer's guide to quantitative methods in the social sciences* (pp. 123–140). New York: Routledge.

Molini, V., & Paci, P. (2015). *Poverty reduction in Ghana—Progress and challenges*. World Bank Other Operational Studies 22733: The World Bank. Available at: https://openknowledge.worldbank.org/handle/10986/22732

Mrazek, P.J., & Haggerty, R.J. (Eds.) (1994). *Reducing risks for mental disorders: Frontiers for prevention research*. Washington, DC: National Academy Press.

Page, K.M., & Vella-Brodrick, D.A. (2013). The working for wellness program: RCT of an employee well-being intervention. *Journal of Happiness Studies*, *14*(3), 1007–1031. https://doi.org/10.1007/s10902-012-9366-y.

Paul-Ebhohimhen, V., & Avenell, A. (2009). A systematic review of the effectiveness of group versus individual treatments for adult obesity. *Obesity Facts*, *2*(1), 17–24. https://doi.org/10.1159/000186144.

Perreira, T.A., Morin, A.J.S., Hebert, M., Gillet, N., Houle, S.A., & Berta, W. (2018). The short form of the Workplace Affective Commitment Multidimensional Questionnaire (WACMQ-S): A bifactor-ESEM approach among healthcare professionals. *Journal of Vocational Behavior*, *106*, 62–83. https://doi.org/10.1016/j.jvb.2017.12.004.

Perugini, M., Gallucci, M., & Costantini, G. (2018). A practical primer to power analysis for simple experimental designs. *International Review of Social Psychology*, *31*, 20. https://doi.org/10.5334/irsp.181.

Pretorius, C., Venter, C., Temane, M., & Wissing, M. (2008). The design and evaluation of a hope enhancement programme for adults. *Journal of Psychology in Africa*, *18*(2), 301–308. https://doi.org/10.1080/14330237.2008.10820202.

Proyer, R.T., Gander, F., Wellenzohn, S., & Ruch, W. (2015). Strengths-based positive psychology interventions: A randomized placebo-controlled online trial on long-term effects for a strengths- vs. a less strengths-intervention. *Frontiers in Psychology*, *6*, 456. https://doi.org/10.3389/fpsyg.2015.00456.

Rashid, T. (2014). Positive psychotherapy: A strength-based approach. *Journal of Positive Psychology*, *10*, 25–40. https://doi.org/10.1080/17439760.2014.920411.

Rugira, J., Nienaber, A.W., & Wissing, M.P. (2015). Evaluating the effect of a psychosocial well-being programme for students at a Tanzanian university. *African Journal for the Psychological Study of Social Issues*, *18*, 77–98. http://ajpssi.org/index.php/ajpssi/article/view/110/pdf_92

Ruini, C., & Ryff, C. (2016). Using eudaimonic well-being to improve lives. In A.M. Wood & J. Johnson (Eds.), *The Wiley handbook of positive clinical psychology: An integrated approach to studying and improving well-being* (pp. 153–166). Hoboken, NJ: Wiley-Blackwell.

Ryff, C.D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology*, *57*, 1069–1081. https://doi.org/10.1037/0022-3514.57.6.1069.

Ryff, C.D. (2014). Psychological well-being revisited: Advances in the science and practice. *Psychotherapy and Psychosomatics*, *83*, 10–28. https://doi.org/10.1159/000353263.

Saint-Mont, U. (2015). Randomization does not help much, comparability does. *PLoS One*, *10*(7), e0132102. https://doi.org/10.1371/journal.pone.0132102.

Sarpong, P.K. (2002). *Peoples differ: An approach to inculturation in evangelization*. Accra: Sub-Saharan Publishers.

Schotanus-Dijkstra, M., Pieterse, M.E., Drossaert, C.H.C., Walburg, J.A., & Bohlmeijer, E.T. (2019). Possible mechanisms in a multicomponent email guided positive psychology intervention to improve mental well-being, anxiety and depression: A multiple mediation model. *Journal of Positive Psychology*, *14*, 141–155. https://doi.org/10.1080/17439760.2017.1388430.

Schotanus-Dijkstra, M., Pieterse, M.E., Drossaert, C.H.C., Westerhof, G.J., de Graaf, R., ten Have, M., … Bohlmeijer, E.T. (2016). What factors are associated with flourishing? Results from a large representative national sample. *Journal of Happiness Studies*, *17*, 1351–1370. https://doi.org/10.1007/s10902-015-9647-3.

Schwarzer, R., & Jerusalem, M. (1995). Generalized Self-Efficacy scale. In In J. Weinman, S. Wright, & M. Johnston (Eds.), *Measures in health psychology: A user's portfolio. Causal and control beliefs* (pp. 35–37). Windsor, UK: NFER-Nelson.

Shadish, W.R., Cook, T.D., & Campbell, D.T. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Boston, MA: Houghton Mifflin.

Shankland, R., & Rosset, E. (2017). Review of brief school-based positive psychological interventions: A taster for teachers and educators. *Educational Psychology Review*, *29* (2), 363–392. https://doi.org/10.1007/s10648-016-9357-3.

Sin, N.L., & Lyubomirsky, S. (2009). Enhancing well-being and alleviating depressive symptoms with positive psychology interventions: A practice-friendly meta-analysis. *Journal of Clinical Psychology*, *65*(5), 467–87. https://doi.org/10.1002/jclp.20593.

Smith, J.L., & Hanni, A.A. (2019). Effects of a savoring intervention on resilience and well-being of older adults. *Journal of Applied Gerontology*, *38*(1), 137–152. https://doi.org/10.1177/0733464817693375.

Solomon, P., Cavanaugh, M.M., & Draine, J. (2009). *Pocket guides to social work research methods. Randomized controlled trials: Design and implementation for community-based psychosocial interventions*. New York: Oxford University Press.

Stein, K.F., Corte, C., Chen, D.G., Nuliyalu, U., & Wing, J. (2013). A randomized clinical trial of an identity intervention programme for women with eating disorders. *European Eating Disorders Review*, *21*(2), 130–142. https://doi.org/10.1002/erv.2195.

Teodorczuk, K., Guse, T., & du Plessis, G.A. (2019). The effect of positive psychology interventions on hope and well-being of adolescents living in a child and youth care centre. *British Journal of Guidance and Counselling*, *47*(2), 234–245. https://doi.org/10.1080/03069885.2018.1504880.

Van Zyl, L.E., & Rothmann, S. (2012). Beyond smiling: The evaluation of a positive psychological intervention aimed at student happiness. *Journal of Psychology in Africa*, *22*(3), 369–384. https://doi.org/10.1080/14330237.2012.10820541.

Weiss, L.A., Westerhof, G.J., & Bohlmeijer, E.T. (2016). Can we increase psychological well-being? The effects of interventions on psychological well-being: A meta-analysis of randomised controlled trials. *PLoS One*, *11*, https://doi.org/10.1371/journal.pone.0158092.

Westerhof, G., & Keyes, C.L.M. (2010). Mental illness and mental health: The two continua model across the lifespan. *Journal of Adult Development*, *17*(2), 110–119. https://doi.org/10.1007/s10804-009-9082-y.

Wissing, J.A.B., Wissing, M.P., Du Toit, M.M., & Temane, Q.M. (2008). Psychometric properties of various scales measuring psychological well-being in a South African

context: The FORT 1 project. *Journal of Psychology in Africa*, *18*(4), 511–520. https://doi.org/10.1080/14330237.2008.10820230.

Wissing, M.P., & Van Eeden, C. (2002). Empirical clarification of the nature of psychological well-being. *South African Journal of Psychology*, *32*(1), 32–44. https://doi.org/10.1177/008124630203200105.

World Bank (2017). *Ghana country overview*. Available at: http://www.worldbank.org/en/country/ghana/overview.