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What Does It Take To Improve Soft Skills - And To Detect That Change?

RESULTS OF THE WORKLINKS SKILLS AND VALUES ASSESSMENT (WLSVA) IN IRAQ AND ALGERIA

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Abstract

This article advances understanding about programming intended to build soft skills for workforce development purposes, and how to systematically measure that skill development. The article provides detailed information about the reliability and validity of the WorkLinks Skills and Values Assessment (WLSVA), an instrument measuring soft skills, earning skills, and civic values that was first psychometrically validated by World Learning in 2020. The present research offers the first analysis of WLSVA data when used in conjunction with programmatic interventions. Data includes findings from three youth employment programs using World Learning's Bawsala Career Mentorship curriculum, two in Iraq and one in Algeria. The data shows measurable skill improvements with between 75-87% of participants improving in at least one skill area, and despite the gender restrictive employment contexts, young women improved their earning skills to be on par with their male colleagues. Additional key findings include: 1) the WLSVA demonstrates good internal reliability when used in these new programmatic contexts and is not gender biased; 2) the WLSVA can detect improvements in skills from beginning to end of a program and the degree of improvement is positively correlated to the intensity and duration of the intervention; and 3) higher WLSVA scores pre-program are significantly associated with employment experience. No significant relationship was detected between WLSVA scores and employment status at the end of the program. However, this study did not include a tracer study component to investigate this relationship after a period of employment search; this is an area for further research. The WLSVA is an open-source tool that can be used by other programs focused on youth employment, soft skills development, and civic engagement, in particular for comparing program quality between cohorts or projects.

Short Abstract

This article advances understanding about how to systematically measure outcomes of youth workforce development programming. The article provides detailed information about the reliability and validity of the WorkLinks Skills and Values Assessment (WLSVA), an instrument measuring soft skills, earning skills, and civic values that was first psychometrically validated by World Learning in 2020. Data includes findings from three youth employment programs using World Learning's Bawsala Career Mentorship curriculum, two in Iraq and one in Algeria. Findings confirm that the WLSVA is reliable, is not gender biased, and can be used to compare the quality of different youth skills training interventions.

Keywords

Youth | Soft skills | Evaluation methods | Outcome measures
Educational assessment | Employment

1 Introduction

Youth workforce development programs often include components intended to build employability and soft skills, but there is still limited data available about what it takes to significantly improve those skills, and how to reliably detect that change. This article focuses on World Learning's efforts to systematically answer these questions by applying the WorkLinks Skills and Values Assessment (WLSVA) across youth programming, generating comparable results for analysis.

The focus of this article is on three completed youth programs funded by the U.S. Department of State in Algeria and Iraq, while additional data is still being gathered in other contexts. All of these programs took place mostly or entirely during the COVID-19 pandemic, requiring rapid adaptation to fully online training experiences—a challenging context for impacting soft skills, which are typically only impacted by social interactions and rich experiential activities. Despite the less-than-ideal training context, this dataset provides a natural opportunity to compare WLSVA score outcomes in three programs using similar training methods and materials, but with different levels of intensity and duration. This article uses that variation to analyze correlations with the pre- and post-program assessment data of program participants, using the soft skills, earning skills, and civic values scales of the WLSVA, as well as questions about employment and earnings.

THE ARTICLE INVESTIGATES THE FOLLOWING RESEARCH QUESTIONS AND ASSOCIATED HYPOTHESES:

1 **Is the basic reliability and equity of the WLSVA tool upheld in program implementation, as established in the tool's original psychometric validation?**

- **Hypothesis 1a:** The major constructs of the WLSVA tool (soft skills, earning skills, and civic values) have acceptable internal reliability scores above an alpha of 0.75.
- **Hypothesis 1b:** The WLSVA is gender-neutral (not gender biased).

2 **Can WLSVA scores be used to compare program quality and efficacy?**

- **Hypothesis 2:** The average percent change in WLSVA scores from pre- to post-program will have a positive correlation with program quality, as measured through the proxy of contact hours multiplied by duration in weeks.

3 **Does the WLSVA show correlational validity with employment outcomes; in other words, are higher WLSVA scores, or greater improvement in scores, associated with greater likelihood of employment and higher earnings?**

- **Hypothesis 3a:** Higher WLSVA pre-test scores are associated with a greater likelihood of lifetime employment experience and current employment at Time 1.
- **Hypothesis 3b:** Higher WLSVA post-test scores are associated with a greater likelihood of lifetime employment experience and current employment at Time 2.
- **Hypothesis 3c:** Greater improvement in WLSVA scores from pre- to post-program is associated with higher likelihood of gaining employment or increasing earnings from pre to post program.

This article includes a brief literature review and background on the WLSVA tool. Next, we discuss the research methodology, including usage of the WLSVA within three youth programs and the final research sample. Third, we present core data re-confirming the internal reliability and lack of gender bias of the WLSVA. Fourth, we discuss the use of the WLSVA for detecting skills improvement with a training intervention, comparing results across the three programs. Finally, we examine correlational validity between WLSVA scores and employment and earnings status. A concluding section highlights key conclusions and raises questions to be investigated in future research.

2 Literature Review and Background on the WLSVA

Economists have highlighted the relationship between soft skills (also variously referred to as noncognitive skills, 21st century skills, social emotional skills, and life skills) and a variety of desirable social and economic outcomes (see, e.g. Heckman and Kautz, 2012). Assessment of these skills has typically focused on the Big Five personality traits identified in the psychology literature, but there has also been attention to a range of other specific skills, as highlighted in recent reviews sponsored by the OECD, the World Bank, and USAID, among other institutions (Galloway et al, 2017; Gates et al 2016; Kautz et al, 2014; Lippman et al 2015; Wilson-Ahlstrom et al, 2011; World Bank Group, 2014). Critiques of existing assessments include the imprecise definitions of skills measured, the proprietary nature of many of the instruments excluding their widespread implementation, use in only selected developed country contexts or with selected populations, lack of documentation of test properties, and thin evidence of validity, particularly the ability to predict outcomes of interest (Lajaaj and Marcours, 2018).

The WorkLinks Skills and Values Assessment (WLSVA) , is an instrument developed by World Learning and made publicly available to other youth-serving organizations, in part as an attempt to respond to these critiques. The 56-item WLSVA measures three major constructs: soft skills, earning skills, and civic values. Each item uses a 5-point forced-choice Likert scale with the following response options: Disagree totally (1), Disagree mostly (2), Agree somewhat (3), Agree mostly (4), Agree totally (5). This forced-choice scale was chosen based on a validation process with youth to determine the most understandable response options, and to spread out participant responses on the positive end of the scale, reducing the ceiling effect that is common with this type of assessment. In typical usage, a participant's responses on all 56 items of the WLSVA, and separately for each major construct, are averaged such that the lowest possible score is 1 (if a participant responded "Disagree totally" on all applicable items) and the highest possible score is 5 (if a participant responded "Agree totally" on all applicable items). In programmatic usage, participants' pre- and post-program scores are matched to calculate the percent change in score, and to determine which participants' scores improved significantly, beyond the measurement error of the instrument.

In 2019-2020, World Learning undertook a two-stage psychometric validation process in Algeria, first piloting the internal reliability of a draft set of items with 128 youth, and then analyzing both the internal reliability and test-retest reliability of a refined set of items with 166 youth (Dershem, 2020). This validation process showed

that the internal reliability and test-retest alpha scores for the major constructs were between 0.80 and 0.90, with low documented test-retest measurement error (labeled as the "smallest real difference"), making them suitable for detecting changes in individual skills at two points in time.

Table 1: Original WLSVA Validation Results (2020)

Construct	Sub-Construct	# Items	Internal reliability	Test-Retest reliability	Smallest Real Difference
WLSVA overall		56	0.94	0.94	3.3%
Soft skills		23	0.89	0.91	3.8%
	Conscientiousness & Self-efficacy	4	0.68	0.77	13.7%
	Goal-setting & perseverance	4	0.65	0.78	10.0%
	Interpersonal skills	5	0.68	0.76	11.0%
	Managing emotions	4	0.65	0.77	15.8%
	Thinking & planning skills	6	0.82	0.87	11.2%
Earning skills		17	0.90	0.93	4.9%
	Job search skills	7	0.79	0.85	11.1%
	Entrepreneurship skills	10	0.86	0.88	9.7%
Civic values		16	0.82	0.86	5.5%
	Community & Civic engagement	4	0.70	0.77	15.1%
	Intercultural understanding & empathy	4	0.65	0.70	13.4%
	Social inclusion & justice	4	0.76	0.81	8.9%
	Sustainability	4	0.78	0.83	13.5%

Additionally, the original validation of the WLSVA demonstrated convergent validity with two other validated instruments. The Perceived Stress Scale (PSS), a well-known psychological instrument used to assess stress levels (Cohen, 1994; Lesage et al, 2012), was selected because it had been previously contextually validated nearby in Morocco (Loubir et al, 2015). Additional research showed that Algerian youth entrepreneurs are particularly resistant to stress, suggesting that stress management and workforce outcomes might be linked (Ziane, 2010). During the WLSVA validation, it was shown that youth who had higher levels of soft skills and earning skills scores on the WLSVA also had significantly lower levels of perceived stress on the PSS. This convergent validity shows that the WLSVA, a new tool, has some underlying correspondence with the well-established and widely-validated PSS; either more highly-developed soft skills help youth manage stress, or youth experiencing less stress feel more positively about their own soft skills.

Convergent validity was also explored with the Physical Aggression Scale (Farrell et al, 2016). While few respondents in the original validation process reported engaging in physically aggressive acts, making it difficult to detect significant relationships, there was the suggestion of two associations. First, those with higher soft skills scores on the WLSVA (whether male or female, younger or older) reported lower levels

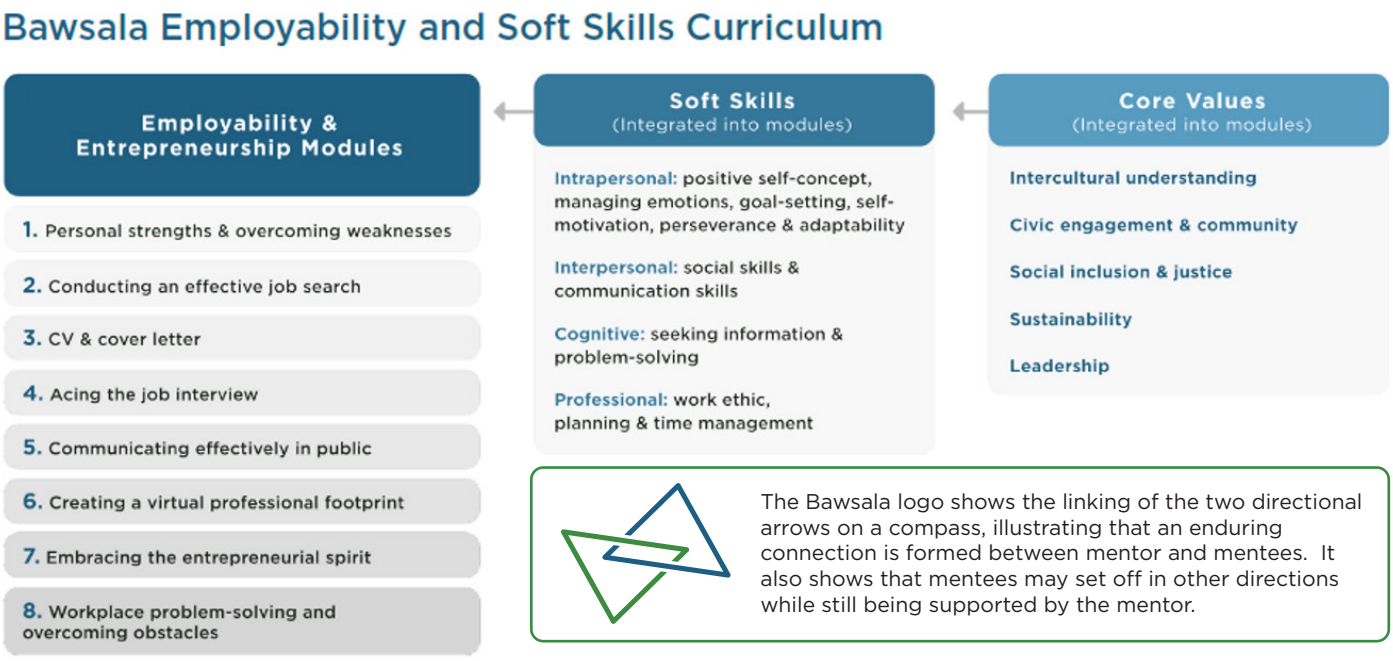
of physical aggression. And second, in contrast, men with higher levels of entrepreneurship scores on the WLSVA reported higher levels of physical aggression. It is not within the scope of this article to explore these associations, but they could be areas for future research.

During the original validation of the WLSVA, employment and earnings status were not examined. The present research therefore includes an examination of convergent validity between WLSVA scores and the Quick-WORQ version of USAID's Workforce Outcomes Reporting Questionnaire (USAID, 2020). This research also expands on the original tool validation by examining the ability of the WLSVA to detect changes in skills at two different points in time, separated by a training intervention. This analysis of the WLSVA's applicability to real-life skills training interventions is intended to determine its utility for other programming seeking to measure impact on participants.

3 Methodology: Use of the WLSVA within Youth Projects in Algeria and Iraq

This dataset includes participants from three small youth workforce development projects focused primarily on current university students and unemployed graduates. These projects were all conducted in 2020-2021, during the COVID-19 pandemic, with two projects in Iraq and one in Algeria. All met online and all used modules from World Learning's Bawsala Career Mentorship program. Bawsala means "compass" in Arabic, and the Bawsala program focuses on career mentorship and job search skills, an introduction to entrepreneurship, and integration of activities intended to build soft skills. The below graphic shows the 8 modules of the full Bawsala curriculum and indicates the soft skills and core values that are integrated into the curriculum.

FIGURE 1: Bawsala Career Mentorship Program curriculum summary



Depending on the schedule of a given project, the Bawsala Career Mentorship program involves daily, weekly, or monthly cycles of activities (see graphic). Each cycle begins with a module orientation with a mentor and group of peers, followed by self-guided module activities, and then a module reflection before proceeding onto the next module of the course. Encouragement to share the materials and advice with peers, as well as different forms of workplace exposure and job shadowing, are also built into the cycle. This material was intended to be used with two in-person meetings per module and some independent work in between, but due to COVID World Learning quickly adapted it for a fully-online experience using zoom for group meetings and independent work that could be completed on smartphones via the course Canvas platform or on printed versions of the module handouts. While the projects featured in this article were all successfully completed with this method, mentors and participants all noted that they would have preferred in-person sessions.

FIGURE 2: Bawsala Career Mentorship Program model

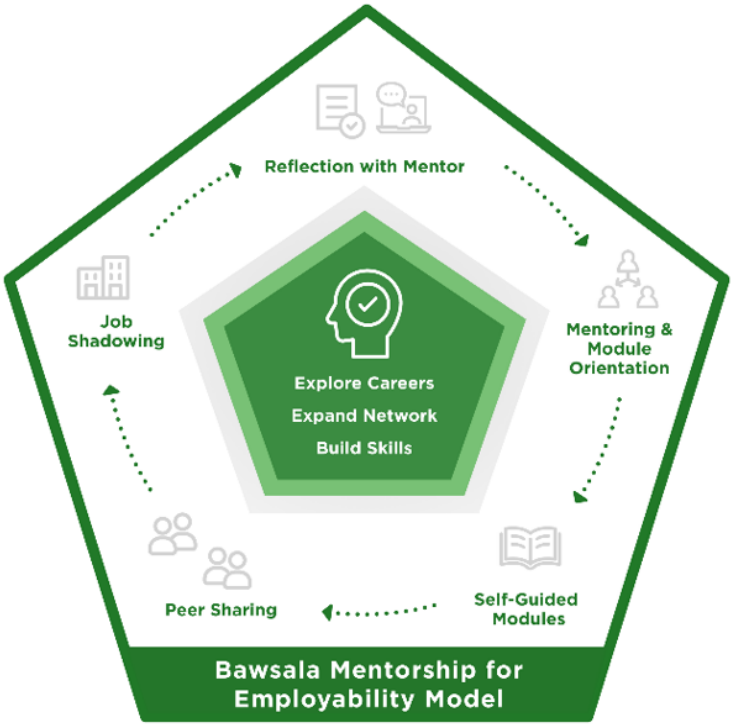


Table 2: Project Characteristics

PROJECT	PROJECT A	PROJECT B	PROJECT C
Country	Iraq	Algeria	Iraq
Full Title	English Language Investment and Training for Economic Success	Algeria Entrepreneurship & Employment Program	Southern Iraq Job Skills Development Program
Description	5 condensed modules of Bawsala, no entrepreneurship; additional English and basic computer skills	All 8 modules of Bawsala; TVET courses also available	All 8 modules of Bawsala, plus a business English course
Total Contact Hours spent on Bawsala curriculum	15 hours of group zoom calls plus 5 hours of independent work (20 hours); many participants missed the first module due to the university exam schedule	30 hours of group zoom calls plus 14 hours of independent work (44 hours)	42 hours of group zoom calls plus 10 hours of independent work (52 hours)
Additional trainings	Computer course, English course prior to the start of Bawsala	About half of participants also did a TVET training	32 hours of business English via zoom calls
Total Bawsala Duration	5 weeks	8 weeks	32 weeks
Contact hours x duration)	100	352	1,664
# Program Participants	100	227	80
% Female	50%	55%	51%
10	0.86	0.88	9.7%

All participants were requested to complete the WLSVA at the beginning of their program, and again at the end, for internal monitoring and evaluation purposes. For Project B and Project C, the pre-assessment was completed as part of the orientation to the Bawsala training itself. For Project A, the pre-assessment was completed during an overall program orientation, which was followed by a computer skills training course and an English skills training course before the beginning of Bawsala, which was the final program component. Those who did not complete the pre or post assessment when first requested were re-contacted and requested again. Note that the post-test was administered immediately at the conclusion of the training program, not after any additional period of employment search.

An IRB-approved research consent statement was incorporated into the WLSVA form so that participants could opt-in to having their program data used for research purposes such as this study. The research sample for this study was therefore composed of program participants who responded to both the pre and post assessments, and who consented to research participation. The below table summarizes this sample:

Table 3: Research Sample Characteristics

PROJECT	PROJECT A	PROJECT B	PROJECT C	TOTAL
# Research Participants [7]	59	76	62	197
% Female	54.2%	72.4%	50.0%	59.9%
% with physical disability[9]	0.0%	7.9%	6.5%	5.1%
% with learning disability [10]	1.7%	0.0%	3.2%	1.5%
Age	22.4 (range 19-28)	24.3 (range 18-30)	21.1 (range 18-25)	22.6
Education level (highest degree attained)	49.2% High School (all enrolled in university) 50.8% BA	34.7% BA 54.7% MA/PhD [11]	100% High School (all enrolled in university)	High school (40.3%), Bachelor's (28.6%), MA/PhD (20.9%)
Pre-Test Lifetime employment experience	62.7%	67.1%	58.1%	62.9%
Pre-Test Currently Employed	30.5%	30.7%	25.8%	28.9%
Post-Test Currently Employed	33.3%	43.5%	43.5%	35.5%

4 Results

4.1. RECONFIRMING INTERNAL RELIABILITY AND LACK OF GENDER BIAS

The original psychometric validation of the WLSVA in Algeria showed good to excellent levels of internal reliability for each of the major subscales using the Chronbach's alpha statistic. The dataset from the present three projects confirms these findings, for males, females, and the overall group, with no alpha value below 0.78. Additionally, there are no individual items that could be dropped to significantly improve these alpha values. Results show somewhat increased internal reliability in the post-test compared to the pre-test, perhaps reflecting participants' increased self-understanding and ability to rate their own skills consistently.

Table 4: Pre-Test Cronbach's Alpha of the major scales[13]

SCALE	ITEMS	MALE ALPHA	FEMALE ALPHA	OVERALL ALPHA
Soft Skills	23	0.90 (Mean 91.97, SD 11.042)	0.85 (Mean 91.23, SD 9.887)	0.87 (Mean 91.53, SD 10.344)
Earning Skills	17	0.90 (Mean 60.71, SD 10.405)	0.87 (Mean 56.69, SD 10.613)	0.89 (Mean 58.30, SD 9.681)
Civic Values	16	0.79 (Mean 67.92, SD 6.780)	0.78 (Mean 66.66, SD 7.127)	0.77 (Mean 67.17, SD 7.000)

Table 5: Post-Test Cronbach's Alpha of the major scales

SCALE	ITEMS	MALE ALPHA	FEMALE ALPHA	OVERALL ALPHA
Soft Skills	23	0.90 (Mean 97.08, SD 9.858)	0.87 (Mean 97.36, SD 9.392)	0.88 (Mean 97.25, SD 9.558)
Earning Skills	17	0.92 (Mean 68.77, SD 9.759)	0.90 (Mean 67.25, SD 9.621)	0.91 (Mean 67.86, SD 9.681)
Civic Values	16	0.85 (Mean 70.14, SD 6.926)	0.81 (Mean 69.94, SD 6.638)	0.83 (Mean 70.02, SD 6.738)

Research hypothesis 1a confirmed: The major constructs of the WLSVA tool (soft skills, earning skills, and civic values) have acceptable internal reliability scores above an alpha of 0.75 in both the pre-test and post-test.

4.1.1 LACK OF GENDER BIAS

Most measures of the WLSVA show no significant gender differences. Both the soft skills scores and civic values scales are consistently gender-neutral with no significant difference in scores between males and females on either the pre-test or post-test (see Table 6).

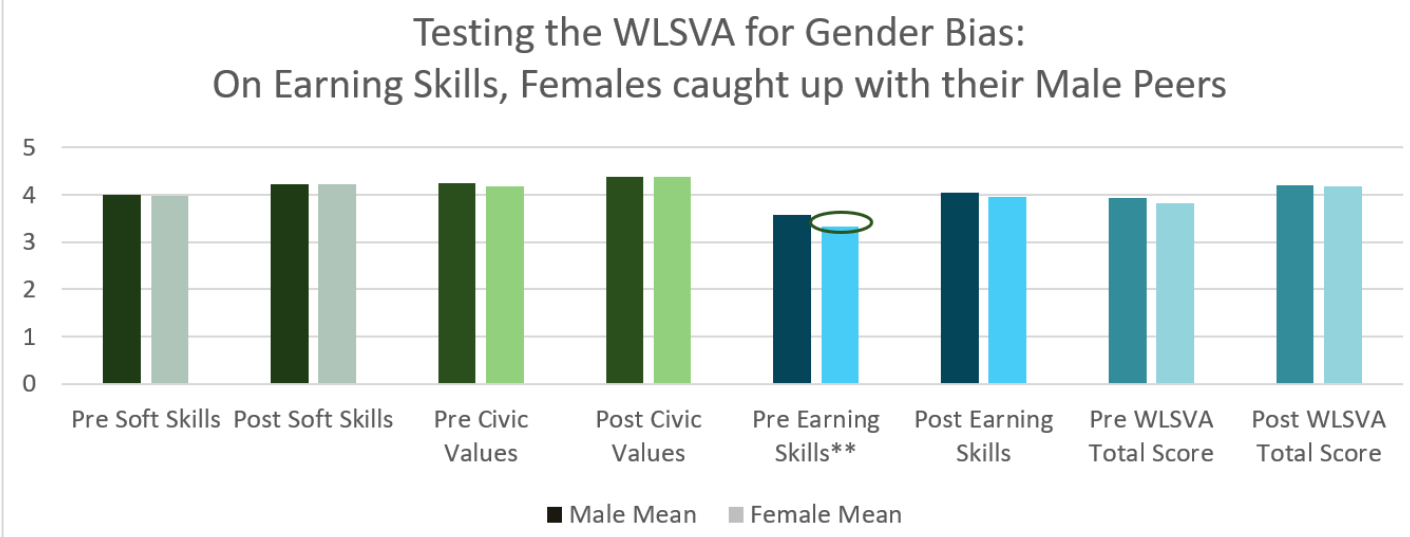
Table 6: Mean scores by gender

SCALE	MALE MEAN	FEMALE MEAN	SIGNIFICANCE (2-TAILED)
Pre Soft Skills	3.99	3.97	*P=.621*
Post Soft Skills	4.22	4.23	*P=.836*
Pre Earning Skills**	3.57	3.33	*** P=.009*
Post Earning Skills	4.05	3.95	*P=.252*
Pre Civic Values	4.25	4.17	*P=.178*
Post Civic Values	4.38	4.37	*P=.800*
Pre WLSVA Total Score	3.94	3.83	*P=.085*
Post WLSVA Total Score	4.21	4.18	*P=.608*

However, on the pre-program earning skills scores females (M=3.33, SD=0.624) showed significantly lower scores than males (M=3.57, SD=0.612), t(195)=2.62, P=.009. This is understandable, given the social context of Algeria and Iraq where women are less encouraged to join the labor force and therefore may have had less opportunity to develop their work-related skills.

It is notable that this one initial gender difference in earning skills scores disappeared by the post-test. The implication is that the programs helped young women catch up in their job search skills and entrepreneurship skills, with both males and females attaining higher and almost equal scores by program end (see graphic). Calculations of percent change in scores indeed show that females experienced a higher percent change in their scores from pre to post than young men, and more women than men showed significant change beyond the measurement error threshold of the WLSVA (78% of women improved their earning skills vs. 66% of men). This is a significant achievement for the projects, in a context where young women experience multiple social and structural barriers to employment and where families are less likely to provide specific guidance to young women on how to obtain a job or start a business.

FIGURE 3: Comparison of mean scores by gender, showing lack of gender bias



Research hypothesis 1b confirmed: Overall, the WLSVA is confirmed to be a gender-neutral assessment. The WLSVA does not exhibit gender bias on the soft skills and civic values constructs. In certain cultural contexts, there may be a gender difference in earning skills scores before an intervention; however, this gender difference in scores can be overcome when used in conjunction with a program that explicitly teaches these skills to all participants, showing that there is no inherent gender bias in the measure.

4.2 DETECTING SKILLS IMPROVEMENT WITH A TRAINING INTERVENTION

As described in the Methodology section, this research includes data from three different training interventions, providing a natural opportunity to examine the effectiveness of the WLSVA tool for comparing program effectiveness. All three programs used a similar curriculum and due to COVID-19 had to rely on Zoom meetings for group activities, with self-study activities in between sessions. But they were different lengths: Project A used only 5 modules (for one of which many students were absent), over a 5-week period. Project B offered the full 8-module course over an 8-week period, and Project C offered the 8-module course over an 8-month period with additional focus on peer sharing. WLSVA score results reflect these different levels of time investment and engagement. In this section, we use contact hours multiplied by duration in number of weeks as a proxy for program quality to determine whether WLSVA score outcomes are higher as would be expected with higher-quality programs. This helps determine whether the WLSVA can be used as a monitoring and evaluation tool to track and compare effectiveness between cohorts of participants and between programs as a whole, such as when evaluating different training intervention packages and approaches.

The following table provides four different WLSVA measures of change in skills from the pre- to post-program, as expressed in the percent change in score from pre to post. Treating program quality as an ordinal/categorical predictor variable, a one-way ANOVA revealed that there was a statistically significant difference in skills score improvement on the full WLSVA between programs, with the highest-contact and longest-duration program Project C showing the highest average skills score improvement on the full WLSVA (15.2% change in scores from pre to post), compared to Project A with the lowest change (4.2%), $F(2, 194)=16.608$, $P<0.001$. ANOVA findings were similarly statistically significant for the specific skills constructs of soft skills, earning skills, and civic values (see table).

Table 6: Mean scores by gender

PROJECT / AVERAGE % CHANGE IN SCORE, FROM PRE TO POST	PROJECT A 20-21 (CONTACT* DURATION=100)	PROJECT B 20-21 (CONTACT* DURATION = 352)	PROJECT C 20-21 (CONTACT* DURATION=1,664)	AVERAGE ACROSS PROGRAMS	ANOVA TEST RESULTS
Full WLSVA	4.2%	7.6%	15.2%	***9.0%	F(2, 194)=16.608, *P<.001*
Soft Skills	2.2%	5.7%	13.5%	***7.1%	F(2,194)=15.714, *P<.001*
Earning Skills	13.0%	16.1%	28.0%	***18.9%	F(2,194)=8.950, *P<.001*
Civic Values	0.8%	4.1%	8.4%	***4.5%	F(2,194)=9.107, *P<.001*

A multiple regression was also carried out to examine effects of other likely independent variable, specifically to determine whether sex, education level, and contact*duration could together significantly predict gain in WLSVA scores from pre- to post-program. The regression results indicated that the model explained 16.3% of the variance, and that the model was a significant predictor of overall gain in WLSVA scores F(3,192)=12.440, *P<.001*. While contact*duration (B=0.007, *P<.001*) and female sex B=3.507, *P=.029*) contributed significantly to the model, education level did not (B=-0.065, *P=0.862*).

The final predictive model taking just the two significant factors into account explained 16.2% of the overall gain in WLSVA scores F(2,194)=18.752, *P<.001,* contact*duration (*P<.001*) and female sex (*P=.035*), as follows:

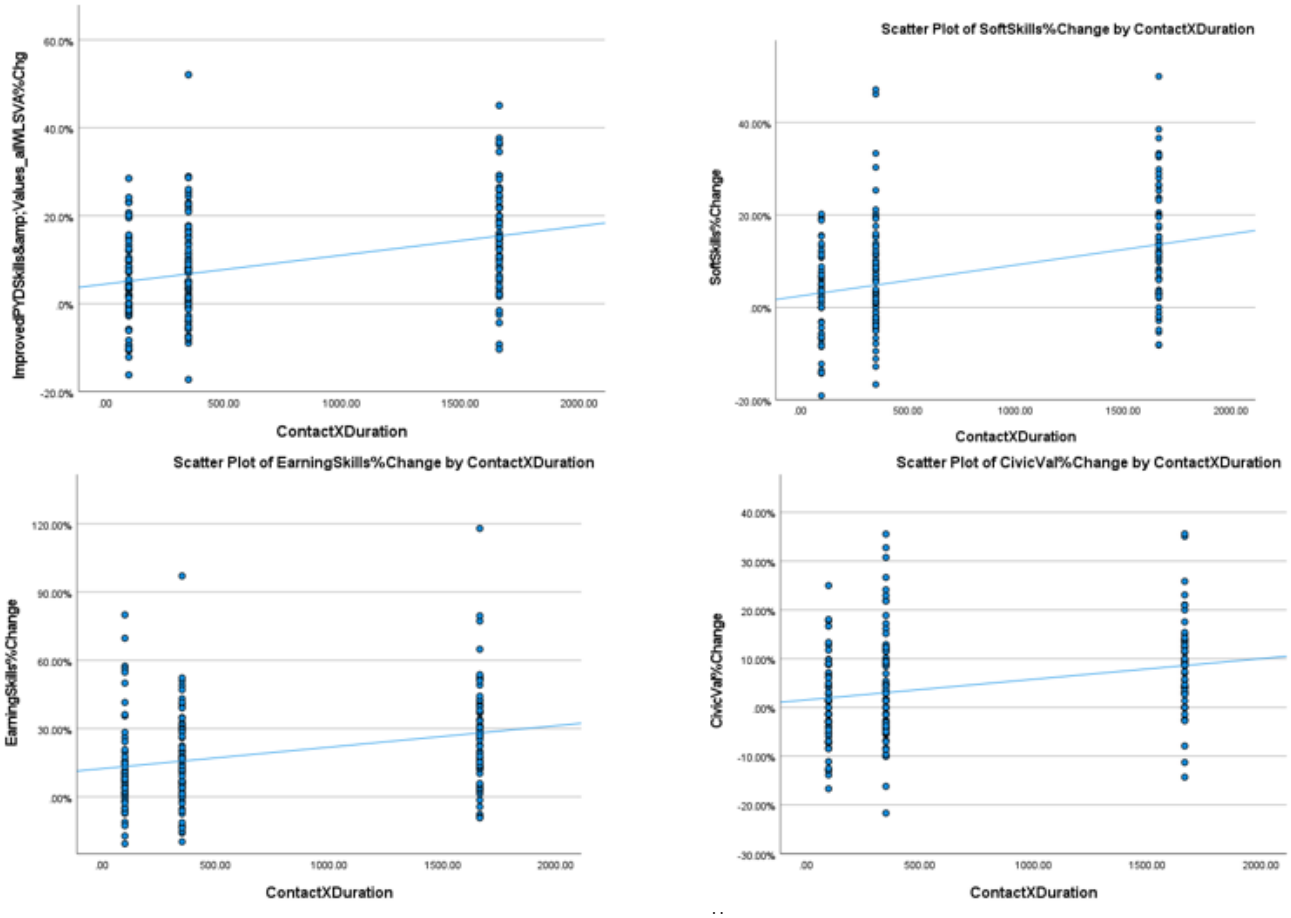
- **WLSVA score % change** = 2.258 + (.007 * Contact*Duration) + (3.34*FemaleSex)

The corresponding predictive models for the three major WLSVA constructs are as follows:

- **Soft Skills score % change** = 0.974 + (.007 * Contact*Duration) + (2.280*FemaleSex)
  - R2=.144, F(2,194)=16.318, contact*duration (*P<.001*), female sex (*P=.171*)
- **Earning skills score % change** = 7.219 + (.010 * Contact*Duration) + (7.903*FemaleSex)
  - R2=.116, F(2,194)=12.688, contact*duration (*P<.001*), female sex (*P=.009*)
- **Civic values score % change** = -.110 + (.004 (* Contact*Duration) + (2.453*FemaleSex)
  - R2=.302, F(2,194)=9.755, contact*duration (*P<.001*), female sex (*P=.081)*

One-way scatterplots focusing on the relationship between contact*duration and WLSVA score % change illustrate the directionality and of change on these models, showing that greater participant contact is associated with reduced occurrence of negative change scores (considered within the measurement error of the instrument) and increased occurrence of high positive % change in scores.

FIGURE 4: Scatterplots of % change in scores from pre- to post-program



When examining relationships between program quality and the binary outcome of whether or not participants attained significant score improvement (beyond the threshold of measurement error on each scale), Chi-square results were also significant on the majority of measures. Project C had the highest percentage of participants who showed significant improvement on at least one of the skills measured (87.1% of participants), the highest percentage who improved their total WLSVA score (again 87.1%), and the highest percentage who improved their soft skills (71.0%), earning skills (85.5%), and civic values (61.3%). On all of these measures, Project B participants achieved middle results, while Project A participants—who took part in the shortest soft skills training intervention—achieved the lowest score results on the WLSVA.

Table 8: Proportion of participants whose scores improved beyond the measurement error threshhold

PROJECT / SIGNIFICANTLY IMPROVED ON WSLVA	PROJECT A (CONTACT * DURATION=100)	PROJECT B (CONTACT* DURATION = 352)	PROJECT C (CONTACT* DURATION=1,664)	AVERAGE ACROSS PROGRAMS AND CHI2 SIGNIFICANCE	CHI-SQUARE TEST RESULTS
Improved at least one skill measured	74.6%	77.6%	87.1%	79.7%	X^2 (2, N=197)=3.25, *P=.196*
Improved total WLSVA score	52.5%	60.5%	87.1%	***66.5%	X^2 (2, N=197)=18.18, *P<0.001*
Improved soft skills	40.7%	46.1%	71.0%	***52.3%	X^2 (2, N=97) =13.044, *P=0.001*
Improved earning skills	62.7%	71.1%	85.5%	**73.1%	X^2(2, N=197) =8.235, *P=0.016*
Improved civic values	28.8%	34.2%	61.3%	***41.1%	X^2 (2, N=197) =15.608, *P<0.001*
Named and described skills they improved	89.8%	85.5%	86.7%	87.0%	X^2 (2, N=185) =0.491, *P=.782*

Interestingly, however, nearly the same percentage of participants in all groups (average 87.0%) were able to name and describe specific skills they felt they improved through the training, and in the case of Project B and Project A, this percentage was higher than the percentage of participants who showed significant improvement on their WSLVA scores. For example, the following is a quote from a female participant in the Project B project who did not show meaningful improvement in her WLSVA scores:

> *"I learned to communicate better and therefore to better sell myself and my abilities. - to identify my strengths but also my weaknesses on which I have worked since (such as time management and productivity) - to understand what I really needed at the moment in terms of my professional career [...]."*

The juxtaposition of thoughtful and positive open-ended responses such as this one, against a lack of WLSVA score improvement, raises an important question: Which counts more—a quantified score of improvement or participants' subjective experiences?

A tentative conclusion from this data is that many or perhaps most participants experience at least some skill improvement as a result of well thought-out training interventions, as expressed in their open-ended

responses. This experience is legitimate and should be part of the evaluation of any program. However, using an assessment like the WLSVA helps discriminate the degree or significance of that improvement, in a way which makes it useful for comparing program quality. On that measure, Project C, with its higher contact hours (52 hours) and longer program duration (8 months) clearly achieved overall superior outcomes for participants. Since programs often need tools that help to gauge the degree or significance of an intervention, this is an important finding about the WLSVA. It suggests, for example, that the WLSVA may be an appropriate tool to use for comparison of treatment and control groups within a Randomized Controlled Trial (RCT).

Research hypothesis 2 confirmed: The average percent change in WLSVA scores from pre- to post-program, as well as whether or not participants achieved meaningful improvement above the measurement error of the instrument, have a positive and statistically significant correlation with program quality, as measured through the proxy of contact hours multiplied by duration in weeks. Sex also played a role in this dataset, with females achieving greater score improvements than males.

4.3 EXAMINING CORRELATIONAL VALIDITY OF WLSVA SCORES WITH EMPLOYMENT

During program implementation, participants responded to questions about their lifetime employment experience, current employment status, type of employment (household enterprise, own business, or employed by another), and earnings, at the pre-test (Time 1) and the post-test (Time 2). This research did not incorporate a tracer study component after a period of job search, although a separate study with a tracer component is currently underway. Therefore, the data is most useful for determining correlational validity of WLSVA scores to employment status at a given point in time, rather than for prediction of future employment outcomes.

The below table summarizes participant characteristics on each of these measures. None of the differences between programs was statistically significant.

Table 9: Participant employment characteristics

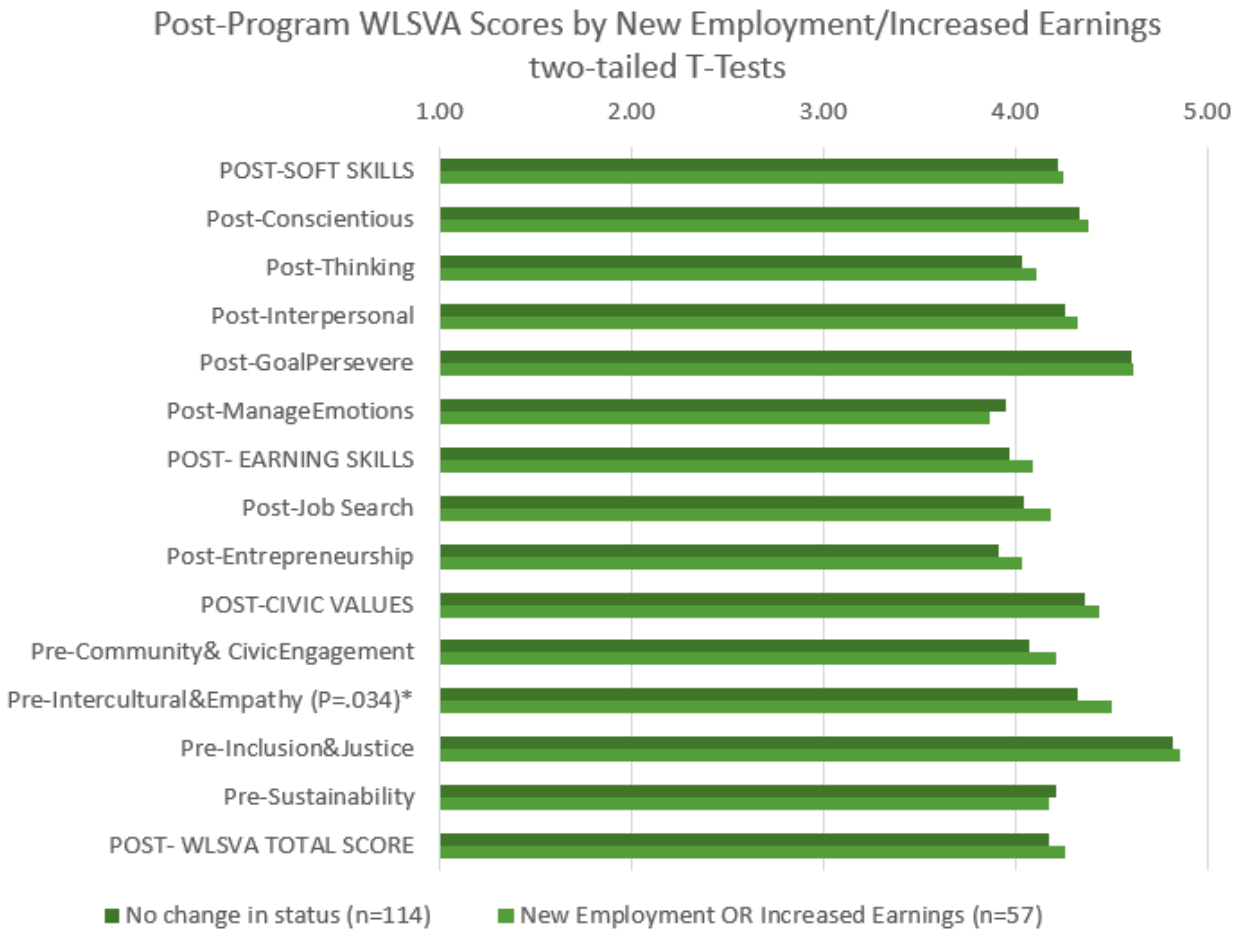
PROJECT	PROJECT B 20-21	PROJECT A 20-21	PROJECT C 20-21	TOTAL
Pre-test Lifetime employment experience	67.1%	62.7%	58.1%	62.9%
Pre-Test Currently Employed	30.7%	30.5%	25.8%	29.1%
Post-Test Lifetime employment experience	77.4%	72.9%	82.3%	77.9%
Post-Test Currently Employed	43.5%	33.3%	43.5%	40.7%
Pre-Post Continued studies[15]	13.1%	8.3%	14.5%	12.3%
Gained employment (not employed to employed)	21.3%	16.7%	27.4%	22.2%
Increased earnings (of those employed at the beginning)	43.8%	33.3%	70.0%	46.3%
Gained employment OR increased earnings (% of all participants)	32.8%	27.1%	38.7%	33.3%

T-Tests suggest that those with lifetime employment experience have significantly higher pre-program scores on all major constructs (soft skills *P=.021*, earning skills *P<.001*, civic values *P<.001*, WSLVA overall *P<.001*) and many sub-constructs, as illustrated in the below chart.

FIGURE 5: Pre-program WLSVA scores by lifetime employment characteristics

Additionally, those who gained employment or increased their earnings also had slightly higher average post-program scores on nearly every measure. However, none of these relationships is statistically significant post-program, except scores on the civic value of intercultural understanding and empathy.

FIGURE 6: Post-program WLSVA scores by new employment/increased earnings



This dataset allows for several possible ways of examining the strength of the relationship between WLSVA scores and employment status. The below table summarizes the primary hypothesized relationships, independent and dependent variable characteristics, and the statistical test employed.

Table 10: Summary of statistical test applied by hypothesis to be tested and variable characteristics

HYPOTHESIS	INDEPENDENT VARIABLE	DEPENDENT VARIABLES	STATISTICAL TEST
Hypothesis 3a: Higher WLSVA pre-test scores are associated with a greater likelihood of lifetime employment experience and current employment at Time 1.	Pre-test WLSVA scores a scale from 1-5 (interval).	Lifetime employment experience (binary) Current employment (binary)	Logistic regression
Hypothesis 3b: Higher WLSVA post-test scores are associated with a greater likelihood of lifetime employment experience and current employment at Time 2, and higher likelihood of gaining employment or increasing earnings from pre to post program.	Pre-test WLSVA scores a scale from 1-5 (interval).	Lifetime employment experience (binary) Current employment (binary) Gained employment or increased earnings (binary)	Logistic regression
Hypothesis 3c: Greater improvement in WLSVA scores from pre- to post-program is associated with higher likelihood of gaining employment or increasing earnings from pre to post program.	% change in WLSVA scores from pre to post (interval)	Gained employment or increased earnings (binary)	Logistic regression
	Whether or not achieved significant change on scores from pre to post, above the measurement error of the WLSVA (binary)	Gained employment or increased earnings (binary)	Chi-square test

Since gender/sex is a factor that significantly impacts employment in the contexts of Iraq and Algeria, we include female sex in the model. Other potential factors include education level, program, and geography (strongly related to program); in initial tests these factors were not statistically significant, however, and so they are not included in the reported statistics below.

To test Hypothesis 3a, "higher WLSVA pre-test scores are associated with a greater likelihood of lifetime employment experience and current employment at Time 1", a binomial logistic regression was applied. The below table includes the Nagelkerke R Square value and significance of the model based on the Hosmer & Lemeshow test, as well as the statistical significance for the independent variable indicated using the Wald test.

INDEPENDENT VARIABLE	DEPENDENT VARIABLE				
	Pre-Lifetime Employment	Pre-Current Employment	Post-Lifetime Employment	Post-Current Employment	New employment or increased earnings
Pre WLSVA	R^2 .242, *P=.070* IV *P<.001****	R^2 .097, *P=.794* IV *P=.021*	R^2 .055, *P=.403* IV *P=.814*	R2 .089, *P=.484* IV *P=.336*	R2 .032, *P=.939* IV *P=.713*
Pre WLSVA Soft Skills	R^2 .195, *P=.403* IV *P<.001****	R^2 .076, *P=.913* IV *P=.123*	R^2 .063 *P=.999* IV *P=.322*	R^2 .084, *P=.538* IV *P=.625*	R^2 .031, *P=.870* IV *P=.977*
Pre WLSVA Earning Skills	R^2 .268, *P=.883* IV *P<.001****	R^2 .110, *P=.178* IV *P=.007*	R^2 .055, *P=.409* IV *P=.748*	R^2 .093, *P=.252* IV P=.225	R^2 .032, *P=.397* IV *P=.749*
Pre WLSVA Civic Values	R^2 .204, *P=.091* IV *P=.011**	R^2 .081, P=.189 IV *P=.084*	R^2 .054, *P=.752* IV *P=.834*	R^2 .088, *P=.453* IV *P=.371*	R^2 .039, *P=.763* IV *P=.322*
Post WLSVA			R^2 .055, *P=.713* IV *P=.818*	R^2 .087, *P=.961* IV *P=.401*	R^2 .040, *P=.990* IV *P=.272*
Post WLSVA Soft Skills			R^2 .055, *P=.374* IV *P=.713*	R^2 .083, *P=.701* IV *P=.711*	R^2 .033, *P=.360* IV *P=.616*
Post WLSVA Earning Skills			R^2 .054, *P=.982* IV *P=.957*	R^2 .090, *P=.913* IV *P=.294*	R^2 .044, *P=.921* IV *P=.199*
Post WLSVA Civic Values			R^2 .055, *P=.669* IV *P=.707*	R^2 .086, *P=.401* IV *P=.454*	R^2 .041, *P=.609* IV *P=.254*
% change WLSVA			R^2 .057, *P=.931* IV *P=.558*	R^2 .082, *P=.769* IV *P=.975*	R^2 .036, *P=.870* IV *P=.439*
% change soft skills			R^2 .069, *P=.469* IV *P=.196*	R^2 .082, *P=.679* IV *P=.968*	R^2 .034, *P=.437* IV *P=.544*
% change earning skills			R^2 .054, *P=.341* IV *P=.861*	R^2 .082, *P=.377* IV *P=.873*	R^2 .036, *P=.885* IV *P=.411*
% change civic values			R^2 .056, *P=.896* IV *P=.66*	R^2 .082, *P=.082* IV *P=.93*	R^2 .032, *P=.315* IV *P=.709*

As is apparent from this table, none of these models is statistically significant at the .05 level. However, pre-WLSVA scores come close to significant relationship with lifetime employment experience pre-program. This logistic regression model examining the effects of gender and pre-program WLSVA overall score on lifetime employment experience pre-program was not quite statistically significant, X2(8)= 14.479, P=.070. The model explained 24.2% (Nagelkerke R2) of the variance in pre-program lifetime employment experience and correctly classified 74% of cases. Higher WLSVA scores were associated with greater likelihood of lifetime employment experience (P<.001), while female sex was associated with lower likelihood (P<.001).

Table 11: Model summary and results

MODEL SUMMARY

STEP	-2 LOG LIKELIHOOD	COX & SNELL R SQUARE	NAGELKERKE R SQUARE
1	219.532[a]	.177	.242
[a.] Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.			

HOSMER AND LEMESHOW TEST

STEP	CHI-SQUARE	DF	SIG.
1	14.479	8	.070

CLASSIFICATION TABLE[a]

Predicted Pre-11. Have you ever earned money from a job or a business at any time in the past or present?

OBSERVED		0	1	PERCENTAGE CORRECT
Step 1 Pre-11. Have you ever earned money from a job or a business at any time in the past or present?		40	32	55.6
		28	96	77.4
Overall Percentage				69.4
[a.] The cut value is .500				

VARIABLES IN THE EQUATION

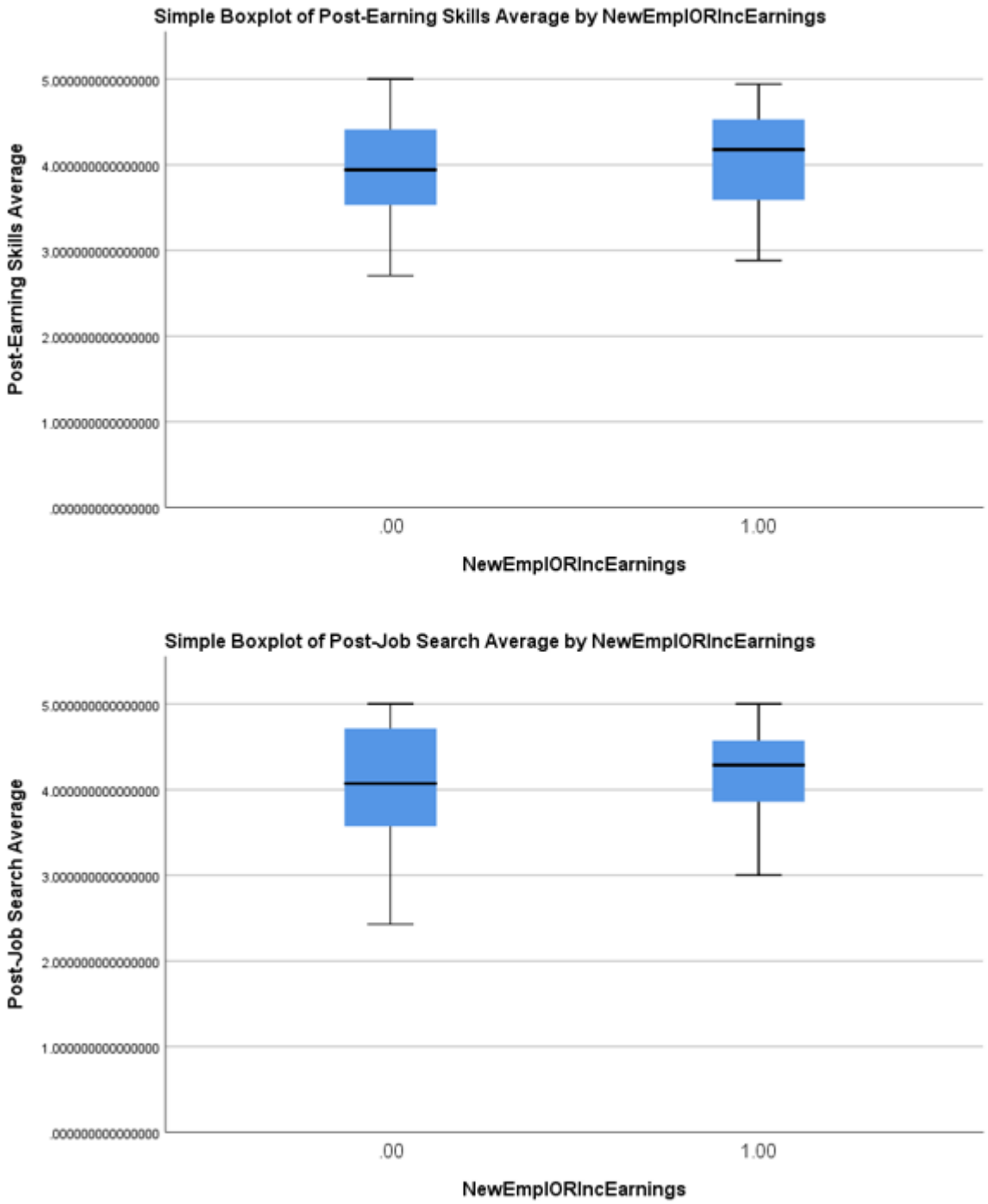
Predicted Pre-11. Have you ever earned money from a job or a business at any time in the past or present?

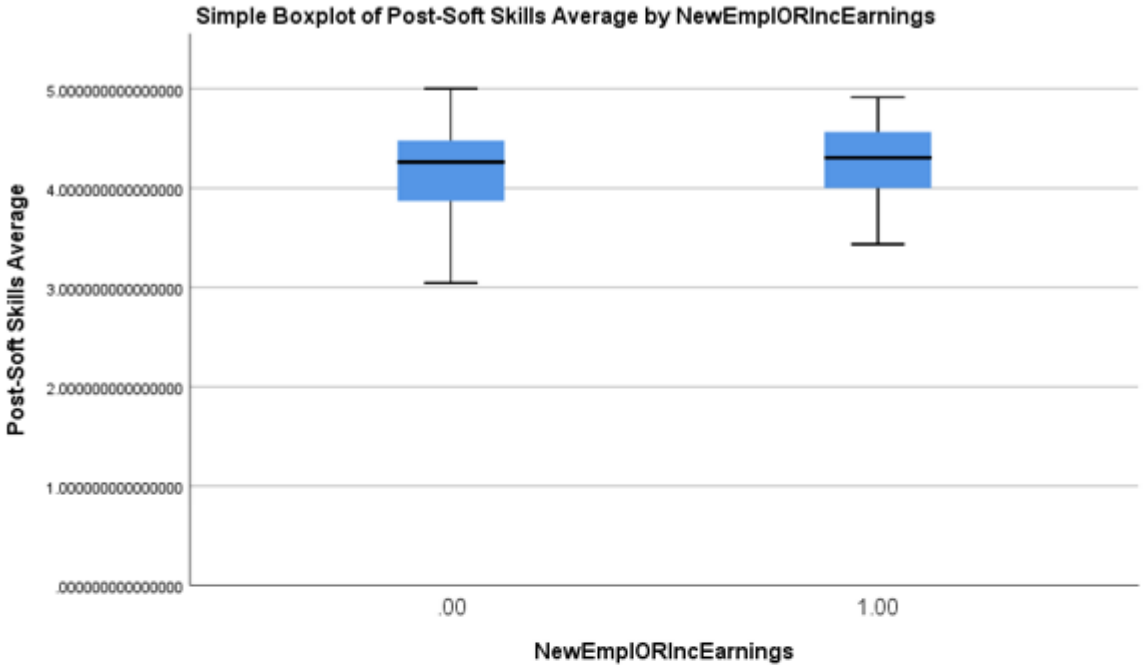
							95% C.I.FOR EXP(B)	
OBSERVED	B	S.E.	WALD	DF	SIG.	EXP(B)	LOWER	UPPER
Step 1[a] Pre-CoreWLSVA Total Score	1.456	.421	11.969	1	<.001	4.289	1.880	9.787
PreSex = "Female" (FILTER)(1)	-1.609	.367	19.167	1	<.001	.200	.097	.411
Constant	-3.975	1.613	6.076	1	.014	.019		
[a.] Variable(s) entered on step 1: Pre-CoreWLSVATotalScore, PreSex = "Female" (FILTER).								

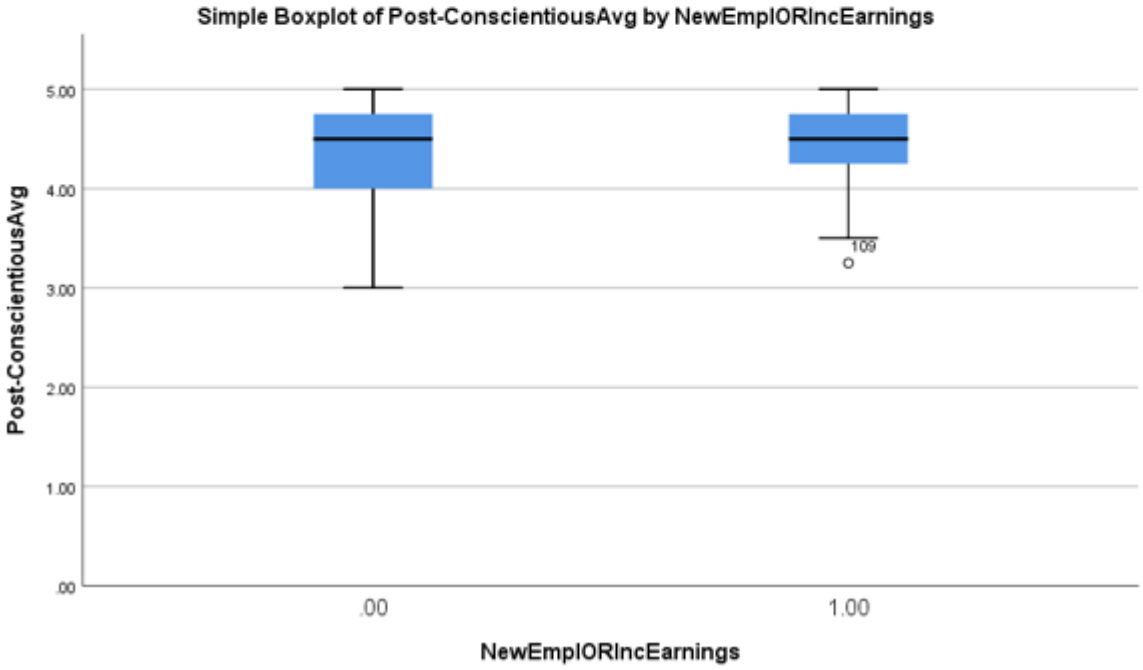
The absence of a significant relationship with post-program employment status or with improved employment/earnings status may be because of the timing of the programs, during which participants may not have had the chance to seek new employment. A tracer study would be better suited to determining whether there is a relationship between WLSVA scores and gaining employment or increasing earnings. Increased WLSVA score (on a scale of 1-5) was associated with an increased likelihood of lifetime employment experience, while female gender was associated with decreased likelihood of employment experience.

Box plots suggest the difference is in the lower end of the range (some participants with both negative and positive outcomes had scores towards the upper end of the range, but those with positive outcomes were less likely to rate themselves in the 2-3 score range corresponding to Disagree Mostly to Agree Somewhat; their scores instead fell primarily in the Agree Somewhat to Agree Mostly or Agree Totally range). This can be indicative of a combination between self-esteem/self-confidence and the actual skill measured. These effects are most noticeable in the job search skills subscale of earning skills and the conscientiousness subscale of soft skills (see below box plots against the outcome of gained employment or increased earnings).

FIGURE 7: Boxplots of post-program scores by new employment/increased earnings







As a final alternate test of the strength of relationships, we used the Chi-square test to examine the relationship to employment of whether or not the participant attained significant score improvement on different WLSVA scales, above the threshold of measurement error. We examined the data in two directions. First, pre-program employment experience can be an independent/predictor variable of score improvement during the program. Second, score improvement of different types can be an independent/predictor variable of post-program employment outcomes. The below table summarizes the findings of Chi-square tests on these relationships.

Table 10: Summary of statistical test applied by hypothesis to be tested and variable characteristics

SCORE IMPROVEMENT TYPE	INDEPENDENT VARIABLE		DEPENDENT VARIABLE		
	Pre-Ever earned	Pre Employed	Post Employed	New employment or increased earnings	Ever employed or increased earnings
Improved WLSVA Score YN	0.310	*0.018	0.552	0.908	0.956
Improved at least 1 skill type YN	0.066	*0.026	0.607	0.893	0.621
Improved civic values YN	*0.032	0.859	0.197	0.127	0.377
Improved soft skills YN	0.469	0.213	0.382	0.665	0.566
Improved earning skills YN	*0.032	*0.036	0.800	0.461	0.680
Improved job search skills YN	***0.000	**0.002	0.329	0.648	0.305
Improved e-ship skills YN	*0.031	0.213	0.345	0.448	0.134
Improved prof. behaviors YN	0.120	*0.013	0.769	0.670	0.322
Open-ended gained skills? No=0, Yes=1, Described=2	0.322	0.374	0.740	0.509	0.288
Named/described specific skills improved YN	0.125	0.177	0.772	0.634	0.245
*** p<=0.001 ** p<=0.01 *p<=0.05 No asterisk = p>0.05; not significant					

The above data shows that employment status before the program had a significant impact on score improvement during the program, in the sense that those who previously had no employment experience or who were unemployed at the time they started the program, were more likely to improve their scores across several dimensions—perhaps indicating that these participants had more "room for improvement".

Those who did not have any lifetime employment experience before the program showed the following effects: First, they were significantly more likely to improve their civic values score (53% improved their civic value score, compared to 35% of those who did have employment experience). Second, they were significantly more likely to improve their earning skills score (82% improved their earnings score, compared to 69% of those who did have employment experience). This relationship was particularly strong for job search skills, but also held true for entrepreneurship skills.

Those who were unemployed at the time of program start showed even broader effects: First, they were significantly more likely to improve total WLSVA score (72% improved their total WLSVA score compared to 54% of those who were employed). Second, they were significantly more likely to improve in at least one skill or value type (84% improved in at least one of the measured skill areas, compared to 70% who were employed). And third, they were significantly more likely to improve the earning skills score (78% improved their earning skills score, compared to 63% who were employed). This relationship was largely due to the job search skills subset, rather than the entrepreneurship skills subset.

Conversely, there is no indication that score improvement by any measure significantly impacted the post-program employment or earnings outcomes. It should be noted, however, that post-program employment and earnings outcomes were measured right at the conclusion of the training when not all participants may have yet been searching for work. An employment tracer study (e.g. 3-6 months after training) after training would be an important additional research step to examine causality on employment and earnings outcomes at a time when more participants are likely to have engaged in a post-training job search/business start-up process. Nonetheless, the dataset does include 33% of participants who gained employment or increased their earnings from pre to post program.

Research Hypothesis 3a partially confirmed: Higher WLSVA pre-test scores are associated with a greater likelihood of lifetime employment experience, but not with current employment at Time 1. The difference in mean scores between those who do and do not have lifetime employment experience is positive and statistically significant. A logistic regression model that includes sex and pre-program WLSVA scores to predict lifetime employment experience is statistically significant at the 0.10 level but not at the 0.05 level.

Not confirmed:

- Research Hypothesis 3b: Higher WLSVA post-program scores are associated with a greater likelihood of lifetime employment experience and current employment at Time 2.
- Research Hypothesis 3c: Greater improvement in WLSVA scores from pre- to post-program is associated with higher likelihood of gaining employment or increasing earnings from pre to post program.

Additional Finding: Those who lack lifetime employment experience, or who are unemployed at program start, are significantly more likely to improve their WLSVA scores from pre- to post-program.

5 Discussion and Conclusion

This research examined pre- and post-program WorkLinks Skills and Values Assessment (WLSVA) data from three youth employment programs, two in Iraq and one in Algeria. All of these programs took place mostly or entirely during the COVID-19 pandemic, requiring rapid adaptation to fully online training experiences—a challenging context for impacting soft skills, which are typically only impacted by social interactions and rich experiential activities. In this context, it is notable that all three programs achieved 75% or more of participants with significant improvement in at least one of the major areas measured (soft skills, earning skills, and civic values), with the most effective program achieving 87% of participants with improved skills. Additionally, despite the gender restrictive employment contexts in Iraq and Algeria, young women improved their earning skills to be on par with their male colleagues.

Beyond using the WLSVA for internal program monitoring and evaluation, this research was concerned with reconfirming the reliability and equity of the WLSVA measures, determining its ability to measure program quality, and examining correlational validity with employment status and outcomes.

Through this research, the following research hypotheses were confirmed:

1. **The WLSVA's constructs are internally reliable and gender neutral:** The major constructs of the WLSVA tool (soft skills, earning skills, and civic values) have acceptable internal reliability scores above an alpha of 0.75 in both the pre-test and post-test. Further, the WLSVA is confirmed to be a gender-neutral assessment. The WLSVA does not exhibit gender bias on the soft skills and civic values constructs. In certain cultural contexts, there may be a gender difference in earning skills scores before an intervention; however, this gender difference in scores can be overcome when used in conjunction with a program that explicitly teaches these skills to all participants, showing that there is no inherent gender bias in the measure.
2. **The WLSVA can be used to compare the quality of different programs:** The average percent change in WLSVA scores from pre- to post-program, as well as whether or not participants achieved meaningful improvement above the measurement error of the instrument, have a positive and statistically significant correlation with program quality, as measured through the proxy of contact hours multiplied by duration in weeks. Sex also played a role in this dataset, with females achieving greater score improvements than males.
3. **Higher pre-program WLSVA scores are associated with lifetime employment experience.** The difference in mean scores between those who do and do not have lifetime employment experience is positive and statistically significant. A logistic regression model that includes sex and pre-program WLSVA scores to predict lifetime employment experience is statistically significant at the 0.10 level but not at the 0.05 level.

This research dataset cannot confirm that WLSVA pre-program scores, post-program scores, or greater improvement in WLSVA scores from pre- to post-program, are associated with higher likelihood of post-program employment or increased earnings. However, it should be noted that in this dataset post-program employment was measured immediately at the end of training.

To further explore the use of the WLSVA for such predictive purposes, a tracer study 3 to 6 months beyond the end of training is likely necessary. A new research study with this design is currently underway, funded by Innovations for Poverty Action (IPA), to determine the predictive validity of the WLSVA tool for employment and earnings outcomes.

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[1] The collection and analysis of project data for these research purposes was approved by the Institutional Review Board (IRB) of World Learning's School for International Training (SIT Graduate Institute). All program participants were given information about data collection purposes and indicated whether they provided consent for use of their data as part of research, or only for program monitoring. Only those who consented to research participation are included within this analysis.

[2] The three projects described in this article were funded under different mechanisms, ultimately through the U.S. Department of State. The Funder had no direct role in study design; in collection, analysis, or interpretation of data; in the writing of the report; nor in the decision to submit the article for publication.

[3] The WLSVA can be accessed here: https://www.worldlearning.org/what-we-do/wlsva-toolkit/

[4] Cronbach's alpha is typically interpreted in the following way: 0.65-0.69 promising, 0.70-0.79 acceptable, 0.80 – 0.89 good, 0.90-0.99 excellent.

[5] Smallest Real Difference is a measure of sensitivity to change and is an estimate of the amount of variation that can appear by chance between measurements repeated over time. Thus, on average, for "real change" to occur in the construct, Soft Skills, Time 2 scores must increase more than 3.8% over Time1 scores.

[6] Respondents who participated in the original psychometric validation process of the WLSVA were recruited from among World Learning Algeria's broad network of social media followers; it is possible that the youth population interested in World Learning's English, STEM, civic engagement, and workforce development programs are overall less likely to be engaged in interpersonal violence than the broader population of Algerian youth.

[7] These are participants who had a complete pre- and post-program assessment dataset, and also consented that their data could be used for research purposes.

[8] It is notable that in Project B, females were both more likely to have a complete pre-post dataset and more likely to opt-in to the research study.

[9] The question posed was: Do you have a physical disability, such as difficulty, walking, hearing, or seeing even when wearing glasses?

[10] The question posed was: Do you have any learning disability, including difficulties reading or communicating in your own language?

[11]Algeria is a context of high unemployment among educated youth, which is why the program attracted even those with advanced degrees.

[12]Cronbach's alpha is typically interpreted in the following way: 0.65-0.69 promising, 0.70-0.79 acceptable, 0.80 – 0.89 good, 0.90-0.99 excellent.

[13]Note reported Means are out of a possible 5 multiplied by the number of items per scale. In typical usage of the WLSVA, these scores are converted to a 5 point scale so that scores on each scale can be more easily compared to one another.

[14]Charts and graphs in this article use the following convention to label p values of significance: *$^{***}p \leq 0.001$, $^{**}p \leq 0.01$, $^{*}p \leq 0.05$.*

[15]Data on participants who continued their studies is included for reference but is not a focus of this research.