

Enhancing resiliency and promoting prosocial behavior among Tanzanian primary-school students: A school-based intervention

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Abstract

Children in Sub-Saharan Africa are living under chronic adversity due to poverty, serious health issues, physical and sexual abuse, and armed conflicts. These highly stressful conditions have deleterious effects on their mental health and socio-emotional adjustment. Since many children lack adequate access to mental health care, culturally adapted school-based resiliency programs could provide a resource to scaffold their development and promote their mental health. This study evaluated the efficacy of a universal school-based intervention in enhancing the resiliency of Tanzanian primary school children and cultivating prosocial behaviors. A total of 183 students from grades 4 to 6 were randomly assigned to either the 16-session “ERSAE-Stress-Prosocal (ESPS)” structured intervention or to a Social Study curriculum (SS) active control group. The original ESPS program was adapted by Tanzanians mental health professionals who modified the program based on local idioms of distress and indigenous practices. Students’ resilience was evaluated before, after and 8 months following the intervention by assessing social difficulties, hyperactivity, somatization, level of anxiety, prosocial behaviors and school functioning as well as academic achievements and disciplinary problems. There was significant improvement on all outcome measures for the ESPS

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group compared to the control group post-intervention and at the 8-month follow up. The ESPS intervention was equally effective on most measures for students experiencing different adversity levels. The results indicate that a culturally adapted universal school-based intervention can be effective in enhancing Tanzanian students' resiliency and promoting prosocial behaviors. Should these results be replicated and found enduring, the modified ESPS could be a valuable mental health-promoting intervention in other low-income countries.

Keywords

cultural adaptation, local idioms of distress, resiliency, prosocial behavior, school-based intervention, social support

Introduction

Children in Sub-Saharan Africa face daunting challenges due to poverty, serious health issues (e.g. HIV and malaria), losing family members to AIDS, armed conflicts and weakening environmental sustainability (U.N., 2015). Even though there has been a decline in poverty in the past decade, more than 40% of the population in Sub-Saharan Africa still lives on less than \$1.25 a day (Beegle, Christiaensen, Dabalen, & Gaddis, 2016).

Tanzania, a Sub-Saharan African country, is one of the poorest countries in the world, ranking in the bottom fifth of the United Nation's Human Development Index (World Bank, 2016). Like many countries in Sub-Saharan Africa, Tanzania also faces an AIDS epidemic where roughly 5% of the current population is HIV-positive (UNICEF, 2014). The country is also home to an estimated 550,000–1,800,000 AIDS orphans (UN AIDS, 2014). In addition, one in three girls and one in seven boys report experiencing at least one incident of sexual violence, and almost three-quarters report experiencing physical violence in childhood (UNICEF, 2011).

A large body of research has shown that exposure to cumulative adversity in childhood dramatically heightens the risk of developing long-term mental, emotional and behavioral problems in highly developed countries like the US (Anda et al., 2006; Yoshikawa, Aber & Beardslee, 2012) as well as in developing countries (Grantham-McGregor et al., 2007). Children who live in such distressed environments tend to develop a wide range of adjustment problems in school (Duncan & Brooks-Gunn, 1997), problematic peer relations (Kupersmidt, Burchinal, & Patterson, 1995), difficulties in affect-regulation (Kim et al., 2013; Thompson, 2014) and a variety of problematic behaviors (Porche, Costello & Rosen-Reynoso, 2016; Zolkoski & Bullock, 2012). Given the cumulative risk factors facing Tanzanian children, one would expect a high prevalence of emotional and behavioral problems that would impinge on their academic performance as well as their socioemotional adjustment in school and in the community.

School is arguably one of the most important settings for children's cognitive, emotional, and social development, and for this reason is an ideal context to address their socioemotional needs (Fazel, Hoagood, Stephan & Ford, 2014). Implementing universal interventions within the school system helps make these services more available, feasible and affordable to a relatively large population (Berger, Gelkopf & Heineberg, 2012). Since children in low-income and middle-income countries (LMICs) do not have adequate access to mental health care (Saxena, Thornicroft, Knapp, & Whiteford, 2007), schools are a potential resource that can facilitate the resilience processes that scaffold healthy development, despite the presence of high risks (Berger & Gelkopf, 2009; Liebenberg et al., 2015).

The last twenty years have witnessed an explosion of school-based mental health promotion (MHP) and social-emotional learning (SEL) interventions in high-income countries (HICs) that address a wide spectrum of issues from improving students' well-being and peer relationships to dealing with a variety of psychological symptomatology and behavioral problems (for review see, Durlak et al., 2011; Fazel et al., 2014). The cumulative body of evidence provided by these reviews confirms the effectiveness of school-based interventions in enhancing students' resiliency and promoting prosocial behaviors. Despite the growing recognition of the importance of school-based interventions in promoting mental health, there have been limited attempts to develop or adapt these interventions in LMICs, particularly in Sub-Saharan Africa.

Two recent reviews identified 22 studies examining school-based MHP in LMICs (Barry et al., 2013; Fazel, Patel, Thomas & Tol, 2014). Though several of these universal school-based programs were found to have significant positive effects on students' emotional and behavioral wellbeing, the majority of these studies were conducted in middle and upper-middle income countries with only few in lower income countries (LICs) in Sub-Saharan Africa (Ager et al., 2011; Gupta & Zimmer, 2008; Kumakech, Cantor-Graae, Maling & Bajunirwe, 2009; Tol et al., 2014). More importantly, most of the school-based interventions that reported positive effects dealt with children affected by armed conflicts rather than children facing more common daily adversities.

One of the most significant protective factors for mental health in children who are facing adversity is social support (Becker & Luthar, 2002; Demaray et al., 2005; Luthar, Cicchetti & Becker, 2000). Children living in LMICs, particularly those in single-family households or orphanages, do not have sufficient family or community support (Engle et al., 2011; Lund et al., 2010). Thus, school personnel and peers are often the only sources of these vital social needs. There is also growing evidence that the quality of social interactions in school significantly influences students' academic performance, school adjustment, and overall emotional well-being (Jennings & Greenberg, 2009; Malecki & Demaray, 2006; Stewart & Suldo, 2011). Pro-social behavior is a key element in establishing positive social interactions (Wentzel, 2014). Pro-social behaviors are defined as a set of behaviors intended to benefit others, such as helping and sharing

(Eisenberg, Fabes & Spinrad, 2007). Engaging in such behaviors has been shown to promote a more positive, secure and empathic environment in school and elsewhere.

Resiliency skills have been shown to help individuals cope with adversity (e.g. Masten, 2014). The concept of resilience was originally formulated by developmental psychologists and psychiatrists to account for the behavior of children exposed to significant and chronic adversity who functioned relatively well within cultural expectations despite these challenges. This led researchers and practitioners to explore those individual differences and personality factors that promote strengths in vulnerable individuals to make them more resilient (Cicchetti, 2013; Kim-Cohen, Moffitt, Caspi & Taylor, 2004; Luthar, 2006). Over time, however, a growing body of research has shown that resilience processes are impacted by broader developmental systems including families (Becvar, 2013; Walsh, 2006), schools (Berger, 2014; Doll, 2013), communities (Norris, Stevens, Pfefferbaum, Wyche, & Pfefferbaum, 2008; Zautra, Hall, & Murray, 2008), and social and cultural ecology (Ungar, 2011; Kirmayer, et al., 2011). These studies, coupled with the emerging theoretical frameworks of relational developmental system theory (Overton, 2013) and ecological systems theory (Bronfenbrenner & Morris, 2006) suggest that the process of resilience may depend on the interaction between individuals' adaptive systems and the context surrounding them. Thus, contemporary scholars define resilience as "the capacity of a dynamic system to adapt successfully to disturbances that threaten system function, viability, or development" (Masten, 2014, p. 6).

Nonetheless, there is an ongoing debate as to what constitutes positive adaptation and how it should be determined (Bonanno, 2012; Masten, 2014). Researchers have suggested that in some contexts, reports of positive adaptation by those who experience adversity are characterized by self-deception that conceals negative adaptation (Hobfoll et al., 2007). In addition, studies in different cultural contexts have highlighted the range of meanings attributed, not only to the concept of adaptation, but also to the concept of adversity. (Barber, 2014; Masten & Narayan, 2012; Ungar, Ghazinour, & Richter, 2013). It is therefore essential to examine transcultural issues when addressing resiliency (i.e. positive adaptation) within LMICs.

The current study drew upon a basic definition of resilience put forward by Masten, who suggested that resilience is "the process of, capacity for or outcomes of successful adaptation despite challenging or threatening circumstances" (Masten, 2011, p. 494). Given the fact that many children living in Tanzania endure significant adversity due to poverty, serious health issues, parental losses, physical and sexual abuse and armed conflicts, which put them at high risk of developing a wide range of emotional and behavioral problems, it is imperative to help them develop resiliency skills. Therefore, the goal of this study was to facilitate Tanzanian students' resiliency through individual-level interventions that center on protective processes such as acquiring affect-regulation skills and exposure to social emotional learning (Aber, Brown, Jones, Berg, & Torrente,

2011) as well as strengthening social support from peers, parents or care-takers and teachers (Fazel, Reed, Panter-Brick & Stein, 2012; Haroz, Murray, Bolton, Betancourt & Bass 2013). Following Masten and Coatsworth (1998), we conceptualized positive adaptation among Tanzanian school children as related to the students' academic achievements and relationships with peers and teachers.

In order to empower Tanzanian children facing daily adversity, a school-based intervention, ERSAE-Stress-Prosocal (ESPS; Berger, 2014) was used. The ESPS is a universal teacher-delivered program that aims to enhance students' resiliency while simultaneously promoting their prosocial behavior. It is composed of two sets of strategies: stress-reduction interventions and prosocial interventions. The theoretical framework underpinning the stress reduction strategies is cognitive-behavioral theory with body-oriented and narrative therapy techniques (Berger & Gelkopf, 2009). The prosocial strategies are based on social-emotional learning and contemplative practices (Berger, Gelkopf, Heineberg & Zimbardo, 2015; Dodson-Lavelle, Berger, Makransky & Seigle, 2014; Frey, Nolen, Edstrom & Hirschstein, 2005). However, the ESPS program was adapted by Tanzanians mental health professionals and was then piloted among a school that did not participate in the study to ensure cultural sensitivity. Based on this pilot and the advice from local educators, we modified the program adding a traditional healing ritual, culturally applicable concepts and traditional folk stories. We also changed some ESPS interventions that were not suitable for a collectivistic society such as Tanzania.

A number of studies have demonstrated the effectiveness of the ERASE-Stress program in enhancing resiliency in children confronted with major adversity including war, terror and natural disasters. For example, several studies among Israeli and Palestinian youth have shown significant reductions in posttraumatic symptomatology, depression, somatic symptoms and functional problems after three months following the EARSE-Stress program compared to a wait-list control group (Berger & Mansra, 2005; Berger, Gelkopf & Heineberg, 2012; Gelkopf & Berger, 2009). Another quasi-randomized controlled trial conducted in the aftermath of the Tsunami disaster in Sri Lanka found significant reductions in the severity of PTSD, depression, somatic complaints, depression and functional problems among elementary students with significant Tsunami exposure 3 months following the EARSE-Stress intervention (Berger & Gelkopf, 2009). In this study the ERASE-Stress program was adapted to Sri Lankan culture (Gelkopf, Ryan, Cotton & Berger, 2008; Berger & Gelkopf, 2009). Finally, ESPS has also demonstrated its efficacy not only in reducing students' stress-related symptoms, but also in cultivating prosocial behaviors and improving intergroup behavior in the wake of political violence (Berger et al., 2015).

The current study was designed to evaluate the effectiveness of the adapted ESPS in enhancing resiliency of Tanzanian students and promoting their prosocial orientation. We hypothesized that students undergoing the ESPS intervention would manifest decreased levels of anxiety, hyperactivity, somatization, and social difficulties and increased prosocial behaviors and functioning at school

compared to students in the active control group. We also predicted that ESPS would improve students' academic achievement and decrease their disciplinary problems compared to the students in the control group.

Methods

Setting and participants

The study was conducted in a public primary school in the Meru district of Tanzania. Poverty and health issues are prevalent among residents of this area and state services are almost non-existent. The project was organized by a humanitarian-aid organization dedicated to the improvement of children's education in this region. Principals from the Meru district approached the organization with a request to help them deal with their students' emotional and behavioral problems as well as with frequent social conflicts between the students in school. The ESPS program was chosen because it addresses problems in both these domains.

Of the 206 grade 4-6 students (age range 11-14) in the six classes of the school chosen for the study, 183 participated in the study: 95 were randomly assigned to receive the ESPS intervention (the experimental group) and 88 took part in social studies classes (SS control group). Of the 23 students (11.1%) from the six classes who were excluded from the study (see Figure 1), 9 students (4.3%) whose parents or guardians did not sign the informed consent were not assessed, 14 students (7.6%) were excluded from the analysis, either because they quit school in the middle of the academic year or failed to adequately fill out the questionnaires. The demographic information on the sample is provided in Table 1.

Procedure

The study was conducted from September 2013 to January 2015 and was approved by the ethical committee of the Meru regional education authority. The ESPS program was presented to all the principals from the primary schools in the Meru district. Six schools that were interested in the program decided to send between 4-6 teachers who were trained in delivering the ESPS program to their students. The plan was to train the teachers to implement the program, and then to have them train their colleagues after the implementation of the program in their classes. Since we had limited funds, we randomly chose (by tossing dice) one school for the study. The principal of this school randomly chose (by tossing a coin) to implement the ESPS (experimental group) in only one of the two classes in each of the 4th-6th grades, while the other classes participated in Social Studies (SS, control group). In addition, the principal and teachers presented the rationale and goals of program to the students' parents or care-takers (extended family or counselors in orphanages) and enlisted their support. They were told that it would be useful if they would cooperate in making sure the children did their home assignments.

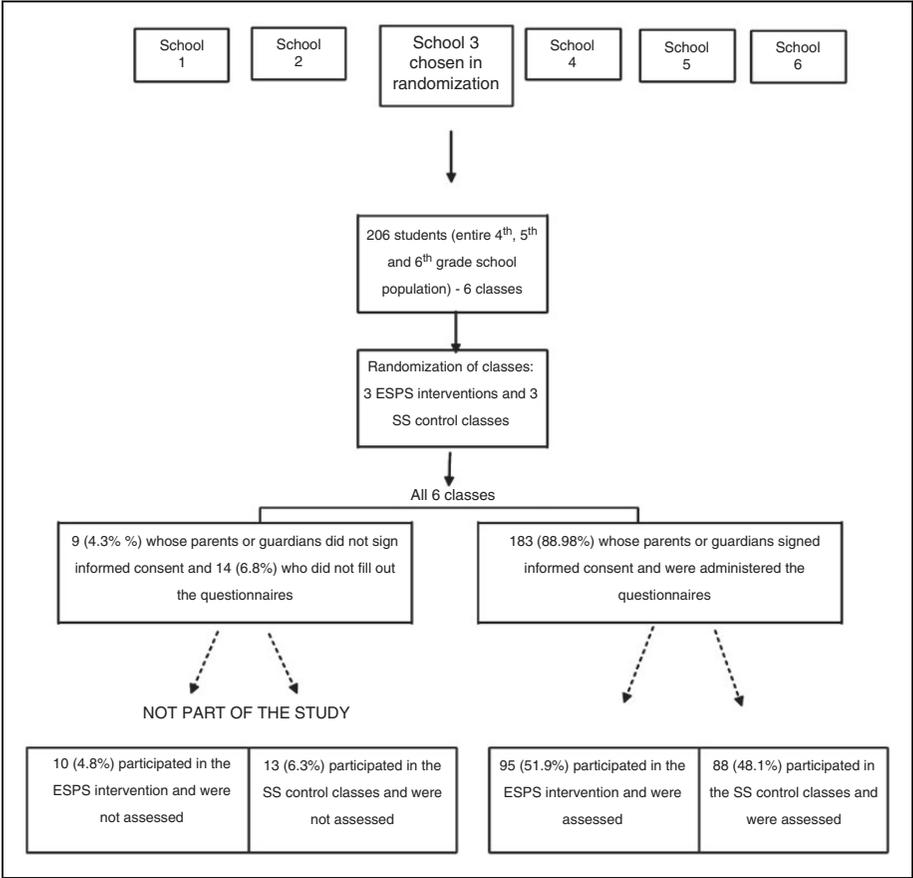


Figure 1. Student flow through the randomization, intervention and assessment protocol.

All the parents or guardians whose children were assigned to the ESPS consented to their children’s participation in the study and expressed support for the program.

Training of the homeroom teachers

All the homeroom teachers had a secondary education certificate (known in Tanzania as “Grade A” teachers) with a teaching experience ranging between 4-12 years. The homeroom teachers were trained in a 4-day workshop (24 hours) by the first author in collaboration with two Tanzanian mental-health professionals who actively participated in providing information and facilitating the experiential exercises. The teachers acquired psycho-educational materials, participated in experiential exercises, practiced skills, and learned dissemination techniques all

Table 1. Demographic information for the intervention and control groups (N = 183).

	ESPS	Control	Total
Participants (%)	95 (51.9%)	88 (47.9%)	183
Age (years)			
Mean	12.44	12.48	12.46
SD	0.89	0.93	0.91
Gender (%)			
Males	47 (49.5%)	43 (48.9%)	90
Females	48 (50.5%)	45 (51.1%)	93
Grade Level (%)			
4	35 (36.8%)	33 (37.5%)	68
5	28 (29.5%)	25 (28.4%)	53
6	32 (33.7%)	30 (34.1%)	62
Parental Loss (%)			
One or both parents deceased	44 (46.3%)	41 (46.6%)	85
Parents alive	51 (53.7%)	47 (53.4%)	98
Child's Residence (n)			
Family	63 (66.3%)	59 (67%)	122
Orphanage	32 (33.7%)	29 (33%)	61

based on the ESPS manual (Berger, 2009). During the implementation in the classes, the two Tanzanian mental health professionals observed and then supervised the teachers on a bi-monthly basis. They also consulted with the first author via scheduled Skype sessions.

The ESPS intervention

The ESPS is a universal school-based program composed of sixteen 90-minute sessions divided into two sets of strategies: stress-reduction interventions and pro-social interventions (i.e. perspective-taking, empathy training, mindfulness and compassion-cultivating practices). The first set of strategies aims to normalize students' stress-related reactions, strengthen their natural resources, equip them with new coping skills and teach them affect-modulation techniques. The second set of strategies is designed to teach students to develop empathy and compassion toward the self and others and to encourage them to act pro-socially in the school and the community. The stress-reduction topics covered include understanding the nature of stress reactions, strengthening natural inner resources, calming the body, coping with fear, anger, loss, and grief, building social support and developing an optimistic outlook. Topics in the prosocial domain include strengthening social skills, cultivating empathy toward the self and others, acquiring independent and critical

thinking, becoming mindful of group biases and prejudices, learning to be an active bystander and adopting a pro-social orientation (see online appendix -Box 1).

Based on the school curriculum's requirements, the teachers delivered the course content of the original 16 session manual in two weekly 45-minute sessions. Each session contained a warm-up exercise, experimental work, psycho-educational knowledge, a contemplative practice, a learned skill and homework assignments. The homework assignments for the students involved sharing some of the knowledge and the learned skills with their caretakers (i.e. parents, extended family or guidance counselors in orphanages) and practicing the skills between the classes.

Cultural adaptation of the ESPS intervention

There has been growing interest in adapting evidence-based psychological interventions and psychosocial programs originally designed for high and middle-income countries to the needs, priorities and cultural features of communities in LMICs (Barrera & Castro, 2006; Silove & Zwi, 2005; Whaley & Davis, 2007). Similar to the multistage adaptation model in Barrera & Castro (2006), we addressed the culturally sensitive dimensions related to treatment interventions such as language, persons, metaphors, content, and context.

The first step was to review the literature and gather information regarding the educational and mental health needs of children in the Meru district. We then conducted an extensive survey on the nature of the problems and the needs of primary school students in the area. A Masters level psychologist familiar with both the area and the program interviewed the school principals and homeroom teachers regarding the types of problems they encountered among their students, their academic, behavioral, and social needs, as well as the educational and cultural practices in the region.

The main issues identified by these informants were disciplinary problems (i.e. not following the teachers' instructions, disturbing the teachers during class and being disrespectful toward teachers and peers), behavioral problems (i.e. lying, stealing and being verbally and physically aggressive toward peers), somatic complaints (i.e. recurrent headaches, stomachaches with no detected medical cause) and academic problems (i.e. the lack of concentration in class, not doing homework, poor academic achievement). The principals and teachers attributed these problems to a variety of sources including: "a bad character" (i.e. "they came from bad families"; "his parents were alcoholic and promiscuous"), "traumatic upbringing" (i.e. "they were not disciplined"; "they were mistreated": "she was sexually molested"), "boiling temper" (i.e. "he is like boiling water under fire"), "uptight nerves" (i.e. "everything makes her worried and anxious"; "he cannot sit still") and "buried sadness" ("he refuses to talk about his dead parents"; "she says that she has heartaches but cannot explain why"). They reported that these problems were treated in a variety of ways including one-to-one talks, corporal and other forms of punishments (i.e. no play time or jobs like cleaning the toilets), suspension for several days, and sometimes referring them to local healers or giving them local

herbal medicine. However, they also indicated that most of these measures were either partially effective or not effective at all.

Based on this information, the original ESPS manual was modified to fit the needs of the Tanzanian students and the local cultural practices. Since Tanzanian primary school students are not exposed through the curriculum to social-emotional learning as is the case for many Western students, and after consultation with the schools, we decided to extend the training period in each session to allow for more time to learn the concepts and practice the skills. Since the survey data indicated that Tanzanian children report experiencing somatic distress, we emphasized body work throughout the manual and added body-oriented techniques such as body-scan and brief muscle relaxation. Finally, we also addressed the reported interpersonal tension and aggression within the school by including more perspective-taking and empathy-building exercises and simulations as well compassion-based practices.

The adapted version of the ESPS was then given to a number of senior Tanzanian educational and mental-health professionals who made suggestions for further cultural adaptation. First, they suggested asking a traditional healer (*Mganga wa kienyeji*) to bless the program, give it the approval of the spiritual ancestors and warn the children to avoid being tempted by evil spirits. According to the local mental-health professionals most of the Meru district residents practice syncretic Christianity, and thus, espouse indigenous rituals such as honoring ancestors' spirits and assuage evil spirits alongside with adhering to traditional Christian practices. Children are not only familiar with these rituals, but also take an active part in them. The principal invited a well-known local healer who performed a ritual with all the students before the implementation of the interventions. Another suggestion was to conduct a collective grief ritual that would help all the students deal with the deceased members of the community, particularly those students who had lost parents or relatives. It was decided to hold this ritual during session 9B (see Box 1) by calling upon the spirits and telling them that the community and their children are taken care of and doing well, thereby allowing them to rest in peace.

The new version of the ESPS manual also included some concepts that were particularly applicable to the Tanzanian culture such as respecting the elderly (*shikamoo*) and providing mutual support (*ujamaais*). Additionally, local popular folk tales and traditional fables such as the "the Value of a Person"; "The Calabash Kids" and "The Tortoise and the Hare" (Anike Foundation, 2016) were incorporated into the manual to illustrate the constructs of integrating different mental capacities, developing self-control, coping with fears, treating others with respect and compassion, and believing in oneself. Furthermore, traditional Kiswahili proverbs such as "you always learn more when you lose than when you win", "by trying often, the monkey learns to jump from the tree", "better lose your eyes than your heart" or "if you love a pumpkin, also love its flower" served to remind the students of the key themes in each session.

The ESPS program was then translated back and forth from English to Kiswahili, and then was piloted by the two Tanzanian mental-health professionals

on a group of 4th- 6th grade Tanzanian students from two schools that were not involved in the project. Based on this pilot, several new psycho-educational materials were added and a few experiential exercises were changed. For instance, in session 5A (see Box 1), instead of employing the Western cognitive-behavioral framework for dealing with “automatic negative thoughts” that was part of the original ESPS manual (Berger et al., 2015), the teachers took a local indigenous perspective that negative thoughts represent admonitions from the ancestors (*Wazee*) for their misdeeds. Thus, the students were encouraged to reflect upon their conduct and learn from it rather than challenge or dispute these negative thoughts. Similarly, in addition to Western desensitization strategies, in session 7B, the students were also introduced to traditional ceremonial healing in the form of expelling evil demons led by the same local traditional healer who had conducted the opening ceremony. Finally, since Tanzania is a highly collectivistic society (Hofstede, Hofstede & Minkov, 2010) we were careful not to overemphasize Western individualistic values such as independence and critical thinking that might have been at odds with local values.

The SS Control Group

The control classes received 2-hour social studies classes weekly based on the Ministry of Education curriculum for primary schools in the mainland, which matched the amount of time spent on the ESPS intervention. These lessons were also provided by the homeroom teachers and were delivered in the control classes at the same time as the ESPS intervention. The contents included topics such as the history of the country, political issues, civics, family life and education for general values. Emphasis was placed on Tanzanian traditions and norms such as respecting the elderly, the importance of the extended family, and the value of mutual cooperation. This information was conveyed by lectures, reading stories of protagonists who exemplified these values, and conducting class discussions.

Fidelity to the program

Fidelity assessments were conducted by the two Tanzanian mental health professionals to ensure that all the teachers followed the manual. Each of the three participating homeroom teachers was rated eight times on 6-point Likert-type scales ranging from 0 (not at all, as stipulated in the manual) to 5 (exactly as stipulated). The rating of the teachers’ adherence to the manual applied to five domains: (1) adherence to the topics in the manual, (2) conducting the contemplative practices, (3) conducting the experiential exercises, (4) eliciting the participation of class members during the session, and (5) students’ compliance with homework assignments. Most assessments were scored either 4 or 5 on all domains and in all classes, and the interrater reliability Kappa value was .76. These assessments confirmed high fidelity to the program manual.

Blinding and questionnaire administration

The questionnaires were self-administered in the class setting about two weeks before the implementation of the programs, a week following the termination of the programs, and at an 8-month follow-up. Trained local psychology students who were blind to the participants' experimental condition administered the questionnaires and assisted students who had comprehension problems. The teachers who implemented the intervention were not present during the administration and the questionnaires were coded to protect the students' confidentiality.

Measures

Overall, children's resilience was inferred from several measures of academic achievement and social-emotional adjustment. Specifically, disciplinary problems as reported by the teachers were an indicator of conduct issues. Social difficulties and pro-social behavior were indicators of peer relationships. Functional impairment served as a general measure of adaptation across domains (children were asked about their functioning at school and at home). Anxiety and somatic complaints were used as a measure of internalizing difficulties, since children might seem adaptive in terms of their behavior but still might be struggling with inner distress, hence the importance of assessing subjective internalizing symptoms.

Functional impairment was measured using a self-report scale that included eight items derived from the Child Diagnostic Interview Schedule (social relationships, school performance, family relationships, chores at home, and after-school activities; Lucas et al., 2001). For instance, an item tapping afterschool activities was: "Is it hard for you to participate in afterschool activities and your hobbies?" Children rated their answers on a 5-point Likert scale ranging from 1 (not at all) to 5 (very much). This measure has been used in previous studies (e.g. Berger & Gelkopf, 2009) and was found to be valid and reliable. The Cronbach alpha in the current sample was 0.79.

Somatic complaints – to assess somatic symptoms, the children were asked whether they had experienced a list of physical symptoms in the previous month. Seven somatic symptoms were listed including: stomach, respiratory, headaches, sleeping problems, excessive eating, appetite loss and 'other problems'. Children answered on a Yes / No categorical scale. This measure was derived from the Diagnostic Predictive Scales (DISC/DPS; Lucas et al, 2001), which has been shown to be valid and reliable. The Cronbach alpha for this scale was 0.72.

Hyperactivity was assessed using the hyperactivity sub-scale from the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997). Children were asked to rate to what extent each statement described them (e.g. I am restless, I cannot stay still for long). The scale included 5 items rated on a 3-point Likert scale ranging from 1(not true) to 3 (certainly true). The Cronbach alpha for this scale was 0.69.

Anxiety was assessed using the Spence Anxiety scale for children (SCAS; Spence, 1997).

This scale is made up of eight items rated on a 5-point Likert scale ranging from 1 (not at all) to 5 (very much). One example is: “I worry about things”. The Cronbach alpha for this scale was 0.74.

Prosocial behavior was measured using the prosocial sub-scale derived from the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997). This scale is composed of eight items. The children were asked to rate to what extent each statement described them (e.g. “I try to be nice to other people. I care about their feelings”). All items were ranked on a 3-point Likert scale ranging from 1(not true) to 3 (certainly true). The Cronbach alpha for this scale was 0.76.

Social Difficulties were measured on the peer problems sub-scale from the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997). Children were asked to rate to what extent each statement described them (e.g. I would rather be alone than with people of my age). Items were ranked on a 3-point Likert scale ranging from 1(not true) to 3 (certainly true). The Cronbach alpha for this scale was 0.77.

Academic achievement was assessed by averaging the students’ grades on five major subjects (i.e., Kiswahili, English, Mathematics, Science and Religious Instruction).

Disciplinary problems included verbal and physical aggression toward peers or staff as well as acts of disobedience (i.e. not following the teachers’ instructions). The frequency of these behaviors was obtained from records documented by the teachers during the academic year for each student.

Adversity was assessed using information obtained from the school regarding the *child’s residence* – child living with family (parent/s or extended family) or child placed in an orphanage, and the child’s *parental loss* – parents still alive or either one or both parents deceased.

Statistical analyses

Descriptive statistics for all outcome measures at baseline were calculated (see Table 2). T-tests for independent samples were performed to determine whether there were differences between the experimental and control groups prior to the intervention on all outcome measures. To assess the effect of the intervention over time, a repeated measure MANOVA including all outcome measures was conducted. The students’ grade level (4, 5, 6) was entered into the repeated measure MANOVA and repeated measures ANOVA analysis, controlling for this factor in the analysis. The MANOVA analysis was significant and thus was followed by separate repeated measure ANOVAs for each outcome measure. Mauchly’s Test was used to test for sphericity. In cases where the assumption of sphericity was violated, a Greenhouse-Geisser correction was used. To examine whether the intervention was equally effective at different adversity levels as well as gender categories, descriptive statistics at Time 1 and group comparisons were calculated. Thereafter, repeated measures ANOVAs with only the participants in the intervention group were computed for all outcome measures. All analyses were conducted using SPSS 21.

Table 2. Descriptive statistics for all outcome measures at baseline for both the intervention and control groups (N = 183).

	Intervention ESPS (n = 95)			Control (n = 88)		
	Mean	SD	Range	Mean	SD	Range
Functioning impairment	18.21	6.4	8–40	18.00	6.93	8–40
Somatic complaints	1.82	.80	0–7	1.93	.74	0–7
Hyperactivity	5.04	1.55	1–3	4.83	1.46	1–3
Anxiety	16.33	3.87	8–40	16.08	3.80	8–40
Prosocial behavior	8.71	1.87	1–3	8.76	2.02	1–3
Social difficulties	6.25	1.83	1–3	5.75	1.83	1–3
Academic achievements	3.75	.68	1–6	3.75	.65	1–6
Disciplinary problems	1.87	.85	0–5	1.87	.77	0–5

Results

No significant differences were found at baseline (prior to the intervention) between the intervention and control group for any of the outcome measures. Descriptive statistics at baseline for both groups are presented in Table 2. The results suggested a significant overall impact of the intervention (time X measures X group; *Wilk's Lambda* = .32; $F = 11.58$; $df = 27, 178$; $p < .001$). Thereafter, repeated measures ANOVAs were performed for each independent measure. The ESPS accounted for significant changes on all dependent measures immediately after the intervention. These effects were sustained 8 months later (see Table 3). Specifically, the results indicated that the intervention was effective in increasing pro-social behavior and children's functioning, while decreasing social difficulties, hyperactivity, somatization and anxiety. In addition, it had a positive effect on children's academic achievement and disciplinary problems (see Table 3). Figure 2 depicts the pattern of results for pro-social behavior. The effect size for the intervention was small with some variation across the outcome measures (η^2 ranging from .04 to .25, Cohen, 1988). Among the self-report measures, the results indicated that the program was most effective in reducing anxiety and hyperactivity and increasing pro-social behavior, but was the least effective in reducing somatic complaints. In terms of academic achievement and disciplinary problems, the effect sizes were in the low to medium range (η^2 was .04 and .04).

We also assessed whether the intervention was differentially effective for the categories of residence (living with family/ institute), parental loss and gender. The baseline descriptive statistics and group comparisons for these variables were computed. Repeated measures ANOVAs including only the participants in the intervention group showed that children who had lost one or both parents and children who had not experienced loss of a parent benefited equally from the

Table 3. The intervention efficacy over time for all outcome measures (N = 183).

	T1 – Before		T2 – After		T3 Follow-up		Main effect for time		Interaction time x group		ES Partial η^2 CI
	Mean	SD	Mean	SD	Mean	SD	F	df	F	df	
Functioning impairment											
Intervention	18.21	6.4	14.98	5.3	14.64	5.04	45.55***		30.68***		.19
Control	18	6.93	17.16	6.22	17.97	6.55	(2,352)		(2,352)		[.09-.21]
Somatic complaints											
Intervention	1.82	.80	1.19	.65	1.27	.49	21.83***		13.88***		.08
Control	1.93	.74	1.86	.72	2.35	.50	(2,348)		(2,348)		[.03-.13]
Hyperactivity											
Intervention	5.04	1.55	3.83	1.10	3.80	1.05	55.06***		54.80***		.24
Control	4.83	1.46	4.77	1.50	4.85	1.56	(2,354)		(2,354)		[.16-.31]
Anxiety											
Intervention	16.33	3.87	13.78	2.85	13.68	2.52	57.38***		56.92***		.25
Control	16.08	3.8	16.05	3.04	16.05	3.12	(2,352)		(2,352)		[.17-.30]
Prosocial behavior											
Intervention	8.71	1.87	10.47	1.36	10.57	1.33	53.64***		49.54***		.22
Control	8.76	2.02	8.87	1.66	8.74	1.79	(2,354)		(2,354)		[.15-.29]
Social difficulties											
Intervention	6.26	1.83	4.71	.98	4.64	.90	98.58***		44.95***		.20
Control	5.75	1.83	5.55	1.67	5.34	1.55	(2,354)		(2,354)		[.13-.27]
Academic achievements											
Intervention	3.75	.68	3.92	.61	3.9	.64	23.21***		6.66*		.04
Control	3.75	.65	3.82	.67	3.77	.67	(2,354)		(2,354)		[.01-.08]
Disciplinary problems											
Intervention	1.87	.85	1.50	.60	1.43	.60	41.22***		7**		.04
Control	1.87	.77	1.70	.74	1.72	.74	(2,354)		(2,354)		[.01.08]

* $p < .05$.

** $p < .01$.

*** $p < .001$.

intervention with regard to most outcome measures with the exception of disciplinary problems (time X parent loss; *Wilk's Lambda* = .91; $F = 4.77$; $df = 2, 92$; $p < .05$). Analysis showed the intervention to have a greater effect in reducing disciplinary problems among children who had lost one or both parents (T1: $M = 6.34$, $SD = 2.38$; T2: $M = 4.27$, $SD = 3.14$) compared to children whose parents were alive (T1: $M = 2.04$, $SD = 2.30$; T2: $M = 1.33$, $SD = 1.92$).

Furthermore, some differences were also found for gender. Specifically, the intervention was found to be more effective among boys with regards to

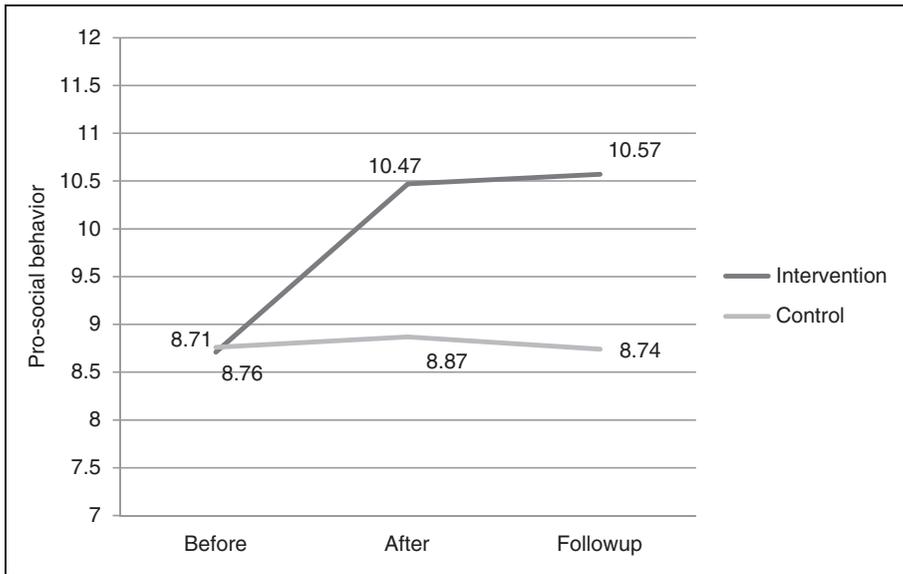


Figure 2. Prosocial behavior before, after and 8 months after the intervention.

hyperactivity (time X gender; *Wilk's Lambda* = .88; $F = 5.95$; $df = 2, 92$; $p < .05$) and pro-social behavior (time X gender; *Wilk's Lambda* = .80; $F = 11.06$; $df = 2, 92$; $p < .001$). Both boys and girls exhibited similar levels of hyperactivity (T2: Boys $M = 3.85$, $SD = 1.17$; Girls $M = 3.81$, $SD = 1.03$) and pro-social behavior (T2: Boys $M = 10.56$, $SD = 1.11$; Girls $M = 10.38$, $SD = 1.58$) after the intervention. However boys had higher hyperactivity levels (T1: $M = 5.46$, $SD = 1.52$) than girls (T1: $M = 4.62$, $SD = 1.47$) and lower pro-social behaviors (T1: Boys $M = 8.10$, $SD = 1.7$; Girls $M = 9.32$, $SD = 1.84$) prior to the intervention.

Discussion

The findings suggest that the ESPS intervention was effective in improving overall functioning, promoting a pro-social orientation and better school adjustment among Tanzanian primary school students, many of whom have been exposed to significantly adverse conditions. More specifically, the 4th-6th graders participating in the ESPS intervention significantly reduced their anxiety level, hyperactivity, somatization and social difficulties as well as increased their pro-social behaviors and functioning at school compared to the SS active control group. A similar pattern of results was found using more objective measures. The ESPS group significantly decreased the frequency of disciplinary behaviors in school and improved their academic performance compared to the control group. More importantly, all these positive changes were sustained at the 8-month follow-up, suggesting that the ESPS intervention was not only effective, but had a potentially durable effect.

Although the impact of the intervention as measured by effect sizes was relatively small, its impact should not be underestimated. Effect sizes were somewhat diminished due to the conservative corrections used in the statistical analysis. Furthermore, changes, particularly in academic achievement, typically only emerge after long periods of time.

The results also showed no significant differences in positive changes on most outcome measures between students who were living with their families and those living in orphanages as well as for students who had experienced parental loss and those who had not. Thus, the ESPS intervention appears to have been equally effective for students who experienced different levels of adversities. However, the intervention was found to be more effective in improving academic achievement among children living in an orphanage than children who were living at home. This finding may be attributed to the greater social needs of orphans. In other words, students who reside in an orphanage and who may be deprived of sufficient attention due to staff shortages might have benefited more from the social support and empathy provided through the intervention. Alternatively, this finding can be attributed to a ceiling effect, since academically the children in orphanages had lower grades prior to the intervention, and therefore improved significantly more than those living at home.

Students who were exposed to the intervention and had experienced parental loss showed significantly more reduction in disciplinary problems. Again, it is possible that the disciplinary problems exhibited by the orphans could represent attention-seeking behaviors that were no longer needed due to the intervention. On the other hand, this finding could also be attributed to floor effect since those living at home already had relatively low levels of disciplinary problems prior to the intervention.

A number of differences were also found for gender. Specifically, boys benefitted to a greater extent from the intervention in terms of hyperactivity and pro-social behavior than girls. Again, this finding may be accounted for by the significant gender differences at baseline in terms of hyperactivity and pro-social behavior.

The positive changes in the students' pro-social orientation were manifested in both the reported reduction in social difficulties and their increase in pro-social behaviors. In the last decade, there have been tribal and ethnic tensions among several LMICs in Sub-Saharan Africa; thus, an intervention that focuses on improving interpersonal relationships and cultivating empathy toward the other in the formative years may contribute to some degree to the prevention or reconciliation of such conflicts in the future. As other researchers have suggested (Tol et al., 2011), longitudinal studies should explore whether school-based resilience programs have a preventive effect on tribal and ethnic conflicts.

Although the ESPS intervention targeted both students' social-emotional skills and pro-social attitudes, it is not clear from the findings whether and in what way these two types of interventions may be interrelated. One possibility is that the reduction in stress as exhibited in the decrease in anxiety level, hyperactivity and somatization improved students' social attitudes and social interactions between students. This explanation is in line with the Stress-Based Model of Extremism

(Canetti-Nisim, Halperin, Sharvit & Hobfoll, 2009), which suggests that negative attitudes toward people are mediated by the degree of stress symptomatology that the person experiences. Thus, the reduction in students' stress level may have resulted in an improved capacity to deal with social conflicts and disputes. Alternatively, the elevated empathy and compassion toward peers and teachers produced by the prosocial skills and practices may have resulted in an increase in social support, which then led to improved social interactions and academic performance. The Broaden-and-Build theory (Fredrickson, 2001) offers theoretical support for this explanation, by suggesting that increases in positive emotions such as empathy and compassion broaden people's cognitive capacities in terms of flexibility and open-mindedness, which in turn may influence academic achievement as well as social interactions (Fredrickson, 2001; Nelson, 2009). Future research is needed to explore the mechanisms underlying these interventions as well as their relative contribution.

Altogether, given the cumulative risk factors that Tanzanian and other LMIC children around the world are facing, and the likelihood that they will develop mental, emotional and behavioral problems, our findings suggest that the ESPS intervention may serve as an important cultivator of resiliency. In other words, equipping LMIC children with affect modulation and social-emotional skills and teaching them empathy and compassion-based practices might enhance their resiliency and promote their pro-social behaviors. Furthermore, the fact that the ESPS intervention can be culturally adapted, integrated into the school curriculum and easily transferred to local teachers, makes this intervention potentially applicable in many LMIC. However, to make the ESPS more scalable to a large population of school-aged children from LMIC, a train-the-trainer model where experienced teachers with knowledge and practice in ESPS should be adopted. This type of model was implemented through the ERASE-STRESS intervention in Sri Lanka in the aftermath of the Tsunami disaster (Gelkopf, Ryan, Cotton & Berger, 2008).

In this study, we chose to promote children's resiliency skills through individual-focused interventions that were implemented in an educational setting. As this study suggests, promoting individual core adaptive skills is essential to the healthy development of all children, particularly those who live in very challenging environments. We believe that adapting the ESPS manual to the local cultural traditions provided by the Tanzanians informants was instrumental to the success of the program. The inclusion of the local traditional healer at the beginning of the program was apparently important in motivating the students to avoid misbehavior since he suggested that this would disturb the spirits of the ancestors. According to the Tanzanian mental health supervisors, the homeroom teachers used the "wrath of the evil spirits" suggested by the healer to motivate the students to change their conduct in the place of corporal punishment. In other words, according to indigenous belief, if a child misbehaves, the evil spirits will avenge by hurting him or his family. This is indeed a positive outcome since several studies in Tanzania have indicated that corporal punishment is detrimental to both internalizing and externalizing behaviors (Hecker, Hermenau, Isele & Elbert, 2014; Feinstein &

Mwahombela, 2010). The utilization of a local collective grief ritual enacted by the students in one of the sessions helped the orphans in their classes talk about their deceased parents and share their feelings.

Nonetheless, we also believe that children who live in risky LMIC environments require a more comprehensive approach that addresses multiple systemic levels and utilizes multiple techniques (Masten, 2014). More specifically, we concur with contemporary resiliency scholars who suggest that resilience-informed practice should target neighborhoods, communities (Norris et al., 2008) and even government policies and cultures (Ungar et al., 2013) and employ a combination of risk-focused, resource-focused and process-focused interventions (Yates, Tyrell & Masten, 2014).

Strengths and Limitations

Although this study involved randomized classes, an active control group, a manualized protocol, both subjective and objective outcome measures, an 8-month follow-up measure and a fidelity assessment, the results should be interpreted with caution for a number of reasons. In particular, the sample was recruited from one primary school; thus, our results may not be generalizable to other settings. Second, since the students in the experimental and control groups attended the same school, some contamination effects cannot be ruled out. Although the current study employed both subjective (i.e. self-administered questionnaires) and objective (i.e. academic performance and frequency of disciplinary behaviors) outcome measures, the objective measures may have been biased since they were completed by the teachers who were not blind to the intervention. The use of the adversity measure (i.e. place of residence and parental loss) was also too crude to yield a valid indication of the relative effectiveness of the intervention in children experiencing various degrees of adversity. Future research should employ more sophisticated and culturally appropriate ways to measure adversity. It might be important, particularly in the context of LMIC, to use a longer follow up to evaluate the durability of the intervention. Finally, and perhaps most importantly, in this study resilience was inferred from measures of academic achievement and social-emotional adjustment. Future studies should employ additional methods of measuring students' resiliency by taking factors into consideration that are more closely related to the social and cultural ecology of LMIC, as well as methods that measure resiliency more directly (e.g. Connor & Davidson, 2003; Prince-Embury, S. 2007; Friberg et al. 2003).

Conclusion

Overall, the findings lend weight to the effectiveness and potential durability of the ESPS in enhancing resiliency and promoting pro-social behavior among Tanzanian primary school students, many of whom are facing significant daily adversity. It is particularly important to apply such a program with relatively young children as it

may have a significant impact on their developmental pathways as well as their future well-being (Porche et al., 2016; Yoshikawa et al., 2012; Zolkoski & Bullock, 2012). Should these results be replicated and found enduring for a longer period of time, the ESPS might be a valuable MHP intervention, not only in the context of Tanzania, but also in other LMICs.

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