SUMMARY OF STUDY FINDINGS

Study Title	A Delayed-Intervention Control Group Design 1:1 Cluster-Randomized Trial of Global Resilience Oral Workshops (GROW) Zambia, A Storytelling Approach to Youth Hope and Resilience through Character Training and Spiritual Practices
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Executive Summary	Few studies have examined the impact of resilience training on youth in lower/middle income countries (LMIC). This mixed methods cluster-randomized trial assessed the feasibility, acceptability and efficacy of GROW, a culturally-adaptable 24-week character-based resilience curriculum rooted in positive psychology interventions and spirituality and taught through storytelling. Twenty-eight classes of 643 Zambian students ages 10-13 were divided into initial-start and delayed-start intervention phases. Focus group participants affirmed the program's excellent cultural fit. Adult stakeholders observed positive impact on school attendance, academic performance, and students' character and behaviour. Quantitative analysis found significant reductions in past-30-day alcohol use in the initial-start group compared to the delayed-intervention control group (10.0% vs. 18.5%, relative risk ratio=0.50, 95%CI 0.31-0.80) and significant pre-post intervention increases in resilience, meaning, and gratitude for students involved in GROW for one year ($p<.05$). Culturally-adaptable spiritually-oriented character training programs shows promise for enhancing resilience and reducing risk behaviors among LMIC youth.
Study Design & Methods	Twenty-eight classes of youth ages 10-13 were recruited (youth assent/parent permission) from 21 schools throughout Lusaka, Zambia. Classes were randomly assigned to an initial-start (Phase-1 GROW implementation, n=15 classes) or delayed-start (Phase-2 GROW implementation, n=13 classes) arm. Study procedures were approved by U.S. and Zambian IRBs. Each GROW class is taught weekly by 2 trained leaders addressing one character strength per session using Bible story role models, drama, music/dance, problem-solving, teamwork activities, and spiritual practices. Program feasibility was assessed by class attendance; cultural acceptability through focus groups with parents, school administrators, GROW leaders and students conducted at Phase-1 completion; and program outcomes using confidential self-administered questionnaires completed by

	all students at baseline (T1), post-Phase-1 (T2), and post-Phase-2 (T3). Items assessed demographics, resilience (Connor-Davidson Resilience Scale), hope (Children's Hope Scale), grit (Grit Short Scale), spirituality (Daily Spiritual Experiences), gratitude (Gratitude Questionnaire), lifetime/past-month alcohol use, and lifetime drug use. We conducted bivariate analysis to assess baseline group equivalence and examined outcomes using generalized linear mixed effects modeling, with school and student as random effects, and adjusting for baseline differences between groups.
Main Findings	At baseline, the sample (N=643 students; 344 initial-start; 299 delayed-start) had mean$\pm$SD age of 11.4$\pm$0.9 years; 55.4% were girls; 68.0% lived with two parents/caregivers; 38.6% lived in <3-room homes; 12.5% had <3 meals/day; 27.8%/13.2% reported lifetime/past-30-day alcohol use; 8.2% reported any lifetime tobacco/drug use. The delayed-start group had older mean age (11.5$\pm$1.03 vs. 11.3$\pm$0.9 years, p=.035) and a higher proportion reporting <3 meals/day (15.7% vs. 9.6%, p=.020). These were entered as control variables in outcomes analyses.

Implementation feasibility:
The percent of enrolled students who attended at least one GROW session was 90.7% for Group A and 79.1% for Group B (p=.000), representing an attrition rate of 9.3% for the initial start group and 20.9% for the delayed start group prior to initiation of classes. Of students attending at least one GROW class, the mean number of classes attended was 23 of 24 (95.8%) for both groups. GROW leader attendance was also high. In Phase 1, mean attendance at weekly training sessions was 28.6 of 30 leaders per meeting (95.2%). In Phase 2, GROW leaders attended a median of 24/30 (80.0%) of all meetings (interquartile range 20-26, min/max range 6-29), including attendance rates <50% for two teachers with medical issues (pregnancy, stroke).

Cultural acceptability:
Adults in all FGs affirmed the strong cultural fit of the GROW program, with four different school administrators/teacher from two different FGs referring to it as "100% fitting." Participants repeatedly mentioned that GROW "conforms to cultural norms and Christian values" and reinforces values parents teach at home. A school leader felt GROW was "…a definition of what it is you call to be Zambian," and a GROW leader noted that it was "…adding to the outstanding part to our culture." All adult FG participants asked for the continuation of the GROW

program, with various stakeholders suggesting that it be taught to all students, include both younger and older students, expand to schools all over Zambia, be taught to adults especially parents, and be offered to community youth who are unable to attend school.

Qualitative Outcomes:

1. Positive changes others observed in the students.
Adult focus group participants observed that GROW students were more confident and resilient, speaking out in class, showing initiative and leading others. They taught GROW to other students and to family members at home. School administrators and teachers most often mentioned students' improved behavior at school and at home, improved attendance and academic performance. Parents most often mentioned that students demonstrated more respect towards adults. Other behaviors observed included more honesty and self-control, less fighting and more kindness toward other students, showing civic responsibility by voluntarily cleaning up classrooms and schoolyards, and serving as role models for other youth.

2. Positive changes noted by students themselves.
Students were excited and energized by GROW meetings, with several students remarking, "GROW changed my life!" They internalized and practiced GROW character strengths and described teaching them to other students, younger family members and even their parents. When asked to identify their favorite character strengths, they mentioned all 24 character strengths, with those most often mentioned being perseverance, honesty, leadership, self-control and forgiveness. Students described practicing goal-setting as they identified future career goals such as becoming a doctor, lawyer, soldier, or aircraft mechanic, and defined shorter term goals such as passing their exams, saying "no" to alcohol and tobacco and finishing their schooling as a means of achieving these goals. At the same time, they identified character strengths such as perseverance, love of learning, and fairness that could help fulfil their plans.

Quantitative Outcomes:

1. Character strength measures
Baseline mean scores of GROW participants on eight self-report character strength measures were high, as demonstrated by comparison with available published mean scores from other adolescent student populations. At baseline, there were significant differences between Group A, the initial start group, and Group B, the delayed start group on two measures, with the initial start group

| | showing lower psychological resilience scores and higher meaning scores. At T2 and T3, the only significant between-group difference was higher level of hope at T2 in the initial start group, which was no longer present at T3. There were, however, some changes in individual intervention groups over time. The initial start group had a significant increase in psychological resilience from T1 to T2 ($p < .05$) and from T1 to T3 (p<.05); a significant decrease in meaning from T1 to T2 ($p < .05$), followed by an increase in meaning from T2 to T3 (p<.05); a significant decrease in daily spiritual experiences from T1 to T2 (p<.05); and significant increases in meaning, gratitude and gratitude to God from T2 to T3 ($p < .05$). The only significant change over time for the delayed start group was a significant decrease in gratitude to God from T1 to T3 ($p < .05$).

2. Substance use measures
At baseline, 27.8% of participants reported lifetime alcohol use and 13.4% reported past-30-day use, with no between group differences. At T2 and T3, initial-start students reported lower past-30-day alcohol use compared to delayed-start students (T2: 10.0% vs. 17.9%, adjusted relative risk ratio[ARRR]=0.65, 95%CI 0.41-1.05; T3: 4.2% vs. 11.2%, ARRR=0.44, 95%CI 0.20-0.95). At T3, initial-start students showed lower rates of experiencing any problems in the past 6 months associated with alcohol use, compared to delayed-start students (4.1 vs. 9.4%, ARRR=.43, 95%CI 0.20-0.91).

Conclusion:
Character training programs such as GROW Zambia show promise for enhancing psychological resilience and reducing risk behaviors among LMIC youth. |