Turning Inward and/or Outward: Which Socioemotional Skills Pay for Agribusiness Entrepreneurs in Nigeria?*

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Abstract

Socioemotional skills (SES) programs are widely used to promote economic empowerment, yet their returns may depend on the type of skills targeted and social context. We study this question using a randomized controlled trial (RCT) among 4,500 aspiring agribusiness entrepreneurs in Nigeria within a large-scale government program. Participants were randomly assigned to an *interpersonal-skills* curriculum, a *combined interpersonal and intrapersonal-skills* curriculum of the same length, or a control group. Both trainings substantially increase women's business performance, raising average profits by 50%. The two trainings generated broadly similar economic impacts overall. Effects are largest in communities with more liberal gender norms, where women report improvements in interpersonal skills such as empathy and negotiation, and better relational outcomes. Despite large economic gains, we find no corresponding increases in women's empowerment or intrahousehold decision-making. For men, interpersonal-skills training increases household income, while the combined curriculum raises profits but only in the most gender-liberal environments. The results show that the returns to SES depend not only on which skills are taught, but also on whether prevailing social norms permit individuals to express and deploy those skills. Translating gains into broader empowerment may require complementary programs that relax gender norms.

Keywords: Gender, Agriculture, Entrepreneurship, Socioemotional skills, Firms, Nigeria
JEL: J16, J24, O12, Q12, L26

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1 Introduction

Socioemotional skills (SES) — such as self-efficacy, personal initiative, and negotiation — are increasingly recognized as critical drivers of labor market success.[1] Seminal work by Heckman et al. (2006) showed that cognitive ability alone explains only a limited share of variation in earnings, shifting attention toward broader sets of skills that shape economic performance. While substantial evidence from high-income countries highlights their economic returns (Borghans et al., 2008; Almlund et al., 2011; Lindqvist and Vestman, 2011; Heckman and Kautz, 2012; Deming, 2017; Edin et al., 2022), the role of SES in shaping economic performance in low- and middle-income countries (LMICs) remains less understood. Emerging evidence suggests that psychology-based programs that strengthen SES can improve economic outcomes in LMICs (Campos et al., 2017, 2025b; Bossuroy et al., 2022). However, relatively little is known about which types of SES generate the highest economic returns and how these returns vary by gender and social norms (Lippman et al., 2015).

This paper examines these questions using a large-scale randomized controlled trial embedded within Nigeria's Agro-Processing, Agricultural Productivity Enhancement and Livelihood Improvement Support (APPEALS) program implemented by the government. The APPEALS Women and Youth Empowerment Program (WYEP) promotes entrepreneurship in agribusiness by providing technical training, mentorship, and an in-kind grant of approximately US$5,000 – US$10,000 to aspiring entrepreneurs. Embedding the SES intervention within APPEALS WYEP allows us to estimate the impact of socioemotional skills training while holding capital and technical skill constraints largely constant.[2]

In the experiment we randomly assign 4,500 aspiring agribusiness owners to one of three groups: (i) an interpersonal-skills only training focused on outward-facing skills such as negotiation, collaboration, and listening (T1); (ii) a combined interpersonal and intrapersonal skills training that additionally included inward-facing skills such as self-awareness, perseverance, and emotional regulation (T2); or (iii) a control group who were not offered any SES training. Both trainings were delivered through four-day classroom sessions reinforced with mobile phone-delivered video messages ("emovis") designed to support behavioral change.[3]

The distinction between *interpersonal* and *intrapersonal* skills is central to the paper. Interpersonal skills facilitate interactions with others and may be especially valuable in a busi-

[1] Socioemotional skills are also often referred to as non-cognitive skills, soft skills, or life skills.

[2] In theory, APPEALS WYEP offers an opportunity for beneficiaries to immediately use socioemotional skills to harness program benefits for labor market outcomes.

[3] Note that the control group received placebo COVID-19 prevention messaging. Prior research suggests that well-designed reminders can enhance adoption of new behaviors in areas such as health, savings, and technology adoption (Grabowska, 2020; Tomlinson et al., 2013; Aranda-Jan et al., 2014; Orkin, 2020).

ness context where economic success may depend on relationship-building and negotiation. Intrapersonal skills, by contrast, govern self-regulation, persistence, and personal initiative, and are often viewed as foundational competencies underlying economic decision-making. Existing SES programs frequently emphasize intrapersonal skills such as grit, self-efficacy, or personal initiative. However, it remains unclear whether interpersonal skills alone can generate comparable or larger economic returns.[4]

Nigeria provides a particularly relevant setting in which to study these questions. Gender norms differ substantially across regions and households, creating variation in the extent to which women's economic participation is socially supported. The study spans both Northern and Southern states, enabling us to examine how perceived community norms mediate the returns to SES training. We focus specifically on a norms measure of the traditional male breadwinner role, using respondents' perceptions of whether their communities disapprove of women earning more than their husbands. The APPEALS WYEP program targets men and women equally, allowing direct gender comparisons and the wide program coverage across six Nigerian states enables analysis of how returns to the SES intervention vary with norms.[5]

Eighteen months after the intervention, we find large effects of the SES training that differ by gender. Among women, both the interpersonal-only and combined trainings substantially increase business profits, with average gains approximately 50%. These effects reflect improvements along both the extensive and intensive margins: women are more likely to operate active and profitable businesses, and profits also rise significantly among firms already in operation. SES training additionally increases women's savings. Yet these economic gains do not translate into corresponding improvements in women's empowerment or household decision-making power, highlighting a disconnect between economic performance and agency. Among men, the interpersonal-skills training increases overall household income, but we find no evidence that either SES intervention improves average enterprise performance.

The mechanisms underlying these gains differ by gender and training content. Women assigned to the interpersonal-only curriculum report higher interpersonal skills, particularly empathy, collaboration, and negotiation. By contrast, the addition of intrapersonal content attenuates some of these gains in women's self-reported SES, but improves marital relationship outcomes such as their ability to resolve conflict. Overall, the evidence suggests that women's profit gains are driven primarily by relational, behavioral, and social channels rather than by improvements in conventional business management practices. A key finding of the

[4]Both treatment arms were of equal duration, so our design also allows us to compare whether concentrating training time on a narrower set of interpersonal skills produces larger effects than spreading the same training time across a broader set of skills.

[5]Note that in a forthcoming companion paper, we utilize a quasi-experimental evaluation method (regression discontinuity design) to estimate the impact of the overall APPEALS WYEP program.

paper is that the returns to SES are strongly mediated by social norms. Women experience the largest gains in skills, employment, profits, and savings in communities perceived to hold relatively liberal views regarding women's economic roles. In more norm-restrictive environments, the combined curriculum that includes intrapersonal skills can even reduce women's self-reported SES, although these do not translate into negative results for businesses. One interpretation is that training heightens awareness of the social penalties associated with assertiveness or autonomy. More broadly, the results suggest that restrictive norms may shape not only the returns to socioemotional skills, but also whether individuals feel able to recognize, express, and apply them. For men, treatment effects are comparatively less sensitive to normative environments, although the strongest gains in profits and savings also emerge in the most gender-liberal settings (under T2).

Social role theory argues that historically gendered social roles produce stereotypes and social norms that reinforce particular behaviors (see Eagly, 1987; Eagly and Wood, 2012a). These processes can affect gender differences in levels and returns to SES. Our findings indicate that socioemotional skills interact with social role expectations, and the same training generates different economic returns depending on both skill content and the surrounding normative environment. For both men and women, the inclusion of intrapersonal skills has some negative results in conservative settings. Individuals may have been unable to develop these skills in the classroom, or proactive self-censorship occured because individuals assumed particular behaviors were unacceptable, or backlash occured. Results are suggestive of proactive self-censorship: among women in conservative environments, there is evidence of lower reporting of SES but no evidence of backlash.

The paper contributes to several strands of literature. First, it contributes to the growing evidence on SES interventions in LMICs. While socioemotional skills are increasingly incorporated into entrepreneurship, vocational training, microfinance, and graduation programs, rigorous evidence on their independent impacts remains relatively limited. Existing studies suggest potentially large returns to SES-focused interventions. For instance, a training in Togo focused on personal initiative (PI), substantially increased enterprise profits relative to traditional business training in the short run (Campos et al., 2017) with effects persisting for men in the long-run (Campos et al., 2025b). In Uganda, the SEED program integrated SES into entrepreneurship training and increased profits by 30% (Chioda et al., 2021), while the STEP intervention improved business formation among youth in Uganda, Kenya, and Mexico (Gielnik et al., 2012). Evidence from Zambia shows that negotiation training improved girls' educational outcomes (Ashraf et al., 2018), and work from Malawi links SES to adoption of higher-value cash crops (Montalvao et al., 2017). Our study extends this literature by focusing on the agribusiness setting, experimentally comparing different categories of

SES, and implementing SES training within a large-scale government program at relatively low cost. The interventions cost approximately US$137 per participant, substantially below many comparable entrepreneurship trainings (McKenzie, 2021), suggesting that scalable SES interventions can be integrated into public sector programs. In addition, the results highlight the importance of scoping work and ensuring SES interventions are considerate of culture, rather than applying curricula blindly across contexts. Results are supportive of recent evidence that individual-oriented programs, those focused on the self and agency, are not always effective in non-WEIRD (Western Educated Industrialized Rich Democratic) contexts (Kizilcec and Cohen, 2017), particularly for women (Campos et al., 2025a; Thomas et al., 2025).

Second, the paper contributes to the measurement of socioemotional skills in low-income country contexts. Much of the existing literature relies exclusively on self-reported measures, which may capture social desirability, perception, confidence or identity beyond skill levels. We employ the Effective Socioemotional Skills to Gain Economic Empowerment (ESTEEM) framework, validated across several Sub-Saharan African settings including Nigeria (Marsh et al., 2025; Delavallade et al., 2025). In addition to self-reported SES, we use behavioral measures based on situational judgment tests (SJTs) to assess 14 distinct socioemotional skills. The divergence we document between self-reported and behavioral measures provides new evidence on how gender norms may shape self-assessments of capability.

Third, the paper contributes to the literature on gender, entrepreneurship, and intra-household dynamics. Prior work has shown that women may exhibit especially high returns to socioemotional skills (Heckman et al., 2006; Campos et al., 2017), but there is limited evidence on how the returns to specific types of SES differ by gender and norm environment. Our findings show that SES training can substantially improve women's business performance without shifting bargaining power or decision-making authority within the household.[6]

Finally, the paper has direct implications for the design of entrepreneurship and women's empowerment programs. The findings suggest that the effectiveness of SES curricula depends critically on both gender and social context. Interpersonal skills appear particularly valuable for women, potentially because they facilitate negotiation, network formation, and help navigate social constraints (Farnworth et al., 2024). Intrapersonal skills, meanwhile, may matter more for strengthening persistence, initiative, and emotional awareness, particularly for men. At the same time, the results suggest that SES training alone may be insufficient to overcome deeper structural constraints imposed by restrictive gender norms. Economic gains do not automatically translate into greater agency, implying that comple-

[6]Early evidence suggests that increasing women's bargaining power can help to improve household welfare (Duflo, 2003; Qian, 2008; Thomas, 1990).

mentary interventions targeting norms and intrahousehold dynamics may be necessary for SES gains to produce broader empowerment effects.

The remainder of the paper proceeds as follows. Section 2 describes the intervention and experimental design. Section 3 presents the conceptual framework and theory of change. Section 4 describes the data and sample. Section 5 outlines the empirical strategy. Section 6 presents the main results and heterogeneity analysis, and Section 7 concludes.

2 Context and Intervention

The impact evaluation was implemented within the government of Nigeria's (GoN) program called the Agro-Processing, Agricultural Productivity Enhancement and Livelihood Improvement Support (APPEALS) project from 2018 to2024. The APPEALS project aims to enhance the agricultural productivity and commercialization of small and medium scale farmers and improve value addition along eleven priority value chains (poultry, cassava, rice, aquaculture, cashew, maize, wheat, tomatoes, ginger, dairy and cocoa) across six states (Lagos, Enugu, Kano, Cross River, Kaduna and Kogi). A component of the APPEALS project — the Women and Youth Empowerment Program (WYEP) — promotes entrepreneurship in the agribusiness sector and targets young men (aged between 18 and 40 years) and women (over 18 years). APPEALS WYEP provides beneficiaries with business and value-chain specific technical training, mentorship, and a labeled in-kind grant (approximately US$5,000 to US$10,000) to support the start-up of the beneficiary's agribusiness. The SES interventions evaluated in this paper are offered to APPEALS WYEP beneficiaries allowing us to estimate the impact of SES training after relaxing both capital and technical skill constraints.

We contracted an experienced firm, Alkimia Consulting, which specializes in SES training for youth in Sub-Saharan Africa, to design the curriculum and training materials, and provide training facilitation support. The materials were specifically designed for low-literacy learners and adapted for use in low-resource settings. The training was tailored to the gender, language, and cultural context of each state. The ESTEEM framework was used as a starting point to design the SES training curriculum.[7] Aligned with the ESTEEM framework, the curriculum was organized into two modules depending on whether the skills targeted self-awareness and self-regulation or interactions with others. The "Inward" mod-

[7]The ESTEEM framework and SES measures were developed to facilitate understanding of which SES matter the most for men and women's economic empowerment. The set of skills was selected based on which skills were linked to economic empowerment based on existing literature, which skills exhibited gender differences in levels, as well as social role theory and focus group results examining gender differences in returns to skills and behaviors. More information on the ESTEEM research agenda, framework and measures can be found at: https://poverty-action.org/socio-emotional-skills..

ule covered the seven intrapersonal skills: emotional awareness, self-awareness, emotional regulation, self-control, perseverance, personal initiative, and problem-solving and decision-making (PSDM). The "Outward with Others" module focused on the seven interpersonal skills: listening, empathy, expressiveness, interpersonal relatedness, interpersonal influence, negotiation, and collaboration.

While skills are organized into these two categories, our impact evaluation compares the effects of interpersonal skills training alone with a combined program of interpersonal and intrapersonal skills. Since both training types were of equal duration, we can assess whether allocating the same amount of training time to seven interpersonal skills alone yields better outcomes than dividing the time across 14 skills (seven interpersonal and seven intrapersonal). The interpersonal-only training thus can be considered to deliver a higher dosage per skill. Detailed definitions of all skills and details on the training modules are provided in Appendix B.2.

The SES interventions were delivered through classroom-based trainings between September 2021 and February 2022 in local state training centers. All individuals assigned to treatment were invited to four consecutive days of classroom training. The interventions also included one-minute reinforcement video messages of training material referred to as "emovis" that were sent via WhatsApp and SMS messages to reinforce skills taught in the classroom and to increase accountability among training participants. The control group received a placebo message to reduce the potential risk of sharing training material. Videos were available in English or Hausa.

Training facilitators were selected within each state and interviewed by the research team and implementing partner for their ability to speak clearly and translate SES concepts, previous training experience, and thoughts on mobilization and motivation to help reduce dropout of trainees (a common issue in training programs, particularly among women). Where possible, facilitators' experience in agriculture and entrepreneurship was also considered. In each of the six states, four facilitators were selected, for a total of 24. All facilitators attended 8 days of training which included 4 days of Training-of-Trainers and 4 days of Facilitation Experience (here facilitators did mock facilitation and were provided feedback by the lead trainers). During the actual training of beneficiaries, each training facilitator was assigned to a classroom of no more than 30 individuals at a time, and the training ran for 4 days per batch. On average, each state had 4 batches and 4 parallel classes per batch. The locations of the training were organized using the support of the GoN APPEALS project coordinators in each state, and the training typically took place in a training institute or hotel.

The reinforcement of training material via messages ("emovis") over the phone was delivered approximately one year after the classroom training. The frequency of the messages

included 2-3 messaging touchpoints per week. These messages were interactive and incorporated behavioral change exercises into the messages to make the information more participatory rather than passive (Lubega et al., 2021).[8] Most beneficiaries had access to a smart phone and approximately 85% received the emovis via WhatsApp and the remaining 15% received the same information via SMS.

The average take-up rate of the classroom training across all 6 states was 79%. This is very high compared to other business training impact evaluations (McKenzie, 2020). On average, we find no significant statistical differences on take-up across the two treatment arms (T1 versus T2). In Table A2 in the Appendix we show the correlates of take-up by estimating differences in baseline characteristics between those who took up the training and those who did not.[9] We find that on average, those who attend the training are slightly older, more likely to be married (0.610 vs. 0.569) and to have farming activities on their own farm (0.502 vs. 0.424), and have lower average household income, relative to those who did not attend a training. Our study sample size was selected assuming only 70% training take-up. However, we successfully achieved closer to 80% take-up.

3 Theory of Change and Outcomes

Our intervention builds on the idea that SES shape how entrepreneurs navigate both their professional and personal lives. However, it is unclear which skills are most effective for economic empowerment. For each of the skills in the ESTEEM framework, a relationship has been observed between the skill and labor market outcomes (see literature review in Appendix table A-4 of Marsh et al. (2025)). In order to gain causal insights into which skills matter for whom, we distinguish between two broad sets of skills. Interpersonal skills such as negotiation, empathy, and collaboration are outward-facing. They help entrepreneurs obtain support in the household, in businesses or the workplace, and in the community. They are required for accessing household resources and permission, learning about opportunities, understanding what behaviors are acceptable or desired, negotiating contracts, obtaining information and loans, and building networks and relationships with customers, colleagues, buyers, and suppliers. The development of these skills may be particularly motivating in collectivist societies, where social relationships and group obligations play a central role in

[8] Interactive messages take the form of reflective questions, offer reminders/encouragement, encourage planning and the selection and commitment to goals, and games or exercises to encourage the practice of any skills learned.

[9] Table A2 column 2 indicates the characteristics of those who were invited but did not attend the training, and column 3 indicates those who did attend; and in (2)-(3) we show the test for a difference in the means across these groups.

shaping individual behavior and economic decision-making. In addition, for women, they can help understand what behaviors are acceptable or desired, and allow women to insert themselves into decision-making in a socially acceptable manner. Intrapersonal skills, such as perseverance, emotional regulation, and initiative, are inward-facing capabilities that shape how individuals perceive, regulate, and motivate themselves. These skills can strengthen self-awareness, confidence, goal setting, and future planning, while reducing stress and improving cognitive bandwidth. In turn, they may influence occupational choice, entrepreneurial decision-making, savings behavior, persistence in the face of setbacks, and problem-solving. For women, such skills may be particularly important for overcoming barriers to labor market success and entrepreneurship. However, in contexts where assertive or independent behavior conflicts with prevailing gender norms, the expression of these skills may also trigger social sanctions, backlash, or self-censorship.

In our design, one group of participants (T1) received training only on interpersonal skills, while another group (T2) received a combination of both interpersonal and intrapersonal skills. This allows us to ask whether focusing exclusively on outward-facing skills in more depth delivers higher economic returns, or whether these skills are more effective when anchored in a foundation of inward-facing abilities.

The SES training was layered onto the APPEALS WYEP program. By improving business assets and access to input and sales markets, APPEALS WYEP aims to foster firm creation and growth. The addition of SES training was expected to help beneficiaries take fuller advantage of these opportunities by improving self-management, strengthening relationships with customers and suppliers, and supporting decision-making within households. Figure 4 in the Appendix summarizes the overall theory of change.

We expect SES training to matter through three main pathways. First, by raising participants' SES directly, the training should change how they think, behave, and interact. Second, SES could shift intrahousehold dynamics, transforming relationships and decision-making, particularly for women. Third, changes in SES and intrahousehold dynamics should spill into the economic domain, improving business practices, mental models, and ultimately firm performance. Each of these pathways may be constrained by prevailing gender norms. Gender and social norms therefore play a central role in our theory of change. SES training may reinforce existing gender patterns or disrupt them. Either way, the impact is likely to vary by gender, and to be stronger in communities where social norms are more supportive of women's economic participation. In the paper we conduct heterogeneity analysis by gender and a measure of social norms.

From this framework, we derive five hypotheses. First, SES training should improve participants' economic outcomes, especially business profits, through better business prac-

tices or through better relationship management. Second, it should enhance SES, with the interpersonal-only arm strengthening outward-facing skills and the combination arm adding gains in both inward and outward-facing ones. Third, SES may increase women's decision-making power. Fourth, impacts are likely to differ by gender. Fifth, impacts should be larger in communities with less restrictive gender norms where we expect greater freedom to use or deploy these skills.

Our primary economic outcomes are business performance and labor supply. We also measure changes in SES using the ESTEEM framework, which examines both self-reports and behavioral measures across 14 skills dimensions aggregated into indices for interpersonal and intrapersonal skills. Finally, we assess women's empowerment, including decision-making power, bargaining, and indices of gender attitudes and perceived community norms. Secondary outcomes capture shifts in household well-being, financial inclusion and mental models. Detailed information on outcomes, mediators and their measurement is available in the pre-registration report published by the *Journal of Development Economics* in 2023 and as an online appendix to this paper.[10]

4 Data and Sample

4.1 Study Sample Selection

The Women and Youth Empowerment Program (WYEP) component of the APPEALS project targeted both men and women. Men had to be 18-40 years, unemployed graduates of universities or colleges of agriculture, or have completed secondary education with a minimum of 18 months experience in any agricultural value chain. Women had to be older than 18 years (without an upper age limit) with the same education and work experience requirements.[11] Persons with disabilities were also encouraged to apply.

The program was advertised in newspapers, social media, radio, and TV. Applicants submitted paper or online applications depending on the state. In total, 133,584 applications were received and screened by the program across all 6 states. About 10% were invited to face-to-face interviews at state offices, and 10,300 were selected for the program.

As part of a listing exercise (August 2019-February 2020), we conducted a short 15-minute survey with 11,691 applicants (5,469 men and 6,222 women) during the interview

[10] Link to JDE Stage 1 Pre-Results Manuscript.

[11] Women above 40 years of age with experience in the agricultural value chain who did not meet the education criteria were also eligible for the program. The age limit for women was relaxed because often there is a delay in female labor force participation due to the onset of childbearing and other domestic responsibilities (this was more salient in the northern states).

stage in 5 states. The APPEALS WYEP interview included questions from a panel of officials and agribusiness owners. Applicants scoring at least 7 on a 0-10 scale in the interview were deemed eligible; those below 7 were not. This cutoff was largely adhered to by the implementer.[12] In total, over 50% of interviewed applicants were selected for WYEP, representing less than 1% of the eligible population per state.[13] We conducted analysis of the value chain choice using the screening and baseline survey data in Das et al. (2023).

The eligible sample for the SES intervention and study is the 10,300 APPEALS WYEP beneficiaries that receive input grants and technical training to start an agribusiness.

4.2 Surveys

We collected individual-level and enterprise-level data from three main sources: (i) the pre-intervention screening survey, (ii) baseline and endline surveys, and (iii) administrative program data on training take-up.

The baseline survey (45 minutes by phone) was conducted between June-July 2020 with 7,796 beneficiaries who consented to be surveyed over the phone and opted into the SES training.[14] For the impact evaluation, we randomly selected 4,500 individuals stratified by state and gender (2,250 men and 2,250 women) using power calculations. At the time of the baseline survey, COVID-19 restrictions meant a phone-based survey was required which prevented the collection of the full set of 14 SES measures at baseline.

As per the impact evaluation design, the 4,500 agribusiness owners (50% men and 50% women) surveyed at baseline were randomly assigned to one of the following groups:

- **T1:** Interpersonal SES training only (classroom + reinforcement message)
- **T2:** Interpersonal and intrapersonal SES training (classroom + reinforcement message)
- **Control Group:** Placebo COVID-19 prevention messaging, without SES training.[15]

SES trainings were delivered in all six states between September 2021 and February 2022. We also collected surveys from training facilitators before each training. The endline data collection with the panel surveyed at baseline was conducted approximately 18 months to 2

[12] In a forthcoming paper we use the eligibility criteria cutoff to exploit a sharp regression discontinuity design (RDD) to estimate the local average treatment effect (LATE) of the overall APPEALS WYEP program in 3 states.

[13] See Table A3 in the Appendix for estimates of the number of APPEALS WYEP beneficiaries versus the total eligible population.

[14] Note that most APPEALS WYEP beneficiaries who were reached by phone said they were interested in taking the SES training intervention.

[15] COVID-19 messaging was disseminated well into the pandemic, when many government-led educational campaigns had already occurred and much of the information was public knowledge.

years after the training (September to October 2023), with some respondents surveyed later during a mop-up round in April to June 2024. Endline surveys were in-person and lasted 1.5 hours, on average.[16] Trained enumerators collected data privately from respondents.

The baseline survey covered demographic characteristics, employment, income, business performance, mental health, quality of spousal relationships, household demands (childcare, elder care, time use, household chores), decision-making, intimate partner violence attitudes, and gender attitudes and norms. Household modules included a household listing, food security, and assets. A subset of the self-reported socioemotional skill index measures were collected at baseline including generalized self-efficacy, perseverance, problem solving and decision making, emotional regulation, relatedness, influence, and empathy.

The endline survey repeated these modules and added questions on household duty sharing, family support, women's empowerment, business practices linked to SES (goal setting, opportunity search, negotiation, networking), consumption of food and temptation goods, time use, and APPEALS WYEP program participation.[17] The endline survey also included self-reported and behavioral SES measures such as situational judgment tests (SJTs): seven self-reported SES (6–12 Likert items each) and behavioral measures of all 14 SES, validated in Nigeria (Marsh et al., 2025; Delavallade et al., 2025).[18] At endline we measure seven intrapersonal skills: emotional awareness, self-awareness, emotional regulation, self-control, perseverance, personal initiative, and problem-solving and decision-making (PSDM); and seven interpersonal skills: listening, empathy, expressiveness, interpersonal relatedness, interpersonal influence, negotiation, and collaboration. Further details on SES measure development, scoring and measure examples are available in Appendix B.1.

4.3 Randomization Balance and Attrition

Table 1 assesses baseline balance across the treatment and control groups separately by gender. We report standard tests of mean differences as well as normalized differences, which provide a scale-invariant measure of imbalance across covariates. Following Imbens and Rubin (2015), normalized differences below 0.25 are generally considered indicative of balance. Although a small number of variables — including employees, self-efficacy, and gender attitudes — show statistically significant mean differences across groups, the corresponding normalized differences are small in magnitude. Consistent with successful randomization, the joint F-tests of covariate balance fail to reject equality across treatment arms.

[16] Note, that the endline survey was originally proposed for one year post-training but was slightly delayed to ensure all in-kind grants were disbursed.

[17] Administrative data from the implementing partner is used to estimate program participation.

[18] Measures are open-source and can be found at www.poverty-action.org/ses.

The baseline characteristics illustrate a sample of relatively young and economically active aspiring agribusiness entrepreneurs. At baseline, participants were on average 33 years old (men 31 years and women 34 years) and 73% had secondary or higher education. Most (60%) were married (67% women, 54% men) and economically active where 86% worked for pay in the past 30 days (84% women and 88% men) and over half owned a business, mostly in agriculture (55% men, 40% women). While employment rates were similar by gender, men had higher levels of financial decision-making: 70% of men versus 25% of women were identified as main income earners in their household; and 51% of men versus 18% women made financial decisions alone. Women spent more time on unpaid domestic work, despite participating in the workforce. At endline, the majority are in production (62% men, 53% women), marketing, (23% men, 29% women), or processing (14% men, 18% women) activities. The most common value chain chosen was poultry (42% men, 47% women), followed by rice (13%), aquaculture (12%) and cassava (9%). These patterns are consistent with application data, especially women's concentration in poultry, which offers flexibility, modest land requirements, and shorter production cycles (Das et al., 2023).

4.4 Survey attrition

Of the 4,500 respondents enrolled across the six study states, 3,890 were successfully surveyed at endline, corresponding to an overall completion rate of 86.4%. Attrition was low and balanced across treatment groups: 13.1% in the control group, 14% in the interpersonal skills treatment (T1), and 13.5% percent in the combined treatment (T2). We find no evidence that treatment assignment predicts survey attrition, as a joint significance test fails to reject equality in attrition rates across treatment arms at conventional significance levels. Accordingly, the main analysis does not adjust for attrition. Several factors contributed to the high follow-up rates, including detailed tracking information, up-to-date contact information, and persistent follow-up where each individual was contacted using multiple numbers.

5 Empirical Strategy

5.1 Main estimation model

For all results tables, we estimate the intention-to-treat (ITT) effects for the full sample of men and women in a unified regression. As specified in the pre-registration report, we use an analysis of covariance (ANCOVA) estimator to assess the impact of the interpersonal only SES training (T1) and any marginal impacts of the foundational intrapersonal skills (T2) on outcomes of interest for which we have both baseline and follow-up data. We estimate the treatment effect for individuals in the following regression specification:

$$Y_{i,t} = \beta_0 + \gamma_1 Women_i + \beta_1 InterSES_i + \beta_2 InterIntraSES_i + \beta_3 InterSES_i \times Women_i + \beta_4 InterIntraSES_i \times Women_i + \beta_5 Y_{i,0} + \beta_6 X'_{i,0} + \lambda_s + \varepsilon_{i,t} \quad (1)$$

where $Y_{i,t}$ is the outcome variable for individual i measured at time t (t = 1 at endline), and $Y_{i,0}$ is the baseline value of the outcome variable. $InterSES$ is a dummy variable for random assignment to the T1: Interpersonal Only SES training, and $InterIntraSES$ is a dummy variable for random assignment to the T2: Combination Interpersonal and Intrapersonal SES training. β_1 and β_2 measure the treatment effects relative to the control group (i.e., those who were not assigned to receive any SES training) among men. To estimate the impact by gender, we interact the treatment dummy variables in equation 1 with a dummy variable for $Women$ equal to 1 if the individual is female and 0 if male. β_3 and β_4 measure gender differences in treatment effects for T1 and T2, respectively. The total treatment effects for women are $\beta_1 + \beta_3$ for T1 and $\beta_2 + \beta_4$ for T2 shown at the bottom of the tables.

$X'_{i,0}$ is a vector of baseline controls (e.g., age, married, and education), λ_s are randomization strata fixed effects, and $\varepsilon_{i,t}$ is the error term. Huber-White robust standard errors are used throughout. At the bottom of the tables we report the total T1 and T2 effects (and p-values) for women; and the test the null hypothesis that there is no difference in the effect of the T1 and T2 trainings for men and women.

Equation 1 provides the intention-to-treat (ITT) estimates, which is the effect of being assigned to the T1 or T2 training sessions among the study sample. Note, that for some outcome variables that were only collected during the endline survey, we rely on the random assignment of treatment status and use ordinary least squares (OLS) estimation to compare outcomes for treatment and control groups.

5.2 Heterogeneity Analysis by Gender Norms

$$Y_{i,t} = \beta_0 + \gamma_1 Norms_i + \beta_1 InterSES_i + \beta_2 InterIntraSES_i + \beta_3 InterSES_i \times Norms_i + \beta_4 InterIntraSES_i \times Norms_i + \beta_5 Y_{i,0} + \beta_6 X'_{i,0} + \lambda_s + \varepsilon_{i,t} \quad (2)$$

where, $InterSES$ is a dummy variable equal to 1 if individual i is randomly assigned to T1 and $InterIntraSES$ for random assignment to T2, as described above. In equation 2 we examine heterogeneity in treatment effects based on baseline gender norms. The $Norms$ variable is a pre-specified measure of gender norms. We estimate heterogeneous treatment effects by interacting treatment status with the norms measure. To test interaction effects, we utilize multiple variable regression analyses and include the product of centered variables as the interaction term (Aiken et al., 1991). In this heterogeneity analysis we split the sample for women (in Figure 1) and men (in Figure 2) for the main outcomes.

The $Norms$ variable represents perceived community norms that is defined using responses to the question: *"Out of 10 people in your community, how many do you think believe that if a woman earns more than her husband, it will almost certainly cause problems?"* The variable ranges from 0 (most norm-supportive environment) to 10 (most norm-conservative environment). Where a response of zero means that the respondent perceives none of their community would believe a woman who contradicts the traditional gender role of the male breadwinner would cause problems. While the Norms variable is analyzed as a count from 0 to 10, in the results we transform to a range of $0 - 100$ to better interpret it as a proportion of the community.

Note, for outcome variables measured as a monetary value, such as profits, we apply the inverse hyperbolic sine (IHS) transformation in our main table to address issues of skewness and the presence of zero-valued observations. The implementation and interpretation of the IHS transformation requires careful attention as detailed in Chen and Roth (2023). We document the number of zero observations to examine the magnitude of the extensive margin effect before interpretation of the IHS transformation as a percentage change. We only interpret the coefficients as a percentage change for outcomes where the proportion of zeroes for the outcome are small (i.e., less than 10%). For robustness, regression results for value outcomes are expressed in levels, winsorized at the 95th percentile, in the Appendix.

We also conduct several robustness checks for our main treatment results: in the regression analysis for SES we control for a social desirability scale (SDS).[19] We control for a set of core demographic variables such as age, marital status, and education throughout the

[19]We use the short-form Balanced Inventory of Desirable Responding (BIDR) which assesses the potential social desirability bias in respondents' answers.

regressions. Results are also found to be robust to using post-double selection lasso (PDS Lasso) method of Belloni et al. (2014) to select baseline control variables (not shown).

Our survey instrument includes several questions related to a single skill, behavior or dimension, therefore we account for multiple hypothesis testing by creating index measures by combining several related indicators into a single standardized index to reduce the total number of individual statistical tests, thereby minimizing the likelihood of false positives (Anderson, 2008). In addition, for the primary economic outcomes, we adjust the statistical significance of each hypothesis test using sharpened False Discovery Rate (FDR) q-values which are calculated using the two-stage procedure proposed by Benjamini et al. (2006), which provides a simple and robust method for controlling the expected proportion of false discoveries. Specifically, the q-value represents the smallest false discovery rate at which the null hypothesis can be rejected, as outlined in Anderson (2008). The sharpened q-values are reported in Appendix Table C.1 for the key outcomes and primary hypotheses.

6 Results

We begin by examining the impacts of the interpersonal-only (T1) and combined interpersonal and intrapersonal (T2) skills trainings on economic outcomes for men and women. We then investigate the mechanisms underlying these effects by analyzing impacts on socioemotional skills — measured through both self-reported and behavioral aggregate indices — as well as business practices, investments, and spousal relationship outcomes. We also examine effects on women's economic empowerment and decision-making power. Throughout, we present intention-to-treat estimates for men and women within a unified regression specification based on Equation 1. To assess the role of the normative environment, we present heterogeneous treatment effects by gender norms in graphs for women (see Figure 1) and men (see Figure 2), following the specification in Equation 2.

6.1 Economic Outcomes

Table 2 examines the effects of the SES trainings on labor supply, household welfare, and business performance. Overall, the results point to marked gender differences in how men and women respond to the intervention. For women, both trainings (T1 and T2) increase labor force participation and substantially improve business profitability. For men, the gains are concentrated instead in household welfare, particularly among those assigned to T1.

In terms of labor supply, the SES intervention was designed to affect participation in income-generating activities at both the extensive and intensive margins. In column 1 we ex-

amine whether respondents engaged in any income-generating activity during the previous 30 days, including farming, livestock rearing, enterprise activity, or wage employment. Employment rates in the control group are already high: 97% among men and 93% among women. Both T1 and T2 increase women's likelihood of participating in an income-generating activity by approximately 3 percentage points. The high starting point among the control group creates a 'ceiling effect' that limits the realistic scope for detecting large increases. However, our observed 3-percentage point increase is economically significant in this context, as it suggests the training successfully activated a portion of individuals who had remained inactive despite the broader APPEALS WYEP program benefits.[20] Against this high control group mean, we find no evidence that either training affects men's employment. In the Appendix Table C.2 we show results that suggest that these gains reflect greater specialization rather than diversification, with women shifting toward either farming-only or non-farm-only activities and away from combining both simultaneously. In column 2 we consider labor supply at the intensive margin through hours worked per day. We find no significant impacts of either training for men or women, suggesting that the intervention primarily affects entry into economic activity rather than time allocation conditional on participation.

Column 3 turns to household welfare, measured using a standardized index of household income, consumption, and food security. Among men, the interpersonal-only training (T1) generates a statistically significant increase of 0.14 standard deviations in the household welfare index. Additional results suggests a reduction in spending on temptation goods, including alcohol and cigarettes (results not shown in Table 2).[21] These patterns suggest that interpersonal skills training may influence men's financial decision-making and household budgeting behavior, potentially improving the allocation of household resources. By contrast, we find no corresponding effects on household income or food security among women. At the bottom of Table 2 we present the marginal effect of intrapersonal skills (the test of equality of the coefficients for T1 versus T2 for men and women).

Turning to columns 4 and 5 we examine business performance through annual profits and the number of workers employed.[22] Consistent with existing literature on the gender gaps in firm size, women in the control group operate smaller firms than men, with lower profits and fewer employees (see negative coefficient on *women*. The main result is that SES training substantially increases women's business profits, while generating no comparable

[20]Note that since the APPEALS beneficiaries gave resources to start an agribusiness activity this high employment rate is to be expected.

[21]SES training may also help men reduce their reliance on alcohol and cigarettes for emotional wellbeing.

[22]Note that we report other measures of business performance such as revenues and costs in the Appendix Table C.3. The likelihood of having a business in operation is high at endline at an average of 87% for both men and women. (Appendix Table C.9)

profit gains for men. The interpersonal-only training (T1) increases women's profits by 46%, while the combined interpersonal and intrapersonal training (T2) increases profits by 51%, relative to the control group who did not receive SES training. These effects are robust to alternative profit measures and transformations reported in the Appendix (see Table C.3). In Appendix Table C.1 we conduct multiple hypothesis testing adjustments and show sharpened q-values for the primary economic and business outcomes with resultant q-values of 0.10 and 0.06 for T1 and T2 effects on women's employment and profits. Our finding of a 51% increase in profits without a corresponding increase in hours worked is consistent with the personal initiative (PI) training results in Togo (Campos et al., 2017), which showed that SES-based interventions improve the quality of entrepreneurial action (e.g., better negotiation or networking) rather than increased labor. Furthermore, our profit magnitudes are closely aligned with other high-performing SES interventions in the region, such as the SEED program in Uganda (Chioda et al., 2021), which reports a 30% profit increase. Evidence of any impacts of SES interventions on hours worked by the owner and hiring of employees in LMICs remains limited.

The profit gains reflect improvements along the extensive margin: women assigned to either SES training are more likely to operate businesses that are active and profitable at endline. Importantly, profits conditional on business operation also increase significantly, indicating that the results are not driven solely by higher business survival. Despite these improvements in profitability, neither training affects the likelihood that firms hire additional workers, suggesting that the gains primarily reflect improvements in business performance within existing firm size.

Taken together, the results on economic outcomes reveal distinct gendered responses to the SES curricula. For women, both T1 and T2 generate large and economically meaningful gains in business profitability alongside modest increases in labor force participation. Yet the mechanisms underlying these gains appear to differ across training designs. For men, the average effects are concentrated in household welfare rather than enterprise outcomes, with the strongest effects emerging for the T1 interpersonal-only curriculum. In the following sections, we examine the mechanisms underlying these patterns by analyzing impacts on more proximate outcomes such as socioemotional skills, business practices and investments, and intrahousehold relational dynamics.

6.2 Socioemotional Skills Index Measures

Given that socioemotional skills are the central target of our intervention, we next examine impacts on a range of SES constructs. Table 3 presents treatment effects on aggregate indices

of socioemotional skills, as well as separate indices for interpersonal and intrapersonal skills. Columns 1–3 report self-reported SES measures, which capture individuals' perceptions of their own skill levels, the value they place on these skills, and their perceptions of how others value them. Columns 4–6 turn to behavioral SES measures, derived from situational judgment tests (SJTs) that assess the application of socioemotional skills in contexts relevant for economic decision-making and empowerment.[23]

In Table 3 among the control group, the coefficient on *Women* indicates that women report significantly lower socioemotional skills than men across all self-reported indices which is true for both interpersonal and intrapersonal domains.[24] However, these gender differences disappear when skills are measured behaviorally. In columns 4–6, men and women perform similarly on the SJT-based SES measures, suggesting that the gender gap is concentrated in self-assessments of skills rather than underlying behavioral competencies.

The interpersonal-only (T1) curriculum produces clear improvements in women's socioemotional skills, increasing the aggregate self-reported SES index by 0.09 standard deviations, driven primarily by gains in interpersonal skills (+0.13 standard deviations). Behavioral measures of SES point in the same direction, with marginal improvements in women's interpersonal skills. By contrast, the addition of intrapersonal content in T2 attenuates these gains in self-assessed SES. Taken together, these findings suggest that specialization in interpersonal content may be more effective at strengthening women's confidence in, or perception of, their socioemotional capabilities. They also point to profit gains being associated with improvements in socioemotional skills such as the ability to manage relationships with clients, employees and/or suppliers and confidence in decision-making.

Appendix Table C.4 decompose the aggregate SES indices into individual skill measures. Using self-reported measures, we examine treatment effects on three out of seven interpersonal skills (empathy, relatedness, and negotiation), and on four out of seven intrapersonal skills (emotional regulation, perseverance, personal initiative (PI), and problem-solving (PSDM)).[25] With behavioral measures, we report treatment effects for the full set of seven interpersonal skills in Table C.5 and on the seven intrapersonal skills in Table C.6. Consistent with the aggregate index results, among the control group, women perform similarly to men on most behavioral SES dimensions, but we observe significant gender differences for expressiveness and collaboration. A male advantage is observed across most measured self-reported skills, consistent with the patterns documented in Cassidy et al. (2024) and

[23]Appendix B, and specifically Appendix B.1, provides detailed definitions of each SES measure.

[24]Baseline skill measures similarly show that women score lower than men across self-reported SES domains in the Nigeria sample and in other contexts (Ajayi et al., 2022b).

[25]To limit survey fatigue and reduce the length of the endline questionnaire, only a subset of the 14 skills was captured through self-reported measures.

Ajayi et al. (2022a).

The treatment effects for women show T1 significantly increases self-reported empathy and negotiation, with effects that are significantly larger than those generated by the combined T2 curriculum. Behavioral measures point in the same direction: T1 significantly improves indices on women's empathy and collaboration (negotiation is marginally not significant), while no comparable effects are observed for men. By contrast, the combined curriculum (T2) appears more effective at shifting men's intrapersonal skills. T2 significantly improves emotional awareness among men, whereas T1 does not. At the same time, both trainings generate marginally significant declines in self-control among men. Baseline gender differences in individual SES do not explain the heterogeneity in treatment effects. While baseline SES measures demonstrate a male advantage we do not observe that the interpersonal training results in women catch up to the levels of men in the control group. There is some gender convergence, for example on a *subset* of skills for which men report an advantage: self-reported empathy and negotiation, as well as the behavioral measure of collaboration.

Comparisons between T1 and T2 underscore the potential importance of training content specialization. Among women, T1 outperforms T2 on several behavioral dimensions, including expressiveness, influence, collaboration, and self-awareness. For men, the primary difference between the curricula is that T2 produces larger gains in emotional awareness relative to T1. However, we caution that the results in Section 6.6 Figures 1 and 2 suggest that these average effects are masking substantial heterogeneity by gender norms.

6.3 Business Practices and Investments

Table 4 examines whether the SES trainings affects business practices, investment behavior, and savings. The results suggest that the profit gains observed among women are not driven by broad improvements in business management practices. Instead, the evidence indicates changes in women's accumulation of productive assets and savings behavior.

In column 1 we examine an index of business practices following the framework of McKenzie and Woodruff (2016).[26] Overall, we find no evidence that either training improves aggregate business practices among men or women.[27] Similarly, we find no effects on related entrepreneurial measures such as the number of business ideas generated, entrepreneurial activity, product innovation, or aspirations (results not shown). These null results suggest that the profitability gains generated by SES training for women do not appear to operate

[26]The index includes measures of record keeping, marketing, stock control, and financial planning.

[27]In a forthcoming companion paper, we find positive effects of the broader APPEALS program — including technical training and input grants — on business practices using a regression discontinuity design.

through systematic improvements in managerial or operational practices. At the same time, the aggregate indices mask some meaningful changes in specific behavior among men. Appendix Table C.7 shows that men assigned to the interpersonal-only training (T1) improve several individual business practices related to listening, problem-solving, personal initiative, and networking. These include seeking feedback from employees and customers, analyzing sales performance, and reaching out to others for business advice.

Columns 2–5 turn to investment behavior and savings outcomes, including business capital, productive assets, household assets, and current savings. Here, the gender patterns differ. Among men, we find no evidence that either training affects investment or savings. For women, however, the intervention alters the composition of asset accumulation and increases savings. The interpersonal-only training (T1) generates a slight decline in business capital investment, significant at the 10 percent level, though this reduction is offset under the combined T2 curriculum. At the same time, T1 significantly increases the value of productive assets owned by women by approximately 31%, despite no change in the total number of assets owned. Appendix Table C.8 indicates that these gains are driven primarily by investments in farming-related assets.[28] Column 5 further shows that both T1 and T2 significantly increase women's savings.[29] This finding is particularly notable in light of evidence from the capital grants and microfinance literature documenting the risk that women's resources may be appropriated by other household members, including spouses (Bernhardt et al., 2019). The results therefore suggest that SES training may strengthen women's ability not only to generate profits, but also to retain and accumulate resources through savings and productive investments.

In theory, interpersonal motivation could improve savings. The improvement in savings may improve investments in productive assets, cost smoothing, and resilience, which results in higher profits. Or higher profits may lead to an increased ability to save disposable income. While we do not observe an improvement in measured business practices or more time spent at work; we find an increased likelihood of starting a new business, among women who receive the interpersonal training (see Appendix Table C.9), and some evidence of a reduction in mild anxiety which may translate into improved cognitive bandwidth (see Appendix Table C.10). We also find support for women's improved ability to negotiate funding for their

[28]The productive asset index includes a large list including land, transport, livestock, farming machinery, and equipment. We also find suggestive evidence that women shift away from small animal ownership toward larger livestock holdings, potentially reflecting greater willingness to undertake higher-return but riskier investments.

[29]Financial inclusion is already high in the sample, with 90% of men and 86% of women reporting access to a formal bank account, and we find no treatment effects on access to formal bank accounts. Appendix Table C.11 provides some evidence of reduced credit-access challenges and greater partner support for business financing among women.

business and get support from husbands to access business loans (see Appendix Table C.11).

6.4 Marital Satisfaction and Relational Skills

Table 5 examines whether the SES trainings affect marital relationship quality among respondents who are married at endline. We focus on index measures of attitudes toward intimate partner violence (IPV), marital satisfaction, trust, and conflict resolution within the household. Overall, the results suggest that SES training improves relational dynamics within marriage for both men and women, with particularly strong effects on attitudes toward violence and conflict management. These estimated treatment effects should be interpreted as the impact of the SES training package as implemented, and may reflect a combination of skill acquisition and social interaction effects generated by the training setting itself. In addition, these results should be interpreted cautiously. Marital satisfaction is a self-reported outcome and may reflect changes in self-perceptions, aspirations, or reporting behavior in addition to changes in actual relationship quality.

Column 1 examines the acceptability of IPV using the standard DHS measure of whether they think a husband is ever justified in hitting or beating his wife.[30] Baseline tolerance for IPV is already low in the sample: only 4% of men in the control group report that such behavior is justified. Even against this, the SES trainings further reduce acceptance of IPV. Among men, the interpersonal-only curriculum (T1) significantly lowers tolerance for violence, while among women the strongest effects emerge under the combined T2 curriculum (no significant difference between T1 and T2 for women). The intervention therefore moves attitudes toward near universal rejection of IPV.

The trainings also improve broader dimensions of marital quality. Column 2 shows that both men and women report greater satisfaction with married life following the SES intervention.[31] In addition, column 4 indicates improvements in conflict resolution behaviors within marriage, particularly under the combined T2 curriculum for both men and women. These findings suggest that SES training may strengthen relational skills, improving how couples manage disagreements. At the same time, the improvements in marital quality do not appear to operate through greater explicit coordination over economic activities. We find no evidence that respondents are more likely to trust their partners (column 3) or communicate more directly about business or household responsibilities with them (see column 5).

While some effects differ slightly across training types and gender, we find little evidence

[30]Respondents were asked whether a husband is justified in hitting or beating his wife if she goes out without telling him, neglects the children, or burns the food.

[31]The women-specific effects are positive but not statistically significant at conventional levels (p-values 0.14 and 0.10.

of statistically meaningful differences between the interpersonal-only (T1) and combined (T2) curricula overall.[32] Together, the results suggest that SES training improves relational quality within marriage primarily through changes in attitudes and interpersonal dynamics rather than through more communication between spouses on their livelihood activities. Women may be benefiting from more household support or at least less intrahousehold interference.

6.5 Women's Empowerment and Decision Making

In Table 6 we turn to measures of women's empowerment restricting the sample to women only. We present index measures of intrahousehold decision-making and women's empowerment. Our measure of women's empowerment uses a modified *Pro-WEAI* index following guidance from the Women's Empowerment in Agriculture Index (WEAI) toolkit (see Alkire et al., 2013).[33] We find no significant treatment effects (column 1) on the index measure of empowerment. This null effect suggests that even when SES training improves women's business performance, structural barriers such as restrictive gender norms and intrahousehold dynamics may constrain the translation of economic gains into greater bargaining power.

We also examine decision-making power by creating an index of the number of decisions the female respondent is able to make solely or jointly in their household and a binary variable equal to one if she makes any decision solely. There is no evidence of an impact on the index of decision-making power. However, we find weak evidence that T1 increases women's likelihood of making a sole decision by 2 pp and the time spent on chores and care by 0.34 hours (not shown in Table 6). Across all of these intrahousehold dimensions, we find little evidence of a treatment impact of either T1 or T2. This pattern reinforces our interpretation that SES training may be insufficient to shift deeper intrahousehold dynamics, even if it strengthens economic performance.

6.6 Heterogeneity Analysis by Gender Norms

Figures 1 and 2 examine heterogeneity in treatment effects by perceived community gender norms for women and men, respectively. The norm measure captures the extent to which respondents perceive their communities as restrictive toward women's economic roles, with

[32]For women, several relational outcomes are primarily driven by the combined T2 curriculum. Among men, T1 significantly reduces the acceptability of violence, whereas T2 generates stronger improvements in conflict resolution behaviors.

[33]The modified WEAI for project use (pro-WEAI) captures important dimensions of intra-household models of bargaining power, including production, productive resources, income, leadership, and time use, plus additional psychosocial factors, including acceptance of gender-based violence, self-efficacy, and respect among household members (Malapit et al., 2019).

higher values indicating more conservative attitudes regarding women earning more than their husbands.[34] Across outcomes, the results suggest that the returns to socioemotional skills training are strongly mediated by the surrounding normative environment, particularly for women.

For women, treatment effects are concentrated in communities perceived to hold relatively liberal gender norms. Figure 1 shows that both the interpersonal-skills treatment (T1) and the combined treatment (T2) significantly improve women's self-reported socioemotional skills in less restrictive environments. Among women who perceive fewer than half of community members as disapproving of women violating traditional male breadwinner norms, both T1 and T2 increase reported interpersonal *and* intrapersonal skills (the positive effects on intrapersonal skills are only statistically significant at 0-30 values). This pattern contrasts with the average treatment effects, where T1 improved primarily interpersonal skills. The results suggest that women in more supportive environments are better able to recognize, express, and deploy socioemotional skills without fear of social sanction. While the evidence indicates that social norms influence the economic returns to socioemotional skills, it is less clear whether norms affect the acquisition of skills during the training itself or the extent to which individuals subsequently feel able to express and apply them.

In contrast, in the most restrictive normative environments (norm is 70-100), the combined T2 curriculum appears to reduce women's self-assessment of their socioemotional skills. Perhaps the T2 training makes the gender norms surrounding certain skills more salient in settings where respondents perceive strong community disapproval, reinforcing the idea that these behaviors are socially inappropriate for women. One interpretation is that SES measures capture not only skill acquisition but also the extent to which individuals feel socially permitted to claim or express these skills. In restrictive settings, the training may increase the salience of prevailing gender norms and the potential penalties attached to violating them. Women may internalize these constraints and revise downward their value for these skills, their perceptions of their own capabilities, or their likelihood of undertaking particular behaviors to conform and avoid social judgment. In either case, the findings suggest that normative environments shape not only the economic returns to socioemotional skills, but also whether women feel able to express such skills.

The heterogeneity analysis for economic outcomes mirrors the patterns observed for self-reported skills in the more liberal norm environments. Both T1 and T2 generate positive

[34] As described in the empirical strategy section, the *Norms* variable is based on responses to the question: *"Out of 10 people in your community, how many do you think believe that if a woman earns more than her husband, it will almost certainly cause problems?"* The variable ranges from 0 (most norm-supportive environment) to 10 (most norm-conservative environment). We transform the variable to 0-100 in the graph to interpret as percentage.

effects on employment and profits primarily where gender norms are more supportive (0-50 norm). For women who perceive no community judgment, SES training increases employment by roughly 5–6 percent. Savings outcomes follow a similar pattern, with significant gains under both treatments in relatively liberal settings. Notably, although women in more conservative environments report lower self-reported socioemotional skills under T2, these declines do not translate into corresponding negative effects on employment or earnings outcomes. Rather, the evidence suggests that supportive normative environments enable women to convert socioemotional skills into improved economic outcomes, whereas restrictive environments constrain the extent to which these skills can be effectively deployed.

The contrast between T1 and T2 further underscores the importance of the content of socioemotional skills curricula. The T2 curriculum includes intrapersonal competencies such as self-awareness, emotional regulation, and personal initiative — skills that may heighten awareness of social expectations and the risks associated with deviating from prescribed gender roles. In more conservative environments, skills focused on relationship development may be more socially acceptable and effective than skills focused on the individual. By contrast, in more liberal environments women appear to face fewer constraints in expressing and utilizing these competencies productively.

Figure 2 presents the corresponding results for men. In contrast to women, treatment effects on SES measures for men are largely invariant to the surrounding gender normative environment, suggesting that prevailing norms do not substantially constrain men's ability to acquire socioemotional skills. Nevertheless, the combined T2 treatment generates stronger effects on employment, business ownership, and profits in the most gender-liberal environments.[35] This pattern suggests that even for men, more egalitarian normative settings may increase the economic returns to the intrapersonal skills provided in T2, potentially by providing tools to better handle emotions, cooperate, or interact with others. Note, that in Table 5 we find a positive impact of T2 on men's marital satisfaction and conflict resolution. However, in the most conservative environments, men experience a negative effect on profits as a result of T2.

Importantly, these results remain robust after accounting for social desirability bias, indicating that the observed heterogeneity reflects genuine normative constraints rather than differential tendencies to provide socially acceptable responses to enumerators.

We also conduct additional heterogeneity analysis in the Appendix to examine whether treatment effects on the primary outcomes vary by marital status (Table C.12), region (Table C.13), selected value chain (Table C.14), and segment of the value chain (Table C.15).

[35]The measured norm on the male breadwinner status is related to traditional gender roles which influences men's behavior too.

6.7 Exploratory associations between mediators and outcomes

To complement the main analysis, we examine residual–residual associations between potential mediators and economic outcomes following (Zhou and Wodtke, 2019). [36] The results, presented graphically in the Appendix in Figures 14.1–14.4, reveal predominantly positive relationships between SES measures, intrahousehold dynamics, and economic performance. Participants with higher-than-predicted socioemotional skills and stronger intrahousehold outcomes also tend to exhibit better-than-predicted economic outcomes.

These relationships appear somewhat stronger among treatment recipients than among control participants, as reflected in steeper slopes for the treatment groups. This pattern suggests a closer alignment between improvements in SES and subsequent economic performance among individuals exposed to the SES training interventions. While purely correlational, the findings are consistent with the broader interpretation that socioemotional skills and relational dynamics may play an important role in shaping economic performance.[37]

7 Conclusion and Discussion

Socioemotional skills (SES) training has emerged as an increasingly important policy tool for improving labor market outcomes. Yet there remains limited evidence on which dimensions of SES matter most for economic success, whether returns differ by gender, and how social norms shape the extent to which these skills can be used effectively. This paper addresses these questions through a large-scale randomized evaluation embedded within the Government of Nigeria's APPEALS agribusiness program. The study compares two four-day training curricula: one focused on interpersonal skills, and an alternative that combines both interpersonal and intrapersonal skills.

Our findings show that SES training can generate substantial economic returns, particularly for women agribusiness owners. Both trainings significantly increased women's business profits, with gains exceeding 50% on average. These improvements reflect both greater labor force participation and higher profitability among already active firms. The results suggests that improve economic outcomes are tied to improved relationship management, rather than in business practices. The intervention also increases women's savings and productive in-

[36] We estimate residuals for both endline mediators and outcomes after regressing them on baseline values, covariates, and strata fixed effects, and then regress outcome residuals on mediator residuals using robust standard errors. These relationships are descriptive and should not be interpreted as evidence of causal mediation, but instead provide suggestive evidence on whether variation in mediators covaries with variation in outcomes within the sample.

[37] Note that business practices (M2) are excluded from the set of mediators because they were not comprehensively measured at baseline.

vestments. However, despite these economic gains, we find no evidence of corresponding improvements in women's empowerment or decision-making power. The results therefore suggest that strengthening women's economic performance does not automatically translate into greater agency within the household.

The evidence further shows that the effectiveness of SES curricula depends on both training content and the surrounding enabling environment. For women, the interpersonal-only curriculum generates the strongest and most consistent improvements in measured socioemotional skills, particularly empathy, collaboration, and negotiation. These gains are strongest in communities perceived to hold relatively supportive views regarding women's economic participation. In more restrictive environments, women benefit less from SES training and under the combined curriculum sometimes self-report lower socioemotional skills. This suggests that the training may heighten awareness of the social costs associated with certain behaviors. The findings indicate that social norms shape not only the economic returns to SES, but also whether women feel able to express and deploy the skills.

For men, SES training generated comparatively modest effects on enterprise outcomes overall, with business profit gains only observed among men receiving the combined curriculum in relatively gender-liberal environments. Men's gains were associated with improvements in intrapersonal skills such as emotional awareness and perseverance. Men receiving the interpersonal-only training enjoy modest increases in household income and reductions in spending on temptation goods. Our results suggest that the returns to different categories of SES are gendered and depend on the extent to which prevailing social norms reward or constrain particular behaviors.

Several policy implications emerge from these findings. First, SES interventions should not be treated as one-size-fits-all programs. The results suggest that curriculum design matters, and that the optimal mix of skills depends on both gender and social context. For women, concentrating training time on interpersonal competencies may generate stronger economic returns by strengthening skills that facilitate negotiation and relationship-building. However, including intrapersonal skills as well could matter more for improving relationship dynamics such as resolving marital conflict. Both training modalities generated positive effects for women entrepreneurs only in environments characterized by relatively supportive gender norms. For men, intrapersonal competencies appear helpful for improving business performance, again only in a supportive normative environment. Both trainings improve marital satisfaction overall. However, the interpersonal skills training improved certain indicators of household welfare: increased income, a reduction in spending on temptation goods and acceptability of IPV. Our findings suggest that tailoring SES curricula to the constraints and opportunities faced by different groups may substantially increase program effectiveness.

This supports recent literature highlighting the need to design psychological interventions in consideration of culture (Thomas et al., 2025).

Second, the results highlight the importance of integrating SES interventions with broader efforts to address restrictive gender norms. While SES training improved women's business outcomes, it did not shift bargaining power or decision-making authority within households, at least over the study period.[38] Moreover, the strongest gains occurred in environments where women perceived lower social penalties for violating traditional gender roles. This suggests that complementary interventions targeting community norms and intrahousehold dynamics may be necessary for SES gains to translate into broader empowerment outcomes. More generally, the findings imply that the returns to skills investments are shaped not only by individuals' capabilities, but also by the environments in which they can be exercised. Designing effective SES programs requires attention not only to which skills are taught, but also to the broader social environments that determine whether individuals are able to use those skills productively.

Finally, the study demonstrates that SES training can be delivered at relatively low cost within large-scale government programs. At approximately US$137 per participant, the intervention was substantially less expensive than many comparable entrepreneurship programs. The results therefore suggest that integrating scalable, open-source SES modules into existing public sector training programs may provide a cost-effective tool for improving enterprise performance, particularly among women entrepreneurs.

[38]Related experimental evidence highlights that addressing gender norms through community-based outreach can relax constraints that limit young women's participation and learning (Delavallade et al., 2021).

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Table 1: Randomization Balance Table

	(1)	(2)	(3)	(4)	(5)	(6)	t-test Difference						Normalized Differences					
	Control Male	Interpersonal Only Male	Combination inter_intra Male	Control Female	Interpersonal Only Female	Combination inter_intra Female												
							(1)-(2)	(1)-(3)	(2)-(3)	(4)-(5)	(4)-(6)	(5)-(6)	(1)-(2)	(1)-(3)	(2)-(3)	(4)-(5)	(4)-(6)	(5)-(6)
Age of respondent	31.50	31.27	31.35	34.61	34.25	34.56	0.22	0.15	-0.08	0.36	0.05	-0.31	0.04	0.03	-0.01	0.04	0.01	-0.03
	(0.19)	(0.20)	(0.19)	(0.35)	(0.34)	(0.33)												
Married (Yes = 1)	0.56	0.53	0.54	0.68	0.65	0.69	0.03	0.03	-0.01	0.03	-0.02	-0.04*	0.06	0.05	-0.01	0.06	-0.04	-0.09*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)												
Worked for pay in past week (Yes = 1)	0.63	0.63	0.64	0.54	0.51	0.49	0.00	-0.01	-0.01	0.03	0.05*	0.02	0.00	-0.03	-0.03	0.06	0.10*	0.04
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)												
Owns a Business (Yes = 1)	0.78	0.76	0.77	0.78	0.78	0.80	0.02	0.01	-0.01	0.01	-0.01	-0.02	0.05	0.02	-0.03	0.01	-0.03	-0.04
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)												
Average monthly business profits unconditional (NGN)	34,518.83	31,446.35	29,925.07	17,160.35	17,788.90	20,100.26	3072.48	4593.76	1521.28	-628.55	-2939.91	-2311.36	0.04	0.07	0.03	-0.02	-0.08	-0.06
	(2,791.98)	(2,340.81)	(2,009.93)	(1,078.19)	(1,147.50)	(1,543.45)												
Number of Employees in Business unconditional (Number)	1.38	1.50	1.25	0.60	0.67	0.76	-0.12	0.13	0.25**	-0.07	-0.16*	-0.08	-0.05	0.06	0.10**	-0.04	0.09*	-0.05
	(0.08)	(0.09)	(0.08)	(0.06)	(0.06)	(0.07)												
Generalized self-efficacy (1-5)	4.20	4.18	4.20	4.14	4.16	4.12	0.02	0.00	-0.01	-0.02	0.02	0.038*	0.04	0.01	-0.03	-0.05	0.04	0.09*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)												
Participated in Own Farm Activity in past 30 days	0.55	0.58	0.58	0.39	0.39	0.40	-0.03	-0.02	0.01	0.00	-0.01	-0.01	-0.06	-0.05	0.02	0.00	-0.03	-0.03
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)												
Participated in Non-Farm Enterprise Activity in past 30 days	0.53	0.54	0.53	0.54	0.54	0.53	-0.02	0.00	0.01	-0.01	0.00	0.01	-0.03	0.00	0.03	-0.01	0.01	0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)												
Participated in Livestock Activity in past 30 days	0.36	0.38	0.37	0.33	0.32	0.31	-0.02	-0.02	0.01	0.02	0.02	0.01	-0.05	-0.04	0.01	0.03	0.05	0.01
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)												
Participated in Wage Employment Activity in past 30 days	0.13	0.11	0.14	0.07	0.09	0.08	0.02	-0.01	-0.03*	-0.02	-0.01	0.01	0.06	-0.03	-0.09*	-0.08	-0.04	0.04
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)												
Average monthly household income (NGN)	65,234.03	61,281.33	61,167.87	58,128.35	54,106.39	56,990.53	3952.70	4066.15	113.45	4021.96	1137.82	-2884.14	0.03	0.03	0.00	0.03	0.01	-0.03
	(5,624.59)	(3,643.11)	(3,210.99)	(5,413.50)	(3,297.45)	(4,558.77)												
Hours spent on work for pay in a day (number)	7.03	7.15	7.00	5.82	5.69	5.77	-0.12	0.03	0.15	0.13	0.05	-0.08	-0.04	0.01	0.05	0.04	0.02	-0.03
	(0.11)	(0.11)	(0.11)	(0.12)	(0.12)	(0.11)												
Hours spent on care in a day (number)	3.93	3.78	4.04	5.29	5.44	5.31	0.15	-0.11	-0.26**	-0.14	-0.02	0.13	0.06	-0.04	-0.10**	-0.04	0.00	0.04
	(0.10)	(0.09)	(0.10)	(0.13)	(0.13)	(0.12)												
Hours spent on household chores in a day (number)	1.99	1.95	2.05	3.13	3.17	3.20	0.05	-0.06	-0.10	-0.03	-0.06	-0.03	0.04	-0.05	-0.08	-0.02	-0.04	-0.02
	(0.05)	(0.05)	(0.05)	(0.06)	(0.07)	(0.06)												
Personally agree with the male breadwinner norm? (Agree = 1)	0.37	0.41	0.38	0.30	0.29	0.26	-0.04	-0.02	0.02	0.02	0.04*	0.02	-0.08	-0.03	0.05	0.04	0.09*	0.05
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)												
Perceived male breadwinner norm (Out of 10 neighbors, agree)	5.17	5.44	5.33	4.68	4.58	4.40	-0.27*	-0.16	0.11	0.10	0.28**	0.18	-0.10*	-0.06	0.04	0.04	0.10**	0.07
	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)												
Number of observations	750	750	750	750	750	750												
F-test of joint significance (P-value)							0.47	0.96	0.48	0.80	0.30	0.67	0.47	0.96	0.48	0.80	0.30	0.67

Notes: ***, **, and * indicate significance at the 1, 5, and 10 percent critical level. The value displayed for t-tests are the differences in the means across the groups. The value displayed for F-tests are p-values. All variables are measured during the baseline.

Table 2: Impact on Economic Outcomes

	(1) Employment (Yes=1; No=0)	(2) Hours worked for pay in a day (number)	(3) Income and consumption index	(4) Annual business profits (IHS)	(5) No. of workers employed
Panel: ITT estimates - Full sample					
Women (0/1)	-0.043***	-0.749***	0.022	-0.971***	-0.350**
	(0.012)	(0.159)	(0.055)	(0.238)	(0.157)
T1: Interpersonal only	0.011	0.112	0.136***	0.050	0.042
	(0.009)	(0.157)	(0.051)	(0.219)	(0.166)
T2: Combination Inter Intra	0.012	0.134	0.011	-0.061	-0.032
	(0.008)	(0.155)	(0.051)	(0.220)	(0.169)
T1 × Women	0.015	-0.006	-0.163**	0.408	-0.008
	(0.015)	(0.222)	(0.078)	(0.317)	(0.218)
T2 × Women	0.018	-0.199	0.066	0.568*	0.105
	(0.015)	(0.223)	(0.074)	(0.317)	(0.220)
Observations	3890	3890	3890	3756	3756
R-squared	0.041	0.113	0.052	0.031	0.076
Control group mean	0.971	7.453	-0.002	12.726	2.287
Treatment effect of T1 | Women	0.026**	0.106	-0.027	0.457**	0.033
P-value: T1 + T1 × Women = 0	*0.046*	*0.502*	*0.655*	*0.047*	*0.813*
Treatment effect of T2 | Women	0.031**	-0.065	0.078	0.507**	0.073
P-value: T2 + T2 × Women = 0	*0.015*	*0.687*	*0.148*	*0.026*	*0.602*
Marginal effect intrapersonal skills | Men	0.002	0.022	-0.125**	-0.110	-0.074
P-value (Marginal effect | Men = 0)	*0.818*	*0.886*	*0.014*	*0.604*	*0.650*
Marginal effect intrapersonal skills | Women	0.005	-0.170	0.104*	0.050	0.040
P-value (Marginal effect | Women = 0)	*0.673*	*0.290*	*0.070*	*0.814*	*0.784*

Notes: $^{*}p <= 0.10$, $^{**}p <= 0.05$, $^{***}p <= 0.01$.
(1) Outcome variables are defined as follows: *Employment* equals 1 if the respondent engaged in any income-generating activity in the past 30 days; *hours worked for pay in a day* measures the number of hours worked for pay in a typical day; *total annual profits* are recorded in Nigerian naira and transformed using the inverse hyperbolic sine (IHS); and *number of employees* refers to those employed by the business at endline.
(2) The *income and consumption index* is a Kling index constructed from *total household income*, measured in Nigerian naira and transformed using the inverse hyperbolic sine (IHS); *food consumption*, defined as the household's daily adult-equivalent (AE) expenditure on food; and a *food security index*, a binary variable equal to 1 if, in the past 7 days, the respondent reported that either a household member skipped a meal or an adult worried about not having enough food.
(3) T1: *Interpersonal only* is a binary indicator for the interpersonal-skills-only treatment group; T2: *Combination Inter Intra* is a binary indicator for the combined interpersonal and intrapersonal skills training group. *Women* equals 1 if the respondent is female and 0 if male. T1 and T2 effect for women and the p-value for the marginal effect of intrapersonal skills for men and women are shown at the bottom of the tables.
(4) Regressions use an ANCOVA specification where applicable, accounting for the baseline level of the outcome variable. All regressions include controls for age, marital status, and education. Randomization strata include fixed effects for state and APPEALS WYEP value chain.
(5) Robust standard errors are reported in parentheses; q-values are reported in the Appendix.

Table 3: Impact on Socioemotional Skills Index Measures

	Self Reported SES	Self Reported Interpersonal SES	Self Reported Intrapersonal SES	Behavioral SES	Behavioral Interpersonal SES	Behavioral Intrapersonal SES
Panel: ITT estimates - Full sample						
Women (0/1)	-0.148***	-0.127**	-0.152***	-0.006	-0.044	0.043
	(0.053)	(0.055)	(0.051)	(0.052)	(0.053)	(0.053)
T1: Interpersonal only	0.068	0.082	0.043	0.034	0.032	0.029
	(0.053)	(0.056)	(0.052)	(0.052)	(0.051)	(0.052)
T2: Combination Inter Intra	-0.017	-0.022	-0.008	0.037	0.031	0.033
	(0.054)	(0.056)	(0.052)	(0.051)	(0.051)	(0.051)
T1 × Women	0.023	0.043	-0.002	0.011	0.058	-0.049
	(0.075)	(0.078)	(0.073)	(0.075)	(0.075)	(0.075)
T2 × Women	0.053	0.049	0.052	-0.061	-0.020	-0.101
	(0.076)	(0.079)	(0.073)	(0.074)	(0.075)	(0.073)
Observations	3610	3610	3610	3860	3863	3872
R-squared	0.163	0.101	0.208	0.115	0.085	0.132
Control group mean	0.061	0.050	0.065	0.006	0.027	-0.022
Treatment effect of T1 | Women	0.091*	0.126**	0.041	0.045	0.090*	-0.020
P-value: T1 + T1 × Women = 0	*0.085*	*0.022*	*0.424*	*0.406*	*0.099*	*0.708*
Treatment effect of T2 | Women	0.037	0.026	0.044	-0.024	0.012	-0.068
P-value: T2 + T2 × Women = 0	*0.488*	*0.638*	*0.388*	*0.652*	*0.829*	*0.190*
Marginal effect intrapersonal skills | Men	-0.085	-0.105*	-0.051	0.003	-0.001	0.003
P-value (Marginal effect | Men = 0)	*0.120*	*0.067*	*0.334*	*0.961*	*0.984*	*0.948*
Marginal effect intrapersonal skills | Women	-0.055	-0.099*	0.003	-0.069	-0.079	-0.048
P-value (Marginal effect | Women = 0)	*0.314*	*0.079*	*0.957*	*0.203*	*0.153*	*0.361*

Notes: $^{*}p <= 0.10$, $^{**}p <= 0.05$, $^{***}p <= 0.01$.
(1) Outcome variables are aggregates of standardized indices of interpersonal and intrapersonal socioemotional skills based on self-reported and situational judgment tests (SJTs) respectively.
(2) T1: *Interpersonal only* is a binary indicator for the interpersonal-skills-only treatment group; T2: *Combination Inter Intra* is a binary indicator for the combined interpersonal and intrapersonal skills training group. *Women* equals 1 if the respondent is female and 0 if male. T1 and T2 effect for women and the p-value for the marginal effect of intrapersonal skills for men and women are shown at the bottom of the tables.
(3) Regressions use an ANCOVA specification where applicable, accounting for the baseline level of the outcome variable. All regressions include controls for age, marital status, and education. Randomization strata include fixed effects for state and APPEALS WYEP value chain. Results are robust to additionally controlling for a standardized social-desirability-bias index and enumerator-gender fixed effects.
(4) Robust standard errors are reported in parentheses.

Table 4: Impact on Business Practices and Investments

	(1) Business practices - Aggregate	(2) Value of business capital ('000 NGN)	(3) Value of productive assets owned ('000 NGN)	(4) Value of household assets owned ('000 NGN)	(5) Amount of savings (NGN)
Panel: ITT estimates - Full sample					
Women (0/1)	0.001	-155.905**	-829.984**	184.719	-61980.844***
	(0.038)	(64.938)	(333.764)	(582.958)	(17127.322)
T1: Interpersonal only	0.049	-16.741	231.889	-131.801	29135.322
	(0.038)	(69.771)	(395.654)	(594.706)	(21468.655)
T2: Combination Inter Intra	0.006	14.418	-231.357	-260.686	27456.710
	(0.039)	(70.868)	(367.051)	(564.752)	(20388.460)
T1 × Women	-0.020	-79.380	492.559	565.122	-1877.853
	(0.053)	(86.262)	(526.436)	(869.525)	(26583.056)
T2 × Women	0.022	16.337	676.650	649.481	9477.690
	(0.054)	(91.440)	(479.364)	(848.474)	(25698.959)
Observations	3683	3756	3890	3890	3610
R-squared	0.041	0.056	0.033	0.017	0.019
Control group mean	-0.019	522.529	3198.475	4265.320	1.76e+05
Treatment effect of T1 | Women	0.029	-96.121*	724.449**	433.321	27257.469*
P-value: T1 + T1 × Women = 0	*0.437*	*0.057*	*0.038*	*0.498*	*0.085*
Treatment effect of T2 | Women	0.028	30.756	445.293	388.794	36934.400**
P-value: T2 + T2 × Women = 0	*0.453*	*0.590*	*0.149*	*0.540*	*0.018*
Marginal effect intrapersonal skills | Men	-0.042	31.159	-463.246	-128.885	-1678.612
P-value (Marginal effect | Men = 0)	*0.275*	*0.660*	*0.227*	*0.820*	*0.939*
Marginal effect intrapersonal skills | Women	-0.001	126.877**	-279.156	-44.527	9676.932
P-value (Marginal effect | Women = 0)	*0.984*	*0.015*	*0.455*	*0.948*	*0.583*

Notes: $^{*}p <= 0.10$, $^{**}p <= 0.05$, $^{***}p <= 0.01$.

(1) Outcome variables include: *business practices (aggregate index)*, defined as the average of all practice items across record keeping, marketing, stock control, and financial planning, following McKenzie and Woodruff (2017). All business-practice items are standardized (Kling z-scores) based on averaged 1–3 frequency responses (1 = less often, 2 = sometimes, 3 = more often) across both IGAs, with higher values indicating more frequent adoption of good practices; *value of business capital* (machinery and equipment); *value of productive and household assets*; and *total savings*, all measured in Nigerian naira (NGN). Monetary variables are winsorized at the 99th percentile.

(2) Winsorization is applied in place of the inverse hyperbolic sine (IHS) transformation when a large share of observations are zero.

(3) T1: *Interpersonal only* is a binary indicator for the interpersonal-skills-only treatment group; T2: *Combination Inter Intra* is a binary indicator for the combined interpersonal and intrapersonal skills training group. *Women* equals 1 if the respondent is female and 0 if male. T1 and T2 effect for women and the p-value for the marginal effect of intrapersonal skills for men and women are shown at the bottom of the tables.

(4) Regressions use an ANCOVA specification where applicable, accounting for the baseline level of the outcome variable. All regressions include controls for age, marital status, and education. Randomization strata include fixed effects for state and APPEALS WYEP value chain.

(5) Robust standard errors are reported in parentheses.

Table 5: Impact on Marital Relationship and Attitudes toward IPV

	(1) Acceptability of violence (Yes=0; No=1)	(2) Satisfaction with married life index	(3) Trust within marriage index	(4) Conflict resolution index	(5) Communication with spouse (Yes=1; No=0)
Panel: ITT estimates - Full sample					
Women (0/1)	0.003	-0.073	-0.016	-0.031	-0.002
	(0.014)	(0.068)	(0.067)	(0.068)	(0.032)
T1: Interpersonal only	0.022*	0.131**	0.044	0.105	-0.017
	(0.012)	(0.065)	(0.066)	(0.068)	(0.032)
T2: Combination Inter Intra	-0.001	0.152**	0.078	0.156**	-0.004
	(0.014)	(0.064)	(0.068)	(0.065)	(0.032)
T1 × Women	-0.003	-0.031	-0.113	-0.067	-0.002
	(0.017)	(0.094)	(0.095)	(0.095)	(0.045)
T2 × Women	0.026	-0.047	-0.061	-0.046	-0.017
	(0.018)	(0.091)	(0.091)	(0.092)	(0.045)
Observations	2610	2610	2610	2610	2610
R-squared	0.014	0.019	0.023	0.012	0.033
Control group mean	0.956	0.031	0.011	0.012	0.677
Treatment effect of T1 | Women	0.019	0.101	-0.069	0.038	-0.019
P-value: T1 + T1 × Women = 0	*0.110*	*0.144*	*0.318*	*0.570*	*0.540*
Treatment effect of T2 | Women	0.025**	0.105	0.017	0.111*	-0.021
P-value: T2 + T2 × Women = 0	*0.030*	*0.103*	*0.782*	*0.089*	*0.508*
Marginal effect intrapersonal skills | Men	-0.023*	0.021	0.034	0.051	0.013
P-value (Marginal effect | Men = 0)	*0.062*	*0.736*	*0.602*	*0.440*	*0.693*
Marginal effect intrapersonal skills | Women	0.006	0.004	0.086	0.072	-0.002
P-value (Marginal effect | Women = 0)	*0.528*	*0.946*	*0.183*	*0.256*	*0.956*

Notes: $^{*}p <= 0.10$, $^{**}p <= 0.05$, $^{***}p <= 0.01$.

(1) Outcome variables are defined as follows: (i) *Acceptability of violence index* is a binary variable equal to 1 if intimate partner violence is not accepted in any listed scenario (0 otherwise); (ii) *Satisfaction with married life*, *Trust within marriage*, and *Conflict resolution* are standardized indices; (iii) *Communication with spouse* is a binary variable equal to 1 if the respondent reports that they at least fairly often discuss either their employment/business or the division of household responsibilities with their spouse.

(2) The sample in Table 8 is restricted to married respondents (N = 2,610) at endline only.

(3) T1: *Interpersonal only* is a binary indicator for the interpersonal-skills-only treatment group; T2: *Combination Inter Intra* is a binary indicator for the combined interpersonal and intrapersonal skills training group. *Women* equals 1 if the respondent is female and 0 if male. T1 and T2 effect for women and the p-value for the marginal effect of intrapersonal skills for men and women are shown at the bottom of the tables.

(4) Regressions use an ANCOVA specification where applicable, accounting for the baseline level of the outcome variable. All regressions include controls for age, marital status, and education. Randomization strata include fixed effects for state and APPEALS WYEP value chain.

(5) Robust standard errors are reported in parentheses.

Table 6: Impact on Women's Empowerment and Decision-Making

	(1) Modified Pro-WEAI index	(2) Decision-making power index
Panel: ITT estimates - Women sample		
T1: Interpersonal only	0.015	-0.081
	(0.064)	(0.111)
T2: Combination Inter Intra	0.069	-0.058
	(0.064)	(0.114)
Observations	1943	1943
R-squared	0.045	0.041
Control group mean	6.838	3.772
Marginal effect intrapersonal skills | Women	0.053	0.023
P-value (Marginal effect | Women = 0)	*0.395*	*0.826*

Notes: $^{*}p <= 0.10$, $^{**}p <= 0.05$, $^{***}p <= 0.01$.
(1) Outcome variables include the modified pro-WEAI empowerment index, a measure of women's empowerment based on eight indicators in which the respondent is considered adequate: self-efficacy; attitudes toward intimate partner violence (IPV); input into productive decisions; ownership of land and other assets; access to and decisions on financial services; control over use of income; work–life balance; and mobility (visiting important locations). The decision-making power index is the count of decisions for which the woman reports being the sole or joint decision-maker. Results are shown for the full sample of women.
(2) T1: *Interpersonal only* is a binary indicator for the interpersonal-skills-only treatment group; T2: *Combination Inter Intra* is a binary indicator for the combined interpersonal and intrapersonal skills training group.
(3) All regressions include controls for age, marital status, and education. Randomization strata include fixed effects for state and APPEALS WYEP value chain.
(4) Robust standard errors are reported in parentheses.

Figure 1: WOMEN - Heterogeneous treatment effects by gender norms

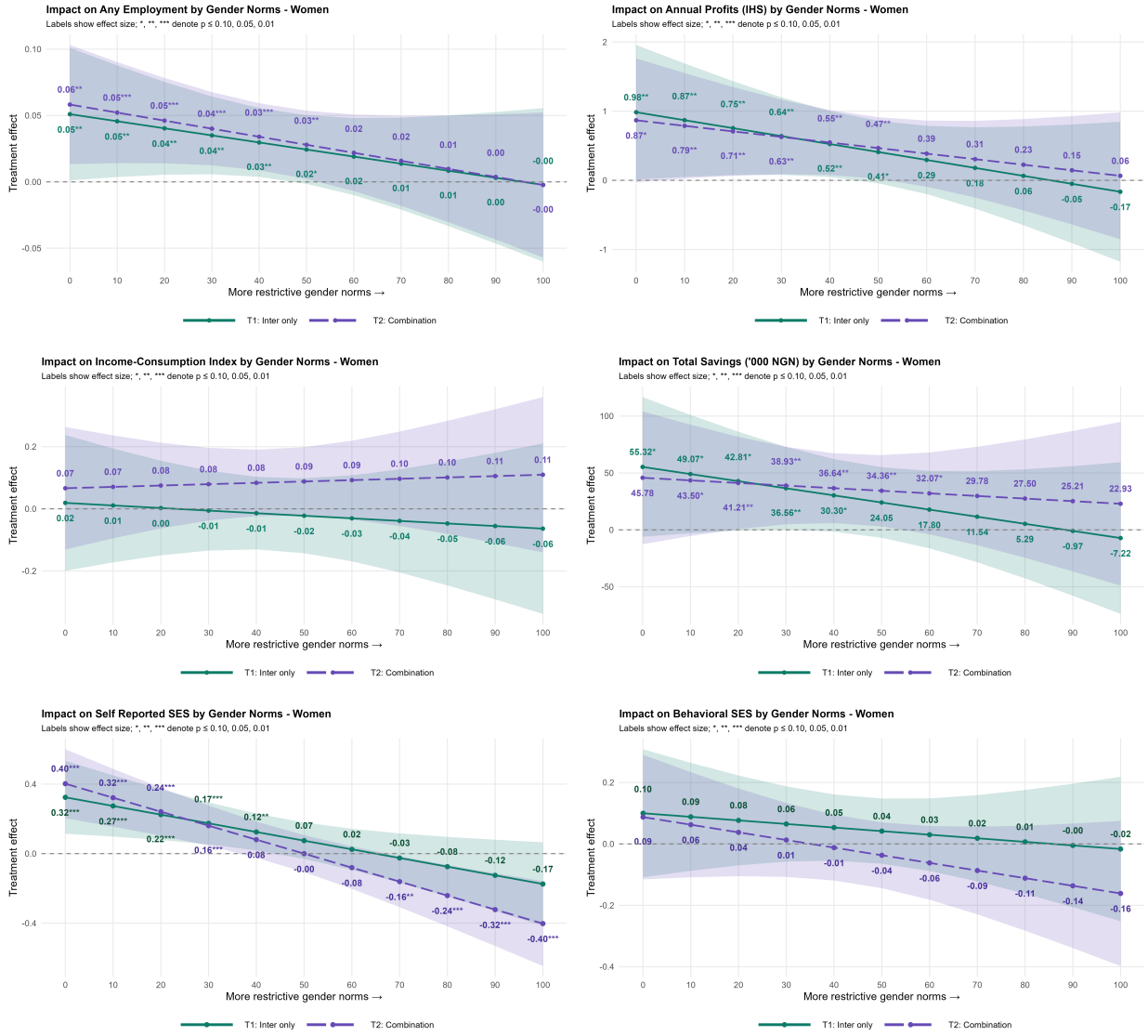
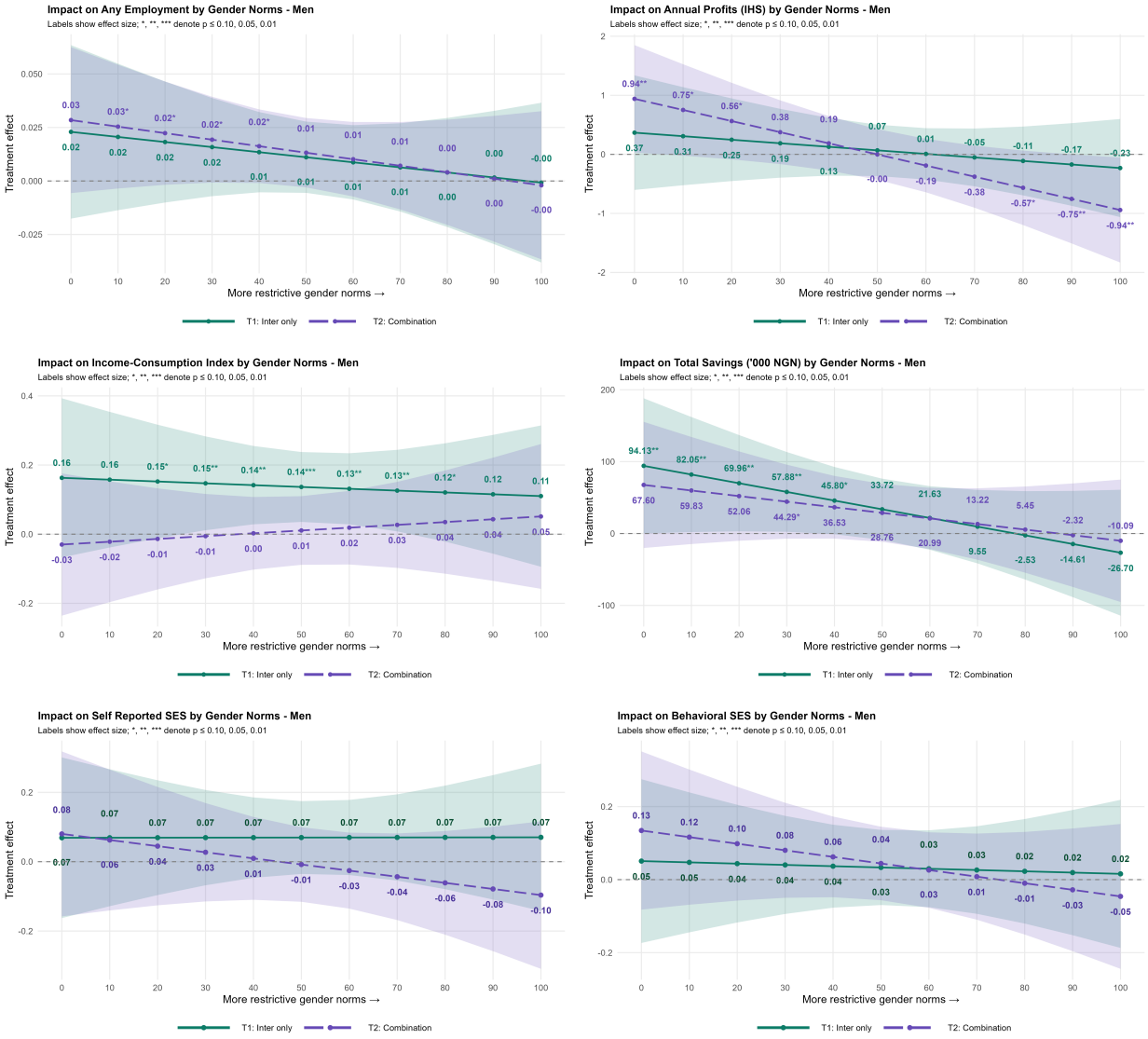


Figure 2: MEN - Heterogeneous treatment effects by gender norms



Supplementary Appendix

A Further Details on Research Design

A.1 Impact Evaluation Design

The research design is summarized in Figure 3. This impact evaluation is an individual-level randomized controlled trial (RCT), designed to identify the effects of interpersonal and combination (inter- and intra-personal) SES training. As the goal of the evaluation is to also understand the gender-disaggregated impact of the program, the eligible beneficiaries are stratified by gender. Note, the participants in the control group are still beneficiaries of the APPEALS WYEP bundled program but are not offered SES training. The use of randomization allows us to attribute differences between groups to the SES intervention itself. Comparing outcomes for the treatment and control group arms provides rigorous evidence on whether the program can generate impact.

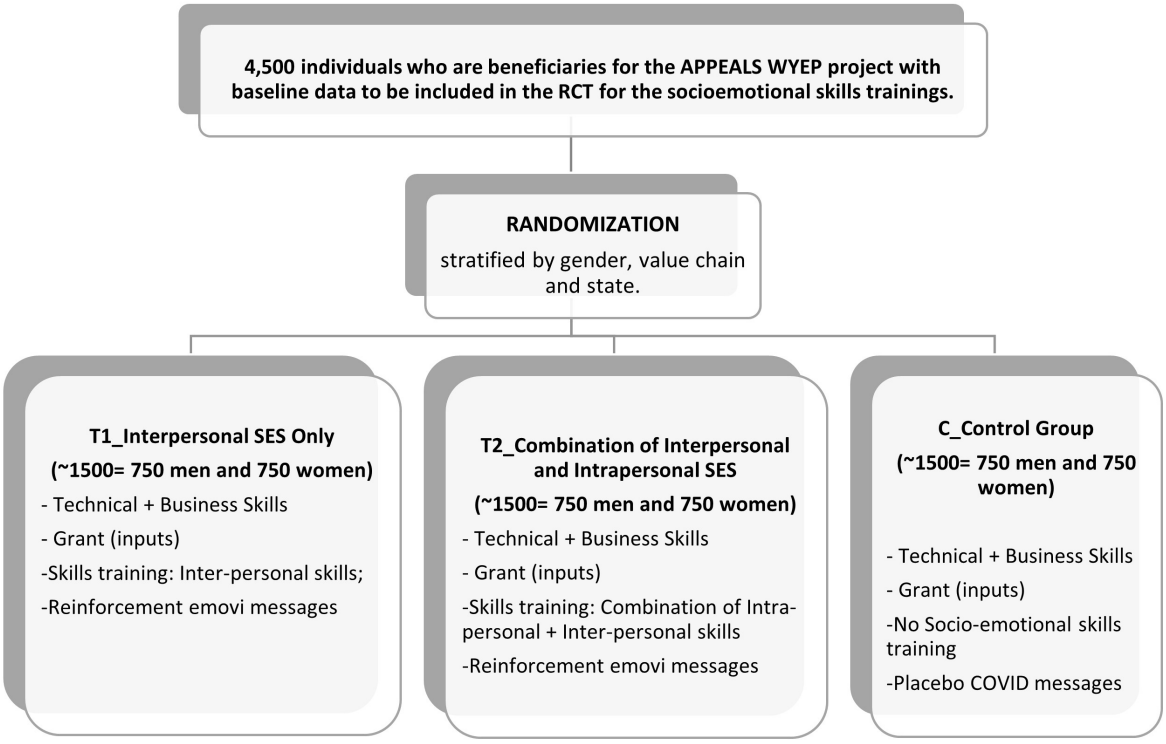


Figure 3: Impact Evaluation Design

The experimental design is a stratified randomized controlled trial (RCT) impact evalua-

tion of the SES trainings. Beneficiaries were assigned to three distinct groups, with individual random assignment stratified by gender of the business owner, by value chain selected for the APPEALS WYEP project, and by state geographic location:[39]

- T1: Treatment 1: Receives interpersonal SES only through classroom instruction and reinforcement messages.
- T2: Treatment 2: Receives a combination of intrapersonal and interpersonal SES through classroom instruction and reinforcement messages.
- C: Control Group: Receives no classroom SES training and receives placebo messaging on COVID-19 information.

The treatment arms are mutually exclusive. Comparing average outcomes for the treatment and control group arms post-intervention provides rigorous evidence on whether each program can generate impact. In each stratum, the sample is randomly assigned to one of the treatment arms. We randomly allocate the APPEALS WYEP beneficiaries into T1 (1/3), T2 (1/3), and C (1/3). The impact of T1 (interpersonal skills only) is assessed by comparing T1 outcomes to C outcomes, while the relative effect of the combined curriculum T2 (intrapersonal + interpersonal skills) versus the higher-dosage interpersonal-only curriculum is estimated by comparing T2 outcomes to T1 outcomes. The combined impact of the combination of intra- and inter-personal skills is estimated by comparing T2 outcomes to C outcomes. This experiment enables us to identify the impact of offering interpersonal skills only relative to one that combines inter- and intra-personal skills to aspiring agribusiness owners.

The control group was not invited to attend any SES training for the duration of the study. Since the reinforcement messages are to be sent over the phone, in order to minimize sharing of video content between treatment and control groups, the research team also developed placebo video messages containing information about COVID-19 to send to the control group and treatment group who did not attend a classroom-based training. The treatment group who did attend the classroom training gets specific skills-related content depending on the treatment assignment i.e., T1 receives only the interpersonal skills content and T2 receives both inter- and intra-personal skills content.

[39]Our sample comprises both men and women agribusiness owners across 6 states. The eligibility criteria to the APPEALS WYEP for men included being aged 18 to 40 years, unemployed or underemployed, graduates of universities or colleges of agriculture or completed secondary education with minimum of 18 months experience in agricultural value chains. The same criteria were set for women with the following exceptions: women above 40 years with less than senior secondary education but with experience in the agricultural value chain were also eligible for the program. The randomization is stratified by state, gender, and value chain. Value chain is that selected for their APPEALS WYEP agribusiness out of eleven priority value chains identified by the project.

A.2 Hypotheses

The study investigates how each training program affects business performance and productivity, measuring key enterprise-level outcomes such as annual and monthly profits and sales, capital investment, employment, and hours worked. It also examines changes in the business owner's SES, household income, consumption, intrahousehold power relations, and women's empowerment and decision-making within the household. The theory behind the SES training is that investment in SES leaves the respondent with a greater ability to make more effective use of the capital and technical skills provided by the APPEALS WYEP program. This leads to an improvement in business practices, and/or increased women's decision-making power and agency. This in turn improves business performance, making them and their household wealthier.

There are five key hypotheses to test:

Hypothesis 1: Neither interpersonal SES training (T1) nor the combination of interpersonal + intrapersonal SES training (T2) has an impact on economic outcomes, well-being outcomes, and decision-making power.

Hypothesis 2: Neither the interpersonal SES training (T1) nor the combination training (T2) has an impact on socioemotional skill constructs.

Hypothesis 3: The interpersonal SES training (T1) and combination training (T2) has no differentiated impact on SES, decision-making power, economic outcomes, and well-being outcomes.

Hypothesis 4: The impact of either treatment arm does not vary by gender.

Hypothesis 5: The impact of either treatment arm does not vary with gender norms at baseline.

A.3 Theory of Change

The SES intervention is expected to impart social and emotional skills such that beneficiaries profit more effectively from the economic components of the APPEALS WYEP program.

The APPEALS WYEP aims to address major constraints to market entry faced by potential agribusiness entrepreneurs, thereby providing business opportunities for women and young men as well as combating unemployment and low agricultural output. The combination of in-kind grants, training and business registration certificates gives beneficiaries improved access to both inputs and sales markets for the beneficiary to start their business activity. Beneficiaries may potentially obtain (additional) credits or grants from informal or formal sources to expand their business(es) and employ additional workers, making use of their improved access to inputs and sales markets. Sales generated by the firm's outputs

result in profits which can be either re-invested in the firm or used as income to support household consumption or investments, thus improving economic well-being. Higher household income might furthermore lead to an improvement in social welfare indicators, such as access to health services or children's school attendance. By employing additional workers, the new enterprises may also contribute to employment creation in the local community.

The set of SES included in the curricula was designed to span a range of skills while capturing and differentiating between skills that have previously been found to matter for labor market outcomes. Training on intrapersonal skills may improve: (1) awareness and emotional regulation, such that individuals can set goals, determine obstacles and areas for growth, and remain calm in the face of obstacles, (2) confidence and ability to persevere and focus despite obstacles, (3) self-control to better manage attention, time, and funds, and (4) personal initiative and problem-solving and decision-making, to plan for opportunities, innovate and pro-actively tackle challenges, and search and access available resources. Training on interpersonal skills may improve beneficiaries' (1) sense of empathy, and thus improve their ability to build trust and resolve issues with collaborators and customers, (2) social perceptiveness and discovery of opportunities, (3) ability to listen and communicate clearly and assert their needs and wants, (4) ability to proactively initiate relationships and grow business networks, and (5) ability to persuade, negotiate, and collaborate with competitors for market share, with suppliers and customers for pricing and synergies, and with household members for access to inputs, assets, capital, and time. The Theory of Change is summarized in Figure 4.

A.4 Implementation Costs of the SES Training

The intervention cost of the SES training is estimated from research and government budgets. To hire a consultant for the curriculum design and support for facilitation cost a total US$105,000. A total cost of US$306,000 was paid for implementation of the trainings across all six states. These variable costs for delivering the trainings include trainer salaries, travel, venue hire, transport costs for participants, and refreshments for trainers and participants. This comes to a total cost of US$411,000 and since 3,000 were trained across the six states that is equivalent to $137 per participant trained.

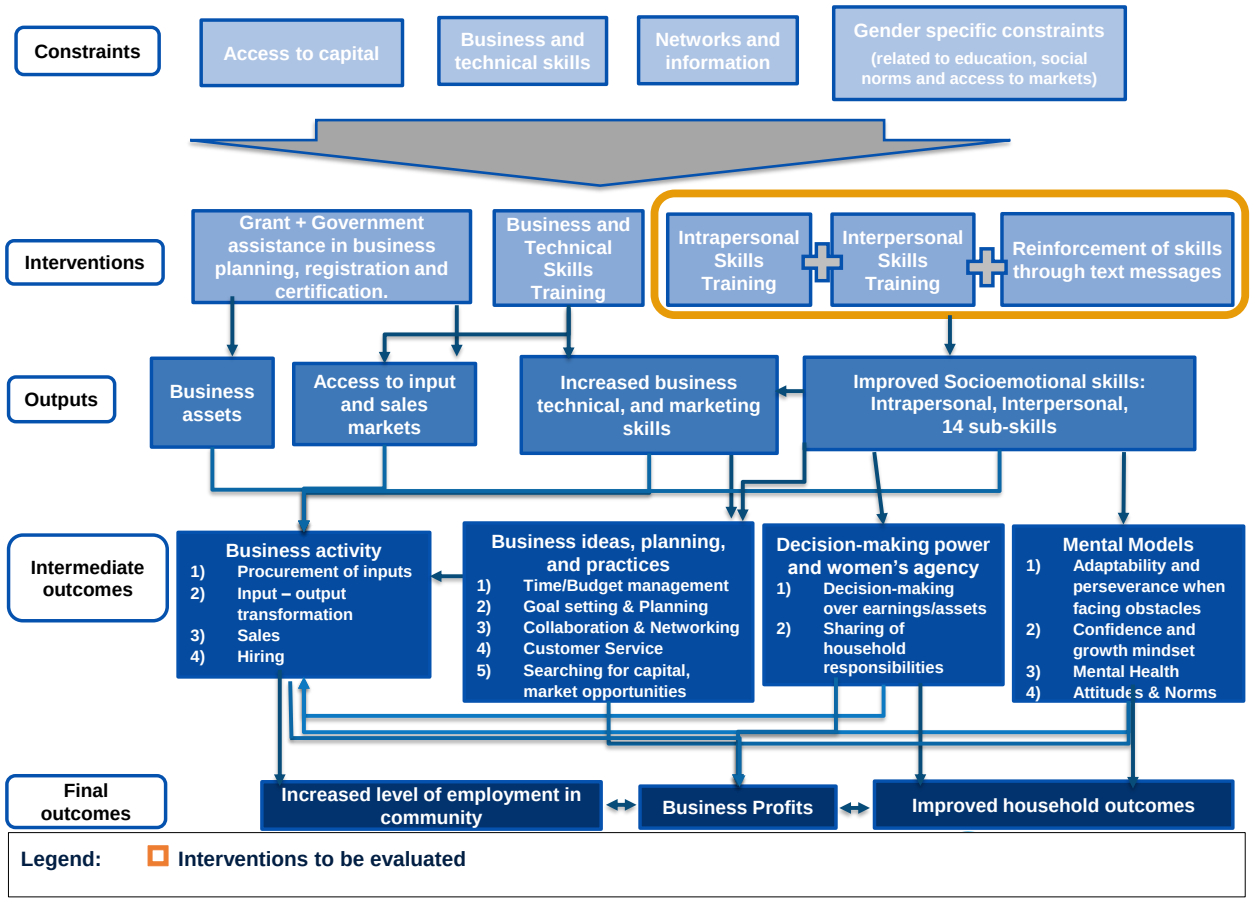


Figure 4: Theory of Change

Table A.1: Training Take-up Rates

Take-up Rate of SES Training By State	***Numbers and Percentage Trained in Each State***				***Percentage Trained by Treatment Assigment and Gender***			
	Numbers Trained in Each State			***Total Percentage Trained***	**T1 Inter only Male**	**T2 Combination inter_intra Male**	**T1 Inter only Female**	**T2 Combination inter_intra Female**
State	**No**	**Yes**	**Total**	**% Trained out of those Assigned**				
CrossRiver	87	413	500	82.6%	80.0%	86.4%	83.2%	80.8%
Kaduna	79	421	500	84.2%	86.4%	86.4%	87.2%	76.8%
Kano	132	368	500	73.6%	74.4%	72.8%	72.8%	74.4%
Kogi	103	397	500	79.4%	80.0%	78.4%	78.4%	80.8%
Lagos	133	367	500	73.4%	67.2%	73.6%	75.2%	77.6%
Enugu	96	404	500	80.8%	79.2%	84.0%	76.8%	83.2%
Total	630	2,370	3,000	**79.0%**	77.9%	80.3%	78.9%	78.9%

Notes: Take-up rates calculated using administrative data collected by the implementing partner and beneficiary surveys collected during the trainings.

Table A.2: Training Take-up Correlates

	(1)	(2)	(3)						
	Control Group (Not Invited to a Training)	Treatment and Did Not Attend Training	Treatment and Attended the Training	t-test Difference			Normalized difference		
Variable	**Mean/SE**	**Mean/SE**	**Mean/SE**	**(1)-(2)**	**(1)-(3)**	**(2)-(3)**	**(1)-(2)**	**(1)-(3)**	**(2)-(3)**
Gender of respondent (Female = 1 / Male = 0)	0.500	0.502	0.500	-0.002	0.000	0.002	-0.003	0.001	0.004
	(0.013)	(0.020)	(0.010)						
Age (Number)	33.054	31.456	33.231	1.598***	-0.177	-1.776***	0.213	-0.023	-0.237
	(0.200)	(0.289)	(0.158)						
Married (Yes = 1)	0.618	0.569	0.610	0.049**	0.008	-0.041*	0.100	0.016	-0.083
	(0.013)	(0.020)	(0.010)						
Worked for pay in the last week (Yes = 1)	0.585	0.552	0.573	0.032	0.012	-0.021	0.065	0.024	-0.042
	(0.013)	(0.020)	(0.010)						
Business (Yes = 1)	0.779	0.768	0.775	0.011	0.005	-0.006	0.026	0.011	-0.015
	(0.011)	(0.017)	(0.009)						
Average Monthly Profits Unconditional (Naira)	25,839.589	26,703.746	24,313.112	-864.157	1526.476	2390.634	-0.016	0.028	0.049
	(1,512.672)	(1,889.867)	(1,043.482)						
Number of Employees (Number)	0.987	1.056	1.038	-0.069	-0.051	0.018	-0.033	-0.025	0.008
	(0.051)	(0.085)	(0.043)						
Generalized self-efficacy score	4.168	4.169	4.162	-0.001	0.006	0.007	-0.002	0.014	0.015
	(0.011)	(0.018)	(0.009)						
Farming activities on your own farm (Yes = 1)	0.469	0.424	0.502	0.045*	-0.033**	-0.078***	0.090	-0.066	-0.156
	(0.013)	(0.020)	(0.010)						
Farming activities on someone else's farm (Yes = 1)	0.127	0.118	0.129	0.009	-0.002	-0.011	0.028	-0.007	-0.035
	(0.009)	(0.013)	(0.007)						
Non-farm activities (Yes = 1)	0.531	0.528	0.538	0.003	-0.007	-0.010	0.006	-0.015	-0.020
	(0.013)	(0.020)	(0.010)						
Livestock rearing (Yes = 1)	0.343	0.358	0.340	-0.014	0.003	0.018	-0.030	0.007	0.037
	(0.012)	(0.019)	(0.010)						
Wage Employment (Yes = 1)	0.099	0.089	0.109	0.010	-0.010	-0.020	0.035	-0.033	-0.068
	(0.008)	(0.011)	(0.006)						
Household Income (Naira)	61,681.186	68,528.084	55,693.729	-6846.898	5987.457	12834.355***	-0.051	0.047	0.120
	(3,903.042)	(4,634.560)	(2,000.579)						
Number of observations	1500	630	2370						

Note: The value displayed for t-tests are the differences in the means across the groups. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table A.3: Estimated Percentage of Beneficiaries out of Eligible Population

	Percentage who met the eligibility criteria out of total population			Projected Population in 2019 (NBS, 2020)			Target Population (NBS & NLSS)			Number of APPEALS WYEP supported beneficiaries			Percent of APPEALS WYEP out of eligible population			Percent of APPEALS WYEP out of total population		
State	Male	Female	Both	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Both	Male	Female	Both
Cross River	4.1%	5.3%	4.7%	2,129,260	2,045,760	4,175,020	88,107	107,852	196,785	751	949	1,700	0.9%	0.9%	0.9%	0.04%	0.05%	0.04%
Enugu	5.2%	9.2%	7.4%	2,242,010	2,154,088	4,396,098	115,893	198,381	325,018	757	943	1,700	0.7%	0.5%	0.5%	0.03%	0.04%	0.04%
Kaduna	3.9%	7.9%	6.0%	4,245,386	4,078,899	8,324,285	165,708	324,165	496,906	723	993	1,716	0.4%	0.3%	0.3%	0.02%	0.02%	0.02%
Kano	3.9%	9.0%	6.5%	7,269,310	6,984,239	14,253,549	283,404	626,957	926,040	997	705	1,702	0.4%	0.1%	0.2%	0.01%	0.01%	0.01%
Kogi	4.9%	7.8%	6.4%	2,118,404	2,035,330	4,153,734	104,262	158,579	266,889	851	893	1,744	0.8%	0.6%	0.7%	0.04%	0.04%	0.04%
Lagos	8.6%	13.2%	10.8%	6,514,171	6,258,713	12,772,884	559,763	823,030	1,383,012	753	985	1,738	0.1%	0.1%	0.1%	0.01%	0.02%	0.01%
	5.1%	8.7%	7.0%										0.5%	0.4%	0.4%	0.03%	0.03%	0.03%

Notes: Data Sources: Eligibility statistics are from the National Bureau of Statistics (NBS) National Living Standard Survey (NLSS) 2020. Criteria used to estimate target population: for male: age -18 to 40, education - secondary secondary and above, unemployed in the last 7 days, and female: age - 18-70 years, education- junior secondary and above, unemployed in the last 7 days. Census Figures NBS Projected Census 2019 https://nigerianstat.gov.ng/download/1241121. Number of Beneficiaries from the APPEALS project.

A.5 Treatment-on-the-treated (TOT)

The take-up rates for the SES training were high at 79% across all 6 states (see Table A.1). In addition to estimating the ITT effects shown in equation 1, we estimate the treatment-on-the-treated (TOT) effect using instrumental variable (IV) estimation to estimate the local average treatment effect (LATE). The LATE can be interpreted as the average treatment effect (ATE) for compliers (i.e., those assigned to the treatment group who actually attend the SES trainings and those in the control group who do not receive treatment). We instrument attendance in the SES training with the random assignment to the treatment groups. This estimate enables us to control for non-compliance with treatment assignment as not everyone who is offered to attend the SES training attends (79% take-up). The LATE is only valid under the assumption that the very act of being invited to the SES trainings has no impact on outcomes even if you do not end up attending the training. Since for most respondents in our sample this assumption is likely to hold true we will estimate the LATE in addition to the ITT. The ToT results are similar to the ITT results so they are not shown.

A.6 Timeline of the Study

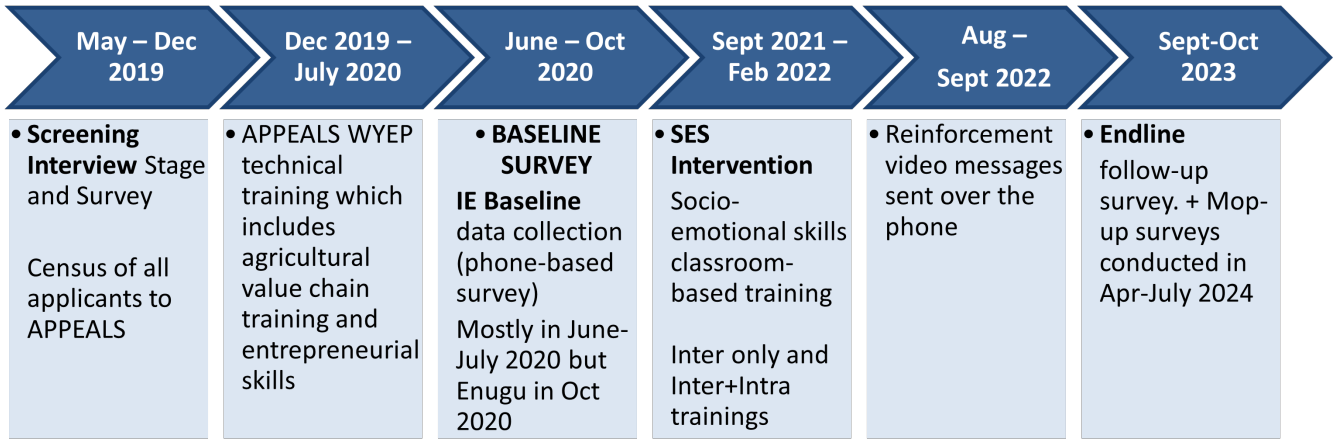


Figure 5: Timeline of the Study

B Definitions of SES and Categorization

ESTEEM Framework
Effective **S**ocio-emotional skills **T**o gain **E**conomic **EM**powerment

	Intrapersonal	Interpersonal
Awareness	**Emotional Awareness:** identifying and accepting one's emotions **Self-Awareness:** identifying and interpreting one's own thoughts and behaviors and evaluating one's strengths and weaknesses	**Listening:** attending to what other people are saying, taking time to understand other's point of view, asking clarifying questions and not interrupting at inappropriate times **Empathy:** understand another's viewpoint or thoughts and having emotional concern for another's situation or experience
Management	**Emotional Regulation:** maintaining or changing one's own emotions by controlling one's thoughts and behavioral responses **Self-Control:** focusing one's attention, staying on task, breaking habits, restraining impulses and keeping good self-discipline **Personal Initiative:** developing long-term goal, seeking opportunities to improve oneself and being motivated to put these plans and goals into action **Perseverance:** sustaining effort despite setbacks **Problem-Solving & Decision-Making:** approaching a problem by gathering information, generating a number of solutions and evaluating the consequences of these solutions before acting	**Expressiveness:** explaining ideas in a way that others will understand and openly expressing one's opinion **Interpersonal Relatedness:** taking actions intended to build trust and benefit others, initiating and maintaining relationships and being respectful, encouraging and caring for others **Interpersonal Influence:** communicating in a manner that changes other's perspectives and adapting one's behavior in situationally appropriate ways to influence others **Negotiation:** identifying one's own and others' interests and changing one's behaviors as a strategy for resolving interpersonal problems and achieving one's goals **Collaboration:** considering different perspective, listening and communicating in groups of two or more people, identifying situations involving group problem-solving and decision-making, and organizing and coordinating team members to create shared plans and goals

Figure 6: Definitions of Intrapersonal and Interpersonal SES

B.1 Socioemotional Skills Measures

B.1.1 Measure Development

This appendix provides additional details on the development of the SES measures.

Conceptual framework. The measurement team, including some of the authors, developed a framework of 14 socio-emotional skills (SES) (see Figure 4). The skills were designed to align with established frameworks (Collaborative for Academic, Social, and Emotional Learning, 2020; Goleman, 1998), be exhaustive and mutually exclusive, focus on skills tied to labor outcomes (Marsh et al., 2025; Delavallade et al., 2025), and incorporate social role theory to examine gender differences (Eagly and Wood, 2012b). Unlike the Big Five, which often perform poorly in LMIC contexts (Laajaj and Macours, 2021), this framework emphasizes mutable, economically relevant skills.

Cultural adaptation of framework. The framework was refined through ethnographic studies in Tanzania (Jukes et al., 2018, 2021; Ariapa and Akongo, 2021), focus groups in Nigeria, and interviews with African SES curriculum developers. These inputs emphasized how skills are intertwined, highlighted awareness skills and interpersonal skills (often excluded from SES curricula), and examined which behaviors were locally associated with each skill. Here, we excluded desirable behaviors with unclear policy implications (e.g., obedience, humor, being well-dressed).

Design and piloting of measures. The measurement team conducted an extensive review of existing measures and consulted with psychologists and practitioners. Development involved qualitative and cognitive interviews, and extensive translation process, expert reviews, piloting in three Sub-Saharan African countries, and enumerator protocols for low-literacy contexts. Self-report scales included 6–12 Likert items. Behavioral measures were selected or designed to be short ($\leq$5 minutes), offline-compatible, and open source.

In order to develop these measures, the team underwent an extensive process involving qualitative interviews, cognitive interviews, reviews by psychologists and SES trainers, and psychometric testing in several countries. Testing included an examination of inter-item reliability, exploratory and confirmatory factor analysis, the relationship between skills, and concurrent and predictive validity with employment variables. The development and results are shared in detail in Marsh et al. (2025) and Delavallade et al. (2025), and an overview of the design and scoring can be found in Appendix B.1.2.

Self-reported measures. Among the self-report scales in the ESTEEM framework, five skills are measured using original items developed by the measurement team based on theory, and nine are adapted from existing scales with the addition of selected original items. The sources for these items can be found in Marsh et al. (2025), and include influential papers

such as Schutte et al. (1998), Schwarzer and Jerusalem (1995), Duckworth and Quinn (2009), and Frese et al. (1997). These measures underwent several changes during the cognitive interview, content validity, and translation process.

Due to limited time, only seven of these measures were used in the endline of this study, two of which were original and five were adapted from existing measures, though two of these had a few original items. These seven measures were selected to include more of the management and composite (skills that often depend on other skills) skills that were expected to directly affect labor outcomes. The selection decision was also based on analysis, available at the time, of concurrent data of SES and labor outcomes. Self-reported measures included six to 12 items with a five-point Likert response scale.

Situational judgment tests (SJTs). While additional behavioral SES measures were collected, the analysis here includes one measure per skill. Here we share results for SJTs whenever possible such that results are as consistent and the theoretical concept captured is similar to that of self-reported measures. Each locally-sourced and tested scenario is followed by a series of actions associated with a given skill and respondents indicate "how likely" they are to take the action using a five-point scale.

SJTs are increasingly used in work settings and medical school admissions (Webster et al., 2020). SJTs avoid several key pitfalls of self-reported measures including domain ambiguity, reference bias, and social desirability bias. In practice, individuals were more likely to reflect on responses and predict "correct" responses. The only skills not represented by an SJT were *self-control* and *listening* which involved enumerator observation and a short task. They also capture broader constructs than many task-based measures, while remaining contextually relevant.

Behaviors associated with a given SES may differ with the domain; for example, one's expressiveness may differ based on whether they are interacting with employers, customers, employees, or household members. Thus, two to three scenarios are included per skill, each with a focus on economic empowerment. The scenarios were designed to examine SES in the context of economic empowerment, and to constrain the context in which individuals reported their likely behaviors in order to improve the comparability of responses from individuals with differing socioeconomic and demographic backgrounds. Measures utilize an adapted format that allows them to be administered verbally while minimizing cognitive load for respondents.

Task-based measures. Two skills were assessed using tasks: self-control (post-survey rating), and listening (listening prompt with comprehension questions and enumerator ratings).

Time cost Administering all 7 self-reports took 15 to 20 minutes; administering all 14

behavioral measures took 45 minutes, on average. Enumerator training time was approximately 7 hours for self-reports and 14 hours for behavioral measures.

B.1.2 Scoring

Self-report measures.

The score for each skill using the self-report measures was calculated as a simple average of item responses.[40] We use standardized variance-weighted indices, following Anderson (2008), of socio-emotional skills indices based on the self-reported measures. The measures of interpersonal skills include empathy, relatedness, and negotiation; and the intrapersonal skills include emotion regulation, perseverance, personal initiative, and problem- solving decision making (PSDM).

Behavioral measures.

Each scenario was followed by several possible actions; each was rated on a one to five scale of the individuals *likelihood* of taking the action. For example, one SJT examining *problem solving and decision-making* presented a scenario in which the individual owns a convenience store and profits have gone down because the price of lotion has increased. The individual is given some possible solutions and then asked how likely they are to "Calculate the effect of each solution on your profits".

For the SJTs, item lists for "good" actions—associated with utilizing a given skill—were separated into scenario-based dimensions. An arithmetic mean was used to combine actions within a scenario, and a geometric mean was used to combine scores across scenarios.

Final scores for individuals' skills were standardized by subtracting the mean and dividing by the standard deviation of the scores from the male sample. Scores for each skill category were then aggregated by calculating the geometric mean of the included individual skills. A modified geometric mean was utilized to prevent scores from zeroing out in the event that the score from one skill was zero.

The scores for task-based measures were based on simple averages. For listening, measures of active listening and listening comprehension were combined using a geometric mean.

[40]The team also ran the analysis using factor scores, available on request, but results were similar, and the simple average scores were considered simpler to utilize and interpret.

B.1.3 Examples of socioemotional skill measures from ESTEEM

Skill	Self-reported measure examples	Behavioral measure examples
Emotional awareness	"I know why my feelings change from one moment to another." / "I can usually describe what I am feeling at the moment in great detail."	SJT: Responding to a boss who criticizes you harshly (e.g., "How likely are you to notice how your boss's words made you feel?")
Self-awareness	"I understand my own behaviors." / "I monitor my thinking to ensure it is accurate."	SJT: Responding to poor performance review at work (e.g., "How likely are you to take time to think about how you can improve?")
Emotional regulation	"When I feel nervous, I know what to do to feel more relaxed." / "When I get upset, I can calm myself quickly."	SJT: Handling an employee who failed to deliver items for a client event (e.g., "How likely are you to take time to calm down before talking to your employee?")
Self-control	"I say inappropriate things." / "I do things that feel good in the moment, but I will regret later on."	Enumerator observation: e.g. "Respondent was able to pay close attention to questions, such that I rarely had to repeat myself."
Perseverance	"I finish whatever I begin." / "Setbacks don't discourage me."	SJT: You have a business in which you face several obstacles. (e.g., With each obstacle "How likely are you to let go of the business?")
Personal initiative	"I actively tackle problems." / "I take action immediately even when others don't."	SJT: Opening a shop without experience (e.g., "How likely is it that you will look for relevant training?")
Problem-solving and decision-making	"I solve most problems if I put in the necessary effort." / "I can find creative solutions to unplanned problems."	SJT: Workplace decision under ambiguity (e.g., "How likely are you to ask others for advice?")
Listening	"I ask questions to understand the other person's position on an issue." / "I begin talking before the other person finishes talking."	Task/Enumerator observation: Listening prompt followed by comprehension questions – enumerator rates attentiveness
Empathy	"If others are happy, I feel good." / "I can quickly sense when someone in the group is uncomfortable."	SJT: Employee is repeatedly late and you are frustrated (e.g., "How likely is it that you will ask them why they have been late?")
Expressiveness	"I am effective in communicating my ideas." / "I ask for what I need when I need it."	SJT : Community meeting on infrastructure (e.g., "How likely is it that you will share your idea with the group?")
Relatedness	"I find it easy to get people to trust me." / "I stay connected with people who are important to me."	SJT: You have a new shop and attend a party (e.g., "How likely are you to talk to at least 10 people about your new shop?")
Influence	"People like to follow my ideas." / "I evaluate social situations to decide the best way to act."	SJT: Convincing family to support a new business (e.g., "How likely are you to ask questions to understand why your family opposes you?")
Negotiation	"When I disagree with someone, I try to understand how that person feels." / "I convince people to change their mind without considering their needs when they disagree with me."	SJT: Persuading a family member to help with chores (e.g., "How likely are you to explain that if he helps, the whole family will benefit?")
Collaboration	"When I work with others, I tell others my ideas and ask for theirs in return." / "I can tell when a problem should be solved by a team of many people instead of one person alone."	SJT: Meeting to organize a local festival (e.g., "If some in the group are quiet, how likely is it that you will encourage them to speak?")

Note that not all examples were included in the measures used for this study.

B.2 Training modules

In this subsection we provide additional detail on the intervention described in Section 2. The intervention was designed by Alkimia Consulting and took place from September 2021 to February 2022. In order to examine which skills mattered most, the research team requested that the curricula follow a few criteria: function in a low-literacy setting, be open-source (now available at www.poverty-action.org/ses), dedicate a similar amount of time to each skill, and align with the definition of the 14 skills in the ESTEEM framework (Marsh et al., 2025). The list of skills was designed to be as exhaustive and mutually exclusive as possible and includes four sub-categories: self-awareness skills (emotional awareness, self-awareness); social awareness skills (listening, empathy); self-management skills (emotional regulation, self-control, perseverance, personal initiative, problem-solving and decision making); and relationship management skills (expressiveness, interpersonal relatedness, influence, negotiation, and collaboration). The Intrapersonal (Inward) modules focused on the seven self-awareness and self-management skills. The Interpersonal modules focused on the seven social awareness and relationship management skills (see Appendix Figure 4).

One set of training included the Interpersonal modules, and one set of training included both the Intrapersonal and Interpersonal modules. Each set of training totaled 4 days, 7.5 hours per day including breaks. The training is based on an experiential learning approach, involving self-reflection and continuous engagement through open-ended questions, case studies, role-playing, and powerful visuals. Example exercises for the intrapersonal modules include a self-awareness exercise in which one uses a tree of life to identify their values and dreams, an overfilled jug used to symbolize emotional regulation, and stones in a river to symbolize goal setting and achievement. Example exercises for the interpersonal modules included using African proverbs to reflect on relationship building, role playing as one listens with the head and heart, and using "I" statements to develop expressiveness and influence. Each participant received a workbook to complete their reflection exercises. Participants received a certificate for training completion.

Facilitators first received the training themselves, which also served as a training pilot. They were then trained on facilitation skills, which included instruction on using the materials, managing groups, and challenging participants, as well as teach-back and feedback sessions. Several facilitators reported conducting this training in other settings after the APPEALS WYEP training.

C Additional tables

In this section, we present tables to conduct multiple hypothesis corrections (Table C.1), examine treatment effects for additional outcomes, including employment types (Table C.2), transformations of business profits (Table C.3), individual SES index measures (Tables C.4 to C.6), business practices (Table C.7), asset investments (Table C.8), other business performance (Table C.9), self-efficacy and anxiety (Table C.10), and credit (Table C.11).

We also examine whether treatment effects on the primary outcomes vary by marital status (Table C.12), region (Table C.13), selected value chain (Table C.14), and segment of the value chain (Table C.15). Results for C.12-C.15 are presented separately by gender, with women in Panel A and men in Panel B of each table in the Appendix. Across specifications, the findings suggest that the returns to socioemotional skills training depend importantly on both household context and the enabling environment in which beneficiaries operate.

In Table C.12 we begin by examining heterogeneity by marital status. Marriage may shape how individuals deploy socioemotional skills by altering household responsibilities, bargaining dynamics, and exposure to social constraints. At baseline, 67% of women and 54% of men were married. Table C.12 shows that gains in business profits are concentrated primarily among married women. In addition, the impacts of the SES training on socioemotional skill outcomes are substantially larger for married men than unmarried men, suggesting that married men may face greater opportunities or incentives to apply these skills within household and business settings. For women, the concentration of profit gains among married participants is consistent with the idea that socioemotional skills may be particularly valuable in navigating any relational constraints associated with marriage.

We next examine heterogeneity by region in Table C.13, comparing the northern states (Kano, Kaduna, and Kogi) with southern states (Lagos, Cross River, and Enugu). This distinction is salient in the Nigerian context, where the South is often characterized by relatively more gender-progressive norms. Consistent with the broader findings on gender norms, the positive effects of SES training on women's profits are concentrated in the South. We find no evidence of significant profit gains for women in northern states, although women receiving the combined T2 curriculum experience increases in income. For men, the regional pattern differs: in northern states, the interpersonal-skills treatment (T1) increases profits, income, and interpersonal socioemotional skills.

Table C.14 explores heterogeneity by selected value chain. Poultry was the most commonly selected sector (there were ten other value chains available through the APPEALS program). Among women operating in poultry, both T1 and T2 significantly increase profits, indicating that socioemotional skills may be particularly valuable in a sector where women

are relatively concentrated and potentially possess stronger business networks or market familiarity. By contrast, we find no evidence of comparable profit gains for men in poultry. Among participants selecting non-poultry value chains, the combined T2 curriculum increases women's business capital investment, while T1 increases income, savings, and interpersonal SES for men.

Table C.15 examines heterogeneity by segment of the value chain. Most participants planned to operate in production activities, rather than in processing or marketing. Among women engaged in processing or marketing, both T1 and T2 increase the likelihood of employment, while T2 additionally raises business capital and savings. In contrast, among women operating in production, both T1 and T2 generate significant increases in profits. For men in production, T1 improves employment and income, while T2 increases savings. Taken together, these results indicate that the returns to socioemotional skills depend not only on the type of sector in which individuals operate, but also on their segment within the value chain, likely reflecting differences in the relative importance of interpersonal interaction.

Tables C.4 to C.6 decompose the aggregate SES indices into individual skill measures; and in Figures 7-13 we turn to results by gender norms. Both T1 and T2 positively affect women's emotional regulation. There is a small negative and marginally significant interaction of T2 with norms for *Listening* among women in Table 6 and for *Perseverance* and *Personal initiative* among men, possibly suggesting that the intrapersonal add-on training may be less effective or even counterproductive in normatively restrictive environments. Among men, the combination treatment arm T2 positively influences *Perseverance* when gender norms are more liberal.

Both T1 and T2 produce significant positive effects on most self-reported SES in the least restrictive norm settings for women. For example, T1 increases *Empathy* by 0.38 standard deviations (sd), and T2 raises *Negotiation* scores by 0.41 sd in the most norm supportive environments (when norm equals 0). However, a one-point increase in neighbors' disapproval reduces the effect of T2 on *Negotiation* by 0.08 sd, effectively reversing the treatment impact in communities with above-average normative constraints. Women under both T1 and T2 report significant improvements in most SES domains — except for *Emotional Regulation* — in accepting norm settings, with the magnitude of the effect diminishing in more disapproving communities. In contrast, impact estimates on men's self-reported SES scores are not significantly affected by gender norms. These results suggest that environments with gender-restrictive norms substantially weaken women's ability to utilize, express, and/or value improved SES following the SES training.

Table C.1: Impact on Primary Economic Outcomes: MHT-adjusted

Outcome	Treatment group	Model p-value	Sharpened q-value
Employment	T1 on men	0.21	1.00
	T2 on men	0.14	0.88
	T1 on women	0.05**	0.10
	T2 on women	0.02**	0.06†
Hours worked for pay in a day (number)	T1 on men	0.48	1.00
	T2 on men	0.39	0.99
	T1 on women	0.50	0.18
	T2 on women	0.69	0.52
Engaged in farming only	T1 on men	0.80	1.00
	T2 on men	0.06*	0.88
	T1 on women	0.22	0.12
	T2 on women	0.03**	0.06†
Engaged in non-farm act. only	T1 on men	0.62	1.00
	T2 on men	0.43	0.99
	T1 on women	0.10	0.10
	T2 on women	0.47	0.42
Engaged in both farming and non-farm act.	T1 on men	0.98	1.00
	T2 on men	0.12	0.88
	T1 on women	0.03**	0.10
	T2 on women	0.02**	0.06†
Business made positive profits at endline	T1 on men	0.46	1.00
	T2 on men	0.68	1.00
	T1 on women	0.05**	0.10
	T2 on women	0.02**	0.06†
Annual business profits (IHS)	T1 on men	0.82	1.00
	T2 on men	0.78	1.00
	T1 on women	0.05**	0.10
	T2 on women	0.03**	0.06†
Total annual revenues (IHS)	T1 on men	0.50	1.00
	T2 on men	0.69	1.00
	T1 on women	0.25	0.12
	T2 on women	0.28	0.30
Started a new business	T1 on men	0.59	1.00
	T2 on men	0.25	0.88
	T1 on women	0.05*	0.10
	T2 on women	0.33	0.31
Value of business capital ('000 NGN)	T1 on men	0.81	1.00
	T2 on men	0.84	1.00
	T1 on women	0.06*	0.10
	T2 on women	0.59	0.49

Notes: The q-values are BKY (2006) sharpened q-values calculated separately for T1 men, T2 men, T1 women, and T2 women across primary economic outcomes. Stars denote p-value significance: $^{*}p <= 0.10$, $^{**}p <= 0.05$, $^{***}p <= 0.01$. Daggers denote q-value thresholds: $^{\dagger}q <= 0.10$, $^{\ddagger}q <= 0.05$, $^{\ddagger\ddagger}q <= 0.01$.

Table C.2: Impact on Employment Type

	(1) Engaged in farming only (Yes=1; No=0)	(2) Engaged in non-farm act. only (Yes=1; No=0)	(3) Engaged in both farming and non-farm act. (Yes=1; No=0)
Panel: ITT estimates - Full sample			
Women (0/1)	-0.082***	0.061**	-0.016
	(0.027)	(0.024)	(0.026)
T1: Interpersonal only	-0.007	0.011	0.001
	(0.026)	(0.023)	(0.026)
T2: Combination Inter Intra	-0.050*	0.018	0.040
	(0.026)	(0.023)	(0.026)
T1 × Women	0.038	0.030	-0.054
	(0.037)	(0.034)	(0.035)
T2 × Women	0.107***	-0.000	-0.098***
	(0.037)	(0.034)	(0.036)
Observations	3890	3890	3890
R-squared	0.045	0.059	0.052
Control group mean	0.398	0.229	0.324
Treatment effect of T1 | Women	0.032	0.041	-0.053**
P-value: T1 + T1 × Women = 0	*0.223*	*0.104*	*0.030*
Treatment effect of T2 | Women	0.057**	0.018	-0.058**
P-value: T2 + T2 × Women = 0	*0.029*	*0.471*	*0.016*
Marginal effect intrapersonal skills | Men	-0.043	0.007	0.039
P-value (Marginal effect | Men = 0)	*0.100*	*0.756*	*0.129*
Marginal effect intrapersonal skills | Women	0.026	-0.023	-0.005
P-value (Marginal effect | Women = 0)	*0.328*	*0.354*	*0.833*

Notes: $^{*}p <= 0.10$, $^{**}p <= 0.05$, $^{***}p <= 0.01$.
(1) Outcome variables are defined as follows: Engaged in farming only equals 1 if the respondent engaged exclusively in farming activities (including livestock rearing); Engaged in non-farm activities only equals 1 if the respondent engaged exclusively in non-farm activities (including wage employment); and Engaged in both farm and non-farm activities equals 1 if the respondent engaged in both types of activities at endline.
(2) T1: *Interpersonal only* is a binary indicator for the interpersonal-skills-only treatment group; T2: *Combination Inter Intra* is a binary indicator for the combined interpersonal and intrapersonal skills training group. *Women* equals 1 if the respondent is female and 0 if male. T1 and T2 effects for women and the p-value for the marginal effect of intrapersonal skills for men and for women are shown at the bottom of the tables.
(3) Regressions use an ANCOVA specification, where applicable, controlling for baseline levels of the outcome variable. All regressions include controls for age, marital status, and education. Randomization strata include fixed effects for state and APPEALS WYEP value chain.
(4) Robust standard errors are reported in parentheses.

Table C.3: Impact on Business Profits

	(1) Business made positive profits at endline (Yes=1; No=0)	(2) Log of Annual Profits (Unconditional)	(3) Log of Annual Profits (Conditional)	(4) Log of Monthly Profits (Unconditional)	(5) Log of Annual Revenues minus Costs (Unconditional)	(6) Profits Standardized Index
Panel: ITT estimates - Full sample						
Women (0/1)	-0.032*	-0.948***	-0.837***	-0.410**	-1.434***	-0.179***
	(0.017)	(0.226)	(0.175)	(0.193)	(0.360)	(0.038)
T1: Interpersonal only	0.011	0.042	-0.027	0.180	-0.247	0.021
	(0.015)	(0.209)	(0.159)	(0.184)	(0.354)	(0.038)
T2: Combination Inter Intra	0.006	-0.065	-0.104	0.236	0.133	-0.032
	(0.015)	(0.210)	(0.155)	(0.181)	(0.346)	(0.055)
T1 × Women	0.022	0.392	0.335	0.023	1.202**	0.052
	(0.023)	(0.302)	(0.234)	(0.262)	(0.497)	(0.052)
T2 × Women	0.031	0.546*	0.448*	0.041	0.304	0.096
	(0.023)	(0.302)	(0.230)	(0.258)	(0.496)	(0.065)
Observations	3756	3756	2532	3756	3756	3756
R-squared	0.022	0.032	0.039	0.035	0.038	0.031
Control group mean	0.916	12.091	12.858	10.000	9.522	0.094
Treatment effect of T1 | Women	0.033**	0.435**	0.308*	0.203	0.955***	0.073**
P-value: T1 + T1 × Women = 0	*0.048*	*0.047*	*0.071*	*0.279*	*0.006*	*0.041*
Treatment effect of T2 | Women	0.037**	0.481**	0.345**	0.277	0.437	0.063*
P-value: T2 + T2 × Women = 0	*0.024*	*0.027*	*0.041*	*0.133*	*0.220*	*0.072*
Marginal effect intrapersonal skills | Men	-0.005	-0.107	-0.077	0.056	0.381	-0.053
P-value (Marginal effect | Men = 0)	*0.744*	*0.599*	*0.613*	*0.756*	*0.275*	*0.333*
Marginal effect intrapersonal skills | Women	0.004	0.047	0.036	0.074	-0.517	-0.010
P-value (Marginal effect | Women = 0)	*0.782*	*0.816*	*0.803*	*0.673*	*0.133*	*0.778*

Notes: $^{*}p <= 0.10$, $^{**}p <= 0.05$, $^{***}p <= 0.01$.

(1) Outcome variables are defined as follows: Business made positive profits at endline is a binary variable equal to 1 if the respondent reports positive profits and 0 otherwise; Annual business profits, Monthly business profits, and Calculated profits (revenues minus costs) are measured in Nigerian naira and transformed using a logarithmic transformation. For the annual profits measure, we report both unconditional (profits set to zero if the business is not operational) and conditional on being operational (profits set to missing if the business is not operational) versions. Profits Index is a standardized index that aggregates across all profit measures and transformations (including winsorization at the 95th percentile, logarithmic and IHS transformations).

(2) T1: *Interpersonal only* is a binary indicator for the interpersonal-skills-only treatment group; T2: *Combination Inter Intra* is a binary indicator for the combined interpersonal and intrapersonal skills training group. *Women* equals 1 if the respondent is female and 0 if male. T1 and T2 effects for women and the p-value for the marginal effect of intrapersonal skills for men and for women are shown at the bottom of the tables.

(3) Regressions use an ANCOVA specification, where applicable, controlling for baseline levels of the outcome variable. All regressions include controls for age, marital status, and education. Randomization strata include fixed effects for state and APPEALS WYEP value chain.

(4) Robust standard errors are reported in parentheses.

Table C.4: Impact on Socioemotional Skills (Self-Reported Measures)

	(1) Empathy	(2) Relatedness	(3) Negotiation	(4) Emotional Regulation	(5) Perseverance	(6) Personal Initiative	(7) Problem Solving Decision Making
Panel: ITT estimates - Full sample							
Women (0/1)	-0.117**	-0.081	-0.133**	-0.096*	-0.111**	-0.131**	-0.118**
	(0.056)	(0.055)	(0.056)	(0.050)	(0.054)	(0.054)	(0.053)
T1: Interpersonal only	0.061	0.059	0.104*	0.004	0.068	0.027	0.030
	(0.055)	(0.056)	(0.056)	(0.051)	(0.053)	(0.054)	(0.053)
T2: Combination Inter Intra	-0.040	-0.027	0.007	0.015	0.018	-0.074	0.017
	(0.056)	(0.056)	(0.055)	(0.051)	(0.053)	(0.054)	(0.053)
T1 × Women	0.061	0.029	0.015	-0.021	-0.014	0.022	0.007
	(0.077)	(0.078)	(0.079)	(0.071)	(0.076)	(0.077)	(0.076)
T2 × Women	0.038	0.029	0.061	0.026	0.024	0.105	0.000
	(0.079)	(0.079)	(0.078)	(0.071)	(0.077)	(0.078)	(0.076)
Observations	3610	3610	3610	3610	3610	3610	3610
R-squared	0.091	0.079	0.082	0.250	0.107	0.094	0.109
Control group mean	0.017	0.005	0.003	0.042	0.007	0.039	0.014
Treatment effect of T1 | Women	0.122**	0.087	0.120**	-0.016	0.054	0.049	0.038
P-value: T1 + T1 × Women = 0	*0.024*	*0.108*	*0.032*	*0.738*	*0.327*	*0.372*	*0.491*
Treatment effect of T2 | Women	-0.002	0.002	0.068	0.042	0.043	0.032	0.017
P-value: T2 + T2 × Women = 0	*0.973*	*0.967*	*0.215*	*0.397*	*0.438*	*0.569*	*0.755*
Marginal effect intrapersonal skills | Men	-0.101*	-0.085	-0.098*	0.011	-0.050	-0.101*	-0.014
P-value (Marginal effect | Men = 0)	*0.072*	*0.142*	*0.080*	*0.828*	*0.353*	*0.075*	*0.803*
Marginal effect intrapersonal skills | Women	-0.124**	-0.085	-0.052	0.058	-0.011	-0.018	-0.021
P-value (Marginal effect | Women = 0)	*0.024*	*0.124*	*0.359*	*0.242*	*0.845*	*0.752*	*0.709*

Notes: $^{*}p <= 0.10$, $^{**}p <= 0.05$, $^{***}p <= 0.01$.

(1) Outcome variables are standardized, variance-weighted indices (Anderson, 2008) of socioemotional skills based on self-reported measures. *Interpersonal skills* include empathy, relatedness, and negotiation; *intrapersonal skills* include emotion regulation, perseverance, personal initiative, and problem-solving/decision-making (PSDM).

(2) T1: *Interpersonal only* is a binary indicator for the interpersonal-skills-only treatment group; T2: *Combination Inter Intra* is a binary indicator for the combined interpersonal and intrapersonal skills training group. *Women* equals 1 if the respondent is female and 0 if male. T1 and T2 effects for women and the p-value for the marginal effect of intrapersonal skills for men and for women are shown at the bottom of the tables.

(3) Regressions use an ANCOVA specification where applicable, accounting for the baseline level of the outcome variable. All regressions include controls for age, marital status, and education. Randomization strata include fixed effects for state and APPEALS WYEP value chain. Results are robust to additionally controlling for a standardized social-desirability-bias index and enumerator-gender fixed effects.

(4) Robust standard errors are reported in parentheses.

Table C.5: Impact on Interpersonal Socioemotional Skills (Behavioral Measures)

	(1) Listening	(2) Empathy	(3) Expressiveness	(4) Relatedness	(5) Influence	(6) Negotiation	(7) Collaboration
Panel: ITT estimates - Full sample							
Women (0/1)	-0.016	-0.021	-0.115**	0.010	-0.026	0.035	-0.101*
	(0.056)	(0.056)	(0.056)	(0.053)	(0.055)	(0.055)	(0.055)
T1: Interpersonal only	-0.059	0.049	-0.048	0.018	-0.044	0.067	0.005
	(0.056)	(0.053)	(0.055)	(0.053)	(0.056)	(0.054)	(0.054)
T2: Combination Inter Intra	-0.025	0.055	0.002	0.017	-0.012	0.041	-0.018
	(0.055)	(0.053)	(0.054)	(0.052)	(0.054)	(0.055)	(0.053)
T1 × Women	0.086	0.096	0.088	-0.021	0.074	0.017	0.089
	(0.079)	(0.077)	(0.081)	(0.076)	(0.079)	(0.077)	(0.079)
T2 × Women	0.008	0.003	-0.074	0.018	-0.064	-0.035	0.013
	(0.078)	(0.077)	(0.079)	(0.074)	(0.078)	(0.078)	(0.077)
Observations	3610	3872	3595	3875	3597	3879	3592
R-squared	0.094	0.066	0.032	0.100	0.080	0.037	0.091
Control group mean	0.041	-0.037	0.063	-0.026	0.024	-0.044	0.026
Treatment effect of T1 | Women	0.027	0.146***	0.039	-0.004	0.031	0.084	0.094*
P-value: T1 + T1 × Women = 0	*0.625*	*0.009*	*0.507*	*0.942*	*0.582*	*0.127*	*0.099*
Treatment effect of T2 | Women	-0.017	0.059	-0.072	0.035	-0.075	0.006	-0.005
P-value: T2 + T2 × Women = 0	*0.750*	*0.292*	*0.210*	*0.499*	*0.175*	*0.916*	*0.934*
Marginal effect intrapersonal skills | Men	0.034	0.006	0.050	-0.000	0.032	-0.026	-0.023
P-value (Marginal effect | Men = 0)	*0.542*	*0.912*	*0.370*	*0.998*	*0.569*	*0.644*	*0.678*
Marginal effect intrapersonal skills | Women	-0.044	-0.087	-0.112*	0.039	-0.106*	-0.078	-0.099*
P-value (Marginal effect | Women = 0)	*0.421*	*0.106*	*0.065*	*0.467*	*0.062*	*0.153*	*0.085*

Notes: $^{*}p <= 0.10$, $^{**}p <= 0.05$, $^{***}p <= 0.01$.

(1) Outcome variables are standardized indices of interpersonal socioemotional skills based on situational judgment tests (SJTs). The behavioral measures include listening, empathy, expressiveness, relatedness, influence, negotiation, and collaboration.

(2) T1: *Interpersonal only* is a binary indicator for the interpersonal-skills-only treatment group; T2: *Combination Inter Intra* is a binary indicator for the combined interpersonal and intrapersonal skills training group. *Women* equals 1 if the respondent is female and 0 if male. T1 and T2 effects for women and the p-value for the marginal effect of intrapersonal skills for men and for women are shown at the bottom of the tables.

(3) Regressions use an ANCOVA specification where applicable, accounting for the baseline level of the outcome variable. All regressions include controls for age, marital status, and education. Randomization strata include fixed effects for state and APPEALS WYEP value chain. Results are robust to additionally controlling for a standardized social-desirability-bias index and enumerator-gender fixed effects.

(4) Robust standard errors are reported in parentheses.

Table C.6: Impact on Intrapersonal Socioemotional Skills (Behavioral Measures)

	(1) Emotional Awareness	(2) Self Awareness	(3) Emotional Regulation	(4) Self Control	(5) Perseverance	(6) Personal Initiative	(7) Problem Solving Decision Making
Panel: ITT estimates - Full sample							
Women (0/1)	0.032	0.033	0.022	-0.026	0.033	0.033	0.008
	(0.058)	(0.055)	(0.056)	(0.056)	(0.053)	(0.053)	(0.053)
T1: Interpersonal only	-0.014	0.086	-0.008	-0.096*	-0.004	0.030	0.043
	(0.058)	(0.055)	(0.056)	(0.058)	(0.053)	(0.052)	(0.052)
T2: Combination Inter Intra	0.114**	0.044	-0.015	-0.097*	0.024	-0.027	0.019
	(0.055)	(0.053)	(0.054)	(0.053)	(0.053)	(0.052)	(0.053)
T1 × Women	0.037	-0.063	-0.037	0.092	-0.071	-0.003	-0.053
	(0.082)	(0.077)	(0.079)	(0.081)	(0.075)	(0.076)	(0.075)
T2 × Women	-0.140*	-0.124	-0.047	0.102	-0.044	0.003	-0.107
	(0.080)	(0.076)	(0.078)	(0.076)	(0.074)	(0.076)	(0.075)
Observations	3597	3886	3606	3890	3876	3888	3886
R-squared	0.030	0.053	0.066	0.009	0.112	0.063	0.091
Control group mean	-0.039	-0.027	0.004	0.043	-0.005	-0.021	-0.000
Treatment effect of T1 | Women	0.023	0.022	-0.045	-0.004	-0.075	0.027	-0.010
P-value: T1 + T1 × Women = 0	*0.693*	*0.676*	*0.426*	*0.950*	*0.157*	*0.628*	*0.857*
Treatment effect of T2 | Women	-0.026	-0.080	-0.063	0.004	-0.021	-0.024	-0.088*
P-value: T2 + T2 × Women = 0	*0.653*	*0.148*	*0.267*	*0.936*	*0.690*	*0.660*	*0.099*
Marginal effect intrapersonal skills | Men	0.127**	-0.042	-0.008	-0.002	0.028	-0.057	-0.024
P-value (Marginal effect | Men = 0)	*0.023*	*0.433*	*0.893*	*0.974*	*0.603*	*0.289*	*0.649*
Marginal effect intrapersonal skills | Women	-0.049	-0.103*	-0.018	0.008	0.055	-0.051	-0.078
P-value (Marginal effect | Women = 0)	*0.403*	*0.063*	*0.753*	*0.890*	*0.297*	*0.369*	*0.150*

Notes: $^{*}p <= 0.10$, $^{**}p <= 0.05$, $^{***}p <= 0.01$.

(1) Outcome variables are standardized indices of intrapersonal socioemotional skills based on situational judgment tests (SJTs). The behavioral measures include emotional awareness, self-awareness, emotional regulation, self-control, perseverance, personal initiative, and problem-solving/decision-making (PSDM).

(2) T1: *Interpersonal only* is a binary indicator for the interpersonal-skills-only treatment group; T2: *Combination Inter Intra* is a binary indicator for the combined interpersonal and intrapersonal skills training group. *Women* equals 1 if the respondent is female and 0 if male. T1 and T2 effects for women and the p-value for the marginal effect of intrapersonal skills for men and for women are shown at the bottom of the tables.

(3) Regressions use an ANCOVA specification where applicable, accounting for the baseline level of the outcome variable. All regressions include controls for age, marital status, and education. Randomization strata include fixed effects for state and APPEALS WYEP value chain. Results are robust to additionally controlling for a standardized social-desirability-bias index and enumerator-gender fixed effects.

(4) Robust standard errors are reported in parentheses.

Table C.7: Impact on Business Practices

	(1) Requested customer satisfaction feedback	(2) Asked for employee ideas/feedback	(3) Analyzed sales of the main product/service	(4) Looked for new markets	(5) Sought mentor/ expert guidance
Panel: ITT estimates - Full sample					
Women (0/1)	0.084	-0.042	0.034	0.000	-0.000
	(0.057)	(0.057)	(0.056)	(0.057)	(0.057)
T1: Interpersonal only	0.086	0.157***	0.097*	0.087	0.137**
	(0.056)	(0.057)	(0.056)	(0.058)	(0.058)
T2: Combination Inter Intra	0.096*	0.090	0.037	0.008	0.023
	(0.057)	(0.057)	(0.055)	(0.058)	(0.057)
T1 × Women	-0.079	-0.102	-0.051	-0.038	-0.078
	(0.080)	(0.081)	(0.079)	(0.081)	(0.081)
T2 × Women	-0.066	-0.045	-0.024	0.086	0.041
	(0.080)	(0.082)	(0.079)	(0.083)	(0.081)
Observations	3610	3610	3610	3610	3610
R-squared	0.042	0.018	0.053	0.029	0.030
Control group mean	-0.020	0.029	-0.009	0.014	0.013
Treatment effect of T1 | Women	0.007	0.055	0.046	0.048	0.059
P-value: T1 + T1 × Women = 0	*0.907*	*0.349*	*0.407*	*0.400*	*0.297*
Treatment effect of T2 | Women	0.031	0.046	0.012	0.094	0.064
P-value: T2 + T2 × Women = 0	*0.593*	*0.432*	*0.826*	*0.111*	*0.260*
Marginal effect intrapersonal skills | Men	0.010	-0.067	-0.060	-0.079	-0.114*
P-value (Marginal effect | Men = 0)	*0.860*	*0.258*	*0.283*	*0.183*	*0.051*
Marginal effect intrapersonal skills | Women	0.024	-0.009	-0.034	0.045	0.005
P-value (Marginal effect | Women = 0)	*0.677*	*0.873*	*0.548*	*0.453*	*0.931*

Notes: $^{*}p <= 0.10$, $^{**}p <= 0.05$, $^{***}p <= 0.01$.

(1) Outcomes are standardized (Kling z-scores) based on averaged responses across both IGAs and capture how often, in the last three months, the respondent: (1) requested satisfaction feedback from clients/customers; (2) solicited ideas/feedback from employees; (3) analyzed sales of the main product/service; (4) explored new markets; and (5) sought guidance from a mentor/experienced person.

(2) T1: *Interpersonal only* is a binary indicator for the interpersonal-skills-only treatment group; T2: *Combination Inter Intra* is a binary indicator for the combined interpersonal and intrapersonal skills training group. *Women* equals 1 if the respondent is female and 0 if male. T1 and T2 effects for women and the p-value for the marginal effect of intrapersonal skills for men and for women are shown at the bottom of the tables.

(3) Regressions use an ANCOVA specification, where applicable, controlling for baseline levels of the outcome variable. All regressions include controls for age, marital status, and education. Randomization strata include fixed effects for state and APPEALS WYEP value chain.

(4) Robust standard errors are reported in parentheses.

Table C.8: Impact on Asset Ownership

	(1) Value of livestock assets ('000 NGN)	(2) Value of farming assets ('000 NGN)	(3) Value of household assets ('000 NGN)	(4) Value of other productive assets ('000 NGN)
Panel: ITT estimates - Full sample				
Women (0/1)	-136.436**	-429.823***	184.719	58.201
	(66.532)	(161.167)	(582.958)	(107.865)
T1: Interpersonal only	52.028	89.976	-131.801	-23.921
	(69.991)	(185.964)	(594.706)	(100.009)
T2: Combination Inter Intra	27.327	-32.995	-260.686	-171.672*
	(68.124)	(171.233)	(564.752)	(94.351)
T1 × Women	-94.535	211.319	565.122	131.955
	(89.855)	(245.871)	(869.525)	(155.489)
T2 × Women	-23.943	195.637	649.481	316.805**
	(90.154)	(226.982)	(848.474)	(149.460)
Observations	3890	3890	3890	3890
R-squared	0.061	0.031	0.017	0.025
Control group mean	481.851	1221.053	4265.320	927.498
Treatment effect of T1 | Women	-42.507	301.295*	433.321	108.034
P-value: T1 + T1 × Women = 0	*0.446*	*0.061*	*0.498*	*0.367*
Treatment effect of T2 | Women	3.384	162.641	388.794	145.134
P-value: T2 + T2 × Women = 0	*0.954*	*0.277*	*0.540*	*0.209*
Marginal effect intrapersonal skills | Men	-24.701	-122.971	-128.885	-147.750
P-value (Marginal effect | Men = 0)	*0.719*	*0.496*	*0.820*	*0.116*
Marginal effect intrapersonal skills | Women	45.891	-138.654	-44.527	37.100
P-value (Marginal effect | Women = 0)	*0.391*	*0.401*	*0.948*	*0.763*

Notes: $^{*}p <= 0.10$, $^{**}p <= 0.05$, $^{***}p <= 0.01$.

(1) Outcomes include total value of assets owned by the respondent categorized as livestock, farming, household and other productive assets, denominated in thousands of Nigerian naira ('000 NGN).

(2) T1: *Interpersonal only* is a binary indicator for the interpersonal-skills-only treatment group; T2: *Combination Inter Intra* is a binary indicator for the combined interpersonal and intrapersonal skills training group. *Women* equals 1 if the respondent is female and 0 if male. T1 and T2 effects for women and the p-value for the marginal effect of intrapersonal skills for men and for women are shown at the bottom of the tables.

(3) Regressions use an ANCOVA specification, where applicable, controlling for baseline levels of the outcome variable. All regressions include controls for age, marital status, and education. Randomization strata include fixed effects for state and APPEALS WYEP value chain.

(4) Robust standard errors are reported in parentheses.

Table C.9: Impact on Business Outcomes

	(1) Business in operation (Yes=1; No=0)	(2) Total annual revenues (IHS)	(3) Annual business costs (IHS)	(4) Started a new business (Yes=1; No=0)	(5) Share of income contributed to household
Panel: ITT estimates - Full sample					
Women (0/1)	0.004	-0.855***	-0.673***	-0.027	-18.899***
	(0.019)	(0.253)	(0.229)	(0.022)	(1.676)
T1: Interpersonal only	-0.005	0.158	0.133	0.012	2.667
	(0.019)	(0.234)	(0.212)	(0.023)	(1.667)
T2: Combination Inter Intra	0.006	-0.096	0.037	0.027	1.235
	(0.019)	(0.242)	(0.212)	(0.023)	(1.494)
T1 × Women	0.002	0.134	-0.157	0.031	-2.856
	(0.027)	(0.343)	(0.314)	(0.032)	(2.556)
T2 × Women	-0.011	0.369	0.336	-0.005	-2.895
	(0.026)	(0.350)	(0.305)	(0.032)	(2.481)
Observations	3890	3756	3756	3610	3743
R-squared	0.016	0.047	0.045	0.019	0.122
Control group mean	0.865	13.415	12.954	0.197	71.784
Treatment effect of T1 | Women	-0.004	0.292	-0.024	0.043*	-0.189
P-value: T1 + T1 × Women = 0	*0.841*	*0.246*	*0.917*	*0.053*	*0.923*
Treatment effect of T2 | Women	-0.006	0.273	0.373*	0.021	-1.660
P-value: T2 + T2 × Women = 0	*0.765*	*0.280*	*0.088*	*0.328*	*0.401*
Marginal effect intrapersonal skills | Men	0.011	-0.254	-0.096	0.014	-1.432
P-value (Marginal effect | Men = 0)	*0.567*	*0.281*	*0.646*	*0.541*	*0.383*
Marginal effect intrapersonal skills | Women	-0.002	-0.018	0.397*	-0.022	-1.471
P-value (Marginal effect | Women = 0)	*0.923*	*0.940*	*0.065*	*0.343*	*0.485*

Notes: $^{*}p <= 0.10$, $^{**}p <= 0.05$, $^{***}p <= 0.01$.
(1) Outcome variables are defined as follows: Business in operation is a binary variable equal to 1 if the respondent reports the business is operational at endline; total annual revenues(IHS transformed); annual business costs (IHS transformed); binary indicator for whether the respondent started a new business in the last 3 months; and percentage share of income contributed to the household.
(2) T1: *Interpersonal only* is a binary indicator for the interpersonal-skills-only treatment group; T2: *Combination Inter Intra* is a binary indicator for the combined interpersonal and intrapersonal skills training group. *Women* equals 1 if the respondent is female and 0 if male. T1 and T2 effects for women and the p-value for the marginal effect of intrapersonal skills for men and for women are shown at the bottom of the tables.
(3) Regressions use an ANCOVA specification, where applicable, controlling for baseline levels of the outcome variable. All regressions include controls for age, marital status, and education. Randomization strata include fixed effects for state and APPEALS WYEP value chain.
(4) Robust standard errors are reported in parentheses.

Table C.10: Impact on Self-Efficacy and Anxiety

	(1) Generalized self-efficacy (Self-Reported)	(2) Generalized self-efficacy (Behavioral)	(3) Agricultural self-efficacy	(4) Anxiety index (higher=better)	(5) Mild anxiety index
Panel: ITT estimates - Full sample					
Women (0/1)	-0.106*	-0.051	-0.257***	0.012	0.031
	(0.054)	(0.055)	(0.058)	(0.056)	(0.023)
T1: Interpersonal only	0.101*	0.042	-0.014	0.067	-0.030
	(0.053)	(0.055)	(0.055)	(0.056)	(0.022)
T2: Combination Inter Intra	0.024	0.034	-0.027	0.064	-0.041*
	(0.054)	(0.054)	(0.055)	(0.057)	(0.021)
T1 × Women	-0.098	0.003	0.023	-0.104	-0.010
	(0.077)	(0.077)	(0.081)	(0.080)	(0.031)
T2 × Women	0.014	-0.068	0.026	-0.051	-0.015
	(0.077)	(0.078)	(0.081)	(0.079)	(0.031)
Observations	3890	3888	3610	3600	3890
R-squared	0.035	0.040	0.033	0.042	0.023
Control group mean	0.015	0.004	0.119	-0.025	0.202
Treatment effect of T1 | Women	0.003	0.045	0.010	-0.037	-0.039*
P-value: T1 + T1 × Women = 0	*0.957*	*0.406*	*0.868*	*0.516*	*0.082*
Treatment effect of T2 | Women	0.038	-0.034	-0.000	0.013	-0.056**
P-value: T2 + T2 × Women = 0	*0.487*	*0.547*	*0.996*	*0.817*	*0.012*
Marginal effect intrapersonal skills | Men	-0.077	-0.007	-0.013	-0.003	-0.011
P-value (Marginal effect | Men = 0)	*0.155*	*0.891*	*0.815*	*0.952*	*0.590*
Marginal effect intrapersonal skills | Women	0.035	-0.078	-0.010	0.050	-0.017
P-value (Marginal effect | Women = 0)	*0.541*	*0.159*	*0.860*	*0.391*	*0.444*

Notes: $^{*}p <= 0.10$, $^{**}p <= 0.05$, $^{***}p <= 0.01$.
(1) Outcome variables are defined as follows: Generalized self-efficacy index (self-reported); Generalized self-efficacy index (behavioral); Agricultural self-efficacy index; Anxiety index (coded so that higher values indicate lower anxiety); and Mild anxiety, defined as a GAD-7 score between 5 and 9.
(2) T1: *Interpersonal only* is a binary indicator for the interpersonal-skills-only treatment group; T2: *Combination Inter Intra* is a binary indicator for the combined interpersonal and intrapersonal skills training group. *Women* equals 1 if the respondent is female and 0 if male. T1 and T2 effects for women and the p-value for the marginal effect of intrapersonal skills for men and for women are shown at the bottom of the tables.
(3) All regressions include controls for age, marital status, and education. Randomization strata include fixed effects for state and APPEALS WYEP value chain.
(4) Robust standard errors are reported in parentheses.

Table C.11: Impact on Access to Credit

	(1) Experienced credit access challenge (Yes=1, No=0)	(2) Influenced family to provide business financing	(3) Partner support for accessing business loans (Yes=1, No=0)	(4) Emergency fund access (1–4)
Panel: ITT estimates - Full sample				
Women (0/1)	-0.048*	-0.021	0.011	-0.116***
	(0.028)	(0.057)	(0.022)	(0.043)
T1: Interpersonal only	-0.031	-0.032	0.020	0.047
	(0.028)	(0.057)	(0.023)	(0.040)
T2: Combination Inter Intra	-0.040	0.005	-0.013	0.020
	(0.028)	(0.058)	(0.021)	(0.041)
T1 × Women	-0.026	0.174**	0.001	-0.021
	(0.040)	(0.081)	(0.033)	(0.059)
T2 × Women	0.019	0.117	0.054*	0.078
	(0.040)	(0.081)	(0.032)	(0.059)
Observations	3536	3683	2408	3890
R-squared	0.064	0.019	0.024	0.035
Control group mean	0.550	0.007	0.104	3.411
Treatment effect of T1 | Women	-0.058**	0.141**	0.021	0.027
P-value: T1 + T1 × Women = 0	*0.042*	*0.012*	*0.369*	*0.544*
Treatment effect of T2 | Women	-0.021	0.121**	0.041*	0.098**
P-value: T2 + T2 × Women = 0	*0.456*	*0.032*	*0.089*	*0.020*
Marginal effect intrapersonal skills | Men	-0.009	0.037	-0.034	-0.027
P-value (Marginal effect | Men = 0)	*0.750*	*0.513*	*0.125*	*0.496*
Marginal effect intrapersonal skills | Women	0.037	-0.020	0.020	0.072*
P-value (Marginal effect | Women = 0)	*0.202*	*0.732*	*0.426*	*0.087*

Notes: $^{*}p <= 0.10$, $^{**}p <= 0.05$, $^{***}p <= 0.01$.

(1) Outcome variables are defined as follows: Experienced challenges accessing credit as a business owner (Yes = 1; No = 0); Kling-standardized measure of influencing family members to provide financing or assets for the business; Received partner support in accessing business loans (Yes = 1; No = 0); and Ability to access funds in the event of an emergency (1 = not at all possible to 4 = very possible). Higher values indicate more favorable outcomes, except for credit access challenge.

(2) T1: *Interpersonal only* is a binary indicator for the interpersonal-skills-only treatment group; T2: *Combination Inter Intra* is a binary indicator for the combined interpersonal and intrapersonal skills training group. *Women* equals 1 if the respondent is female and 0 if male. T1 and T2 effects for women and the p-value for the marginal effect of intrapersonal skills for men and for women are shown at the bottom of the tables.

(3) All regressions include controls for age, marital status, and education. Randomization strata include fixed effects for state and APPEALS WYEP value chain.

(4) Robust standard errors are reported in parentheses.

Table C.12: Heterogeneity Analysis by Marital Status

	(1) Employment (Yes=1; No=0)	(2) Total HH income (IHS)	(3) Business in operation (Yes=1; No=0)	(4) Annual business profits (IHS)	(5) Value of business capital (IHS)	(6) Amount of savings (NGN)	(7) Business practices – Aggregate	(8) Self Reported Interpersonal SES	(9) Self Reported Intrapersonal SES	(10) Behavioral Interpersonal SES	(11) Behavioral Intrapersonal SES
Panel A: Women Sample											
Married (0/1)	0.03	0.25*	-0.00	0.46	0.57	28222.64	0.09	0.03	-0.02	-0.07	-0.01
	(0.02)	(0.14)	(0.03)	(0.40)	(0.52)	(21737.38)	(0.09)	(0.08)	(0.08)	(0.09)	(0.08)
T1: Interpersonal only	0.05*	-0.08	-0.03	0.29	0.49	26496.96	0.05	0.09	0.00	0.15	0.04
	(0.02)	(0.15)	(0.03)	(0.44)	(0.58)	(28253.31)	(0.10)	(0.10)	(0.09)	(0.10)	(0.09)
T2: Combination Inter Intra	0.03	0.01	-0.02	0.32	0.64	44134.25	0.16	0.03	-0.03	0.04	-0.13
	(0.03)	(0.17)	(0.04)	(0.45)	(0.61)	(28149.60)	(0.11)	(0.10)	(0.09)	(0.10)	(0.09)
T1 × Married	-0.03	-0.02	0.03	0.23	-0.79	905.01	-0.00	0.06	0.06	-0.08	-0.08
	(0.03)	(0.19)	(0.04)	(0.52)	(0.71)	(34375.20)	(0.12)	(0.12)	(0.11)	(0.12)	(0.11)
T2 × Married	-0.00	0.12	0.02	0.22	-0.30	-11941.99	-0.14	-0.00	0.11	-0.04	0.10
	(0.03)	(0.19)	(0.04)	(0.53)	(0.75)	(34229.43)	(0.12)	(0.12)	(0.11)	(0.12)	(0.11)
Observations	1943	1943	1943	1870	1870	1818	1818	1818	1818	1927	1934
R-squared	0.056	0.039	0.020	0.034	0.183	0.018	0.060	0.083	0.186	0.084	0.123
Control group mean	0.91	12.10	0.87	11.50	4.47	101838.00	-0.01	-0.10	-0.14	0.00	-0.00
Treatment effect of T1 | Married	0.02	-0.11	0.01	0.52**	-0.31	27401.97	0.04	0.14**	0.06	0.06	-0.05
P-value: T1 + T1 × Married = 0	(0.27)	(0.33)	(0.77)	(0.05)	(0.46)	(0.15)	(0.50)	(0.03)	(0.33)	(0.33)	(0.47)
Treatment effect of T2 | Married	0.03**	0.13	-0.00	0.55**	0.35	32192.26*	0.02	0.03	0.08	0.00	-0.04
P-value: T2 + T2 × Married = 0	(0.03)	(0.12)	(1.00)	(0.04)	(0.41)	(0.09)	(0.70)	(0.68)	(0.19)	(0.95)	(0.57)
P-value (Marginal effect intrapersonal skills | Not married = 0)	(0.55)	(0.59)	(0.91)	(0.94)	(0.80)	(0.58)	(0.26)	(0.55)	(0.69)	(0.27)	(0.07)
P-value (Marginal effect intrapersonal skills | Married = 0)	(0.31)	(0.02)	(0.76)	(0.91)	(0.13)	(0.82)	(0.77)	(0.09)	(0.75)	(0.36)	(0.87)
Panel B: Men Sample											
Married (0/1)	0.01	-0.10	0.03	0.58*	0.45	5449.30	0.10	-0.18**	-0.07	-0.25***	-0.18**
	(0.01)	(0.10)	(0.03)	(0.34)	(0.56)	(31345.49)	(0.08)	(0.08)	(0.08)	(0.07)	(0.08)
T1: Interpersonal only	0.02	0.06	-0.00	0.21	0.09	26811.85	0.06	-0.01	-0.05	-0.04	-0.08
	(0.01)	(0.08)	(0.03)	(0.35)	(0.55)	(31898.74)	(0.09)	(0.08)	(0.08)	(0.07)	(0.08)
T2: Combination Inter Intra	0.02	-0.03	0.03	0.10	0.41	37860.44	0.05	-0.16*	-0.05	-0.06	-0.04
	(0.01)	(0.11)	(0.03)	(0.36)	(0.54)	(30741.42)	(0.09)	(0.09)	(0.08)	(0.08)	(0.08)
T1 × Married	-0.02	0.10	-0.00	-0.26	0.13	4692.48	0.00	0.17	0.17*	0.13	0.19*
	(0.02)	(0.13)	(0.04)	(0.45)	(0.74)	(42873.54)	(0.11)	(0.11)	(0.10)	(0.10)	(0.11)
T2 × Married	-0.01	0.08	-0.04	-0.30	-0.79	-20439.78	-0.07	0.24**	0.09	0.17	0.13
	(0.02)	(0.15)	(0.04)	(0.46)	(0.72)	(41420.11)	(0.11)	(0.11)	(0.11)	(0.10)	(0.10)
Observations	1947	1947	1947	1886	1886	1792	1792	1792	1792	1936	1938
R-squared	0.018	0.047	0.022	0.026	0.157	0.015	0.035	0.125	0.230	0.097	0.153
Control group mean	0.96	12.23	0.85	12.47	6.11	171722.75	-0.00	0.09	0.04	0.12	0.06
Treatment effect of T1 | Married	0.00	0.16*	-0.01	-0.06	0.23	31504.33	0.06	0.16**	0.12*	0.08	0.11
P-value: T1 + T1 × Married = 0	(0.80)	(0.09)	(0.82)	(0.84)	(0.65)	(0.28)	(0.43)	(0.03)	(0.07)	(0.23)	(0.13)
Treatment effect of T2 | Married	0.01	0.05	-0.01	-0.19	-0.38	17420.66	-0.02	0.09	0.03	0.11	0.09
P-value: T2 + T2 × Married = 0	(0.42)	(0.64)	(0.62)	(0.49)	(0.42)	(0.53)	(0.80)	(0.25)	(0.65)	(0.12)	(0.19)
P-value (Marginal effect intrapersonal skills | Not married = 0)	(0.85)	(0.39)	(0.27)	(0.76)	(0.55)	(0.73)	(0.92)	(0.09)	(0.95)	(0.79)	(0.63)
P-value (Marginal effect intrapersonal skills | Married = 0)	(0.58)	(0.17)	(0.79)	(0.63)	(0.21)	(0.65)	(0.31)	(0.31)	(0.20)	(0.75)	(0.78)

Notes: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.
(1) Outcome variables include: *Employment* (Yes= 1; No= 0); *Total household income* (IHS); *Business in operation* (Yes= 1; No= 0); *Annual business profits* (IHS); *Value of business capital* (IHS); *Amount of savings* (NGN); *Business practices—aggregate*; *Self-reported interpersonal SES*; *Self-reported intrapersonal SES*; *Behavioral interpersonal SES*; and *Behavioral intrapersonal SES*.
(2) Panel A and B present heterogeneity analysis by marital status for women and men, respectively.
(3) T1: Interpersonal only is a binary variable for the interpersonal skills training only treatment group and T2: Combination Inter Intra is the combined interpersonal and intrapersonal skills training treatment group. Married is a binary variable equal to 1 if the respondent is married and 0 if not. T1 and T2 effect for the married subsample and the p-value for the marginal effect of intrapersonal skills for married and non-married respondents are shown at the bottom of the tables.
(4) Regressions use an ANCOVA specification, where applicable, controlling for baseline levels of the outcome variable. All regressions include controls for age, marital status, and education. For SES outcomes, results are robust to additionally controlling for a standardized social-desirability-bias index and enumerator-gender fixed effects. Randomization strata includes fixed effects for state and APPEALS WYEP value chain.
(5) Robust standard errors are reported in parentheses.

Table C.13: Heterogeneity Analysis by Region

	(1) Employment (Yes=1; No=0)	(2) Total HH income (IHS)	(3) Business in operation (Yes=1; No=0)	(4) Annual business profits (IHS)	(5) Value of business capital (IHS)	(6) Amount of savings (NGN)	(7) Business practices – Aggregate	(9) Self Reported Interpersonal SES	(10) Self Reported Intrapersonal SES	(12) Behavioral Interpersonal SES	(13) Behavioral Intrapersonal SES
Panel A: Women Sample											
North (0/1)	-0.01	-0.33**	0.05	0.11	2.99***	-8363.75	0.16	0.41***	0.42***	0.36***	0.46***
	(0.02)	(0.14)	(0.04)	(0.45)	(0.66)	(27031.82)	(0.11)	(0.10)	(0.09)	(0.10)	(0.10)
T1: Interpersonal only	0.03**	-0.18**	0.00	0.83***	-0.13	34914.22	0.12	0.17**	0.03	0.14*	0.01
	(0.01)	(0.08)	(0.02)	(0.31)	(0.46)	(21315.31)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
T2: Combination Inter Intra	0.02	-0.10	-0.04	0.58*	0.30	47964.05**	0.05	0.05	0.01	-0.00	-0.13*
	(0.01)	(0.09)	(0.03)	(0.32)	(0.48)	(21092.60)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
T1 x North	-0.00	0.17	-0.02	-0.79*	0.17	-15463.90	-0.15	-0.09	0.02	-0.09	-0.05
	(0.03)	(0.18)	(0.04)	(0.46)	(0.68)	(31835.26)	(0.11)	(0.11)	(0.10)	(0.11)	(0.11)
T2 x North	0.02	0.37**	0.07*	-0.22	0.28	-23451.37	0.03	-0.04	0.08	0.03	0.13
	(0.03)	(0.16)	(0.04)	(0.46)	(0.70)	(31503.20)	(0.11)	(0.11)	(0.10)	(0.11)	(0.10)
Observations	1943	1943	1943	1870	1870	1818	1818	1818	1818	1927	1934
R-squared	0.055	0.041	0.022	0.035	0.182	0.019	0.061	0.083	0.186	0.085	0.123
Control group mean	0.96	12.46	0.88	11.88	5.90	120665.64	0.16	-0.17	-0.18	-0.06	0.06
Treatment effect of T1 | North	0.02	-0.02	-0.01	0.04	0.04	19450.32	-0.03	0.08	0.05	0.05	-0.04
P-value: T1 + T1 x North = 0	(0.27)	(0.92)	(0.63)	(0.90)	(0.94)	(0.41)	(0.71)	(0.27)	(0.46)	(0.53)	(0.55)
Treatment effect of T2 | North	0.04*	0.28**	0.02	0.36	0.58	24512.67	0.08	0.01	0.08	0.03	-0.00
P-value: T2 + T2 x North = 0	(0.06)	(0.03)	(0.34)	(0.27)	(0.25)	(0.29)	(0.30)	(0.92)	(0.21)	(0.69)	(0.96)
P-value (Marginal effect intrapersonal skills | South = 0)	(0.60)	(0.34)	(0.09)	(0.35)	(0.38)	(0.59)	(0.35)	(0.14)	(0.72)	(0.09)	(0.08)
P-value (Marginal effect intrapersonal skills | North = 0)	(0.48)	(0.05)	(0.16)	(0.33)	(0.29)	(0.84)	(0.16)	(0.34)	(0.65)	(0.80)	(0.57)
Panel B: Men Sample											
North (0/1)	0.02	-0.19	-0.00	0.41	3.76***	38534.70	0.09	0.53***	0.49***	0.48***	0.64***
	(0.02)	(0.13)	(0.04)	(0.41)	(0.70)	(37410.43)	(0.11)	(0.10)	(0.10)	(0.10)	(0.10)
T1: Interpersonal only	-0.01	-0.00	-0.03	-0.43	-0.47	40130.80	0.00	0.05	0.05	0.03	0.04
	(0.01)	(0.08)	(0.03)	(0.32)	(0.52)	(32136.35)	(0.08)	(0.08)	(0.07)	(0.08)	(0.08)
T2: Combination Inter Intra	0.00	-0.09	0.02	-0.09	-0.22	22330.02	-0.03	0.04	0.02	0.03	0.04
	(0.01)	(0.10)	(0.02)	(0.28)	(0.50)	(28882.02)	(0.08)	(0.09)	(0.08)	(0.08)	(0.08)
T1 x North	0.03*	0.23*	0.05	0.96**	1.23*	-21210.93	0.10	0.07	-0.01	-0.01	-0.03
	(0.02)	(0.13)	(0.04)	(0.44)	(0.74)	(43149.29)	(0.11)	(0.11)	(0.10)	(0.10)	(0.11)
T2 x North	0.02	0.20	-0.02	0.06	0.38	7936.17	0.08	-0.11	-0.04	0.01	-0.02
	(0.02)	(0.15)	(0.04)	(0.44)	(0.71)	(40896.42)	(0.11)	(0.11)	(0.10)	(0.10)	(0.10)
Observations	1947	1947	1947	1886	1886	1792	1792	1792	1792	1936	1938
R-squared	0.020	0.048	0.023	0.029	0.158	0.015	0.035	0.124	0.228	0.096	0.151
Control group mean	0.98	12.43	0.89	13.12	6.94	179187.51	0.16	-0.11	-0.10	-0.06	-0.05
Treatment effect of T1 | North	0.03**	0.23**	0.02	0.53*	0.76	18919.87	0.11	0.12*	0.04	0.02	0.01
P-value: T1 + T1 x North = 0	(0.03)	(0.02)	(0.47)	(0.08)	(0.15)	(0.51)	(0.18)	(0.10)	(0.59)	(0.72)	(0.90)
Treatment effect of T2 | North	0.02	0.11	-0.00	-0.03	0.17	30266.19	0.05	-0.07	-0.03	0.04	0.02
P-value: T2 + T2 x North = 0	(0.11)	(0.31)	(0.92)	(0.93)	(0.75)	(0.30)	(0.53)	(0.33)	(0.70)	(0.59)	(0.72)
P-value (Marginal effect intrapersonal skills | South = 0)	(0.35)	(0.38)	(0.08)	(0.27)	(0.62)	(0.58)	(0.65)	(0.87)	(0.64)	(0.92)	(0.97)
P-value (Marginal effect intrapersonal skills | North = 0)	(0.54)	(0.19)	(0.41)	(0.06)	(0.24)	(0.71)	(0.49)	(0.01)	(0.37)	(0.86)	(0.83)

Notes: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

(1) Outcome variables include: *Employment* (Yes= 1; No= 0); *Total household income* (IHS); *Business in operation* (Yes= 1; No= 0); *Annual business profits* (IHS); *Value of business capital* (IHS); *Amount of savings* (NGN); *Business practices—aggregate*; *Self-reported interpersonal SES*; *Self-reported intrapersonal SES*; *Behavioral interpersonal SES*; and *Behavioral intrapersonal SES*.

(2) Panel A and B present heterogeneity analysis by region for women and men, respectively.

(3) T1: Interpersonal only is a binary variable for the interpersonal skills training only treatment group and T2: Combination Inter Intra is the combined interpersonal and intrapersonal skills training treatment group. North is a binary variable equal to 1 if the respondent is in the northern states (Kaduna, Kano, or Kogi) and 0 if the respondent is in the southern states (Cross River, Lagos, or Enugu). T1 and T2 effects for the northern subsample, and the p-value for the marginal effect of intrapersonal skills for northern and southern respondents, are shown at the bottom of the tables.

(4) Regressions use an ANCOVA specification, where applicable, controlling for baseline levels of the outcome variable. All regressions include controls for age, marital status, and education. For SES outcomes, results are robust to additionally controlling for a standardized social-desirability-bias index and enumerator-gender fixed effects. Randomization strata includes fixed effects for state and APPEALS WYEP value chain.

(5) Robust standard errors are reported in parentheses.

Table C.14: Heterogeneity Analysis by Value Chain

	(1) Employment (Yes=1; No=0)	(2) Total HH income (IHS)	(3) Business in operation (Yes=1; No=0)	(4) Annual business profits (IHS)	(5) Value of business capital (IHS)	(6) Amount of savings (NGN)	(7) Business practices – Aggregate	(8) Self Reported Interpersonal SES	(9) Self Reported Intrapersonal SES	(10) Behavioral Interpersonal SES	(11) Behavioral Intrapersonal SES
Panel A: Women Sample											
Poultry (0/1)	-0.03	-0.17	0.01	0.21	-1.46**	30300.24	0.15	-0.17*	-0.14	-0.09	0.08
	(0.02)	(0.12)	(0.03)	(0.43)	(0.61)	(22175.04)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)
T1: Interpersonal only	0.02	-0.08	-0.00	0.19	-0.01	33762.11	0.02	0.08	-0.02	0.02	-0.02
	(0.02)	(0.12)	(0.03)	(0.35)	(0.56)	(22565.25)	(0.08)	(0.09)	(0.08)	(0.08)	(0.08)
T2: Combination Inter Intra	0.03**	0.08	-0.00	0.39	1.25**	45231.39**	0.16*	-0.01	0.04	-0.05	-0.13
	(0.02)	(0.09)	(0.03)	(0.32)	(0.57)	(22819.98)	(0.08)	(0.09)	(0.08)	(0.08)	(0.08)
T1 x Poultry	0.02	-0.03	-0.00	0.43	-0.06	-11582.01	0.05	0.08	0.11	0.12	0.01
	(0.03)	(0.17)	(0.04)	(0.47)	(0.70)	(31550.42)	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)
T2 x Poultry	-0.00	0.03	-0.01	0.15	-1.40*	-16465.88	-0.16	0.07	0.02	0.12	0.11
	(0.02)	(0.15)	(0.04)	(0.45)	(0.72)	(31294.88)	(0.11)	(0.11)	(0.10)	(0.11)	(0.11)
Observations	1943	1943	1943	1870	1870	1818	1818	1818	1818	1927	1934
R-squared	0.055	0.039	0.019	0.034	0.185	0.018	0.062	0.083	0.186	0.085	0.122
Control group mean	0.94	12.24	0.88	11.95	6.31	106224.51	0.01	0.01	0.03	-0.00	0.01
Treatment effect of T1 | Poultry	0.03	-0.11	-0.00	0.62	-0.07	22180.10	0.06	0.16	0.09	0.14	-0.02
P-value: T1 + T1 x Poultry = 0	(0.06)	(0.37)	(0.86)	(0.04)	(0.88)	(0.31)	(0.39)	(0.03)	(0.19)	(0.05)	(0.81)
Treatment effect of T2 | Poultry	0.03	0.11	-0.01	0.53	-0.15	28765.51	-0.00	0.06	0.05	0.06	-0.02
P-value: T2 + T2 x Poultry = 0	(0.11)	(0.36)	(0.65)	(0.09)	(0.72)	(0.18)	(0.96)	(0.43)	(0.43)	(0.39)	(0.75)
P-value (Marginal effect intrapersonal skills | Other VCs = 0)	(0.27)	(0.21)	(0.92)	(0.54)	(0.03)	(0.66)	(0.08)	(0.32)	(0.47)	(0.38)	(0.19)
P-value (Marginal effect intrapersonal skills | Poultry = 0)	(0.80)	(0.06)	(0.78)	(0.76)	(0.84)	(0.78)	(0.36)	(0.17)	(0.61)	(0.29)	(0.94)
Panel B: Men Sample											
Poultry (0/1)	-0.00	0.07	-0.02	0.03	-2.10***	-6530.75	0.15	-0.14	-0.07	-0.09	-0.08
	(0.02)	(0.14)	(0.03)	(0.39)	(0.65)	(37034.71)	(0.10)	(0.09)	(0.09)	(0.09)	(0.09)
T1: Interpersonal only	0.00	0.20**	-0.00	0.08	0.33	61910.56**	0.07	0.14	0.09	0.03	0.01
	(0.01)	(0.10)	(0.03)	(0.31)	(0.56)	(31557.99)	(0.08)	(0.08)	(0.08)	(0.07)	(0.07)
T2: Combination Inter Intra	0.00	0.06	0.01	0.17	0.68	20454.97	0.07	-0.08	-0.10	0.07	0.02
	(0.01)	(0.11)	(0.03)	(0.30)	(0.54)	(28665.45)	(0.08)	(0.09)	(0.08)	(0.07)	(0.07)
T1 x Poultry	0.02	-0.16	-0.00	-0.04	-0.32	-62553.72	-0.02	-0.09	-0.09	0.00	0.02
	(0.02)	(0.13)	(0.04)	(0.44)	(0.74)	(43386.11)	(0.11)	(0.11)	(0.10)	(0.10)	(0.11)
T2 x Poultry	0.02	-0.08	-0.00	-0.44	-1.35*	11240.66	-0.11	0.12	0.18*	-0.08	0.02
	(0.02)	(0.15)	(0.04)	(0.44)	(0.72)	(40795.14)	(0.11)	(0.11)	(0.10)	(0.10)	(0.10)
Observations	1947	1947	1947	1886	1886	1792	1792	1792	1792	1936	1938
R-squared	0.019	0.047	0.021	0.026	0.158	0.017	0.035	0.124	0.231	0.096	0.151
Control group mean	0.98	12.10	0.86	12.77	6.97	156907.67	-0.04	0.04	0.06	0.02	-0.04
Treatment effect of T1 | Poultry	0.02	0.04	-0.00	0.04	0.01	-643.16	0.05	0.04	-0.00	0.03	0.04
P-value: T1 + T1 x Poultry = 0	(0.16)	(0.65)	(0.86)	(0.89)	(0.98)	(0.98)	(0.52)	(0.58)	(1.00)	(0.67)	(0.63)
Treatment effect of T2 | Poultry	0.02	-0.02	0.01	-0.27	-0.67	31695.63	-0.04	0.03	0.08	-0.01	0.04
P-value: T2 + T2 x Poultry = 0	(0.09)	(0.81)	(0.83)	(0.40)	(0.16)	(0.28)	(0.59)	(0.65)	(0.27)	(0.93)	(0.59)
P-value (Marginal effect intrapersonal skills | Other VCs = 0)	(0.94)	(0.12)	(0.70)	(0.75)	(0.51)	(0.19)	(0.95)	(0.01)	(0.01)	(0.54)	(0.90)
P-value (Marginal effect intrapersonal skills | Poultry = 0)	(0.76)	(0.50)	(0.69)	(0.32)	(0.15)	(0.29)	(0.23)	(0.92)	(0.30)	(0.62)	(0.97)

Notes: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.
(1) Outcome variables include: *Employment* (Yes= 1; No= 0); *Total household income* (IHS); *Business in operation* (Yes= 1; No= 0); *Annual business profits* (IHS); *Value of business capital* (IHS); *Amount of savings* (NGN); *Business practices—aggregate*; *Self-reported interpersonal SES*; *Self-reported intrapersonal SES*; *Behavioral interpersonal SES*; and *Behavioral intrapersonal SES*.
(2) Panel A and B present heterogeneity analysis by value chain for women and men, respectively.
(3) T1: Interpersonal only is a binary variable for the interpersonal skills training only treatment group and T2: Combination Inter Intra is the combined interpersonal and intrapersonal skills training treatment group. Poultry is a binary variable equal to 1 if the respondent pursued poultry as the APPEALS value chain and 0 otherwise. T1 and T2 effects for the poultry subsample, and the p-value for the marginal effect of intrapersonal skills for poultry versus other value chains, are shown at the bottom of the tables.
(4) Regressions use an ANCOVA specification, where applicable, controlling for baseline levels of the outcome variable. All regressions include controls for age, marital status, and education. For SES outcomes, results are robust to additionally controlling for a standardized social-desirability-bias index and enumerator-gender fixed effects. Randomization strata includes fixed effects for state and APPEALS WYEP value chain.
(5) Robust standard errors are reported in parentheses.

Table C.15: Heterogeneity Analysis by Segment

	(1) Employment (Yes=1; No=0)	(2) Total HH income (IHS)	(3) Business in operation (Yes=1; No=0)	(4) Annual business profits (IHS)	(5) Value of business capital (IHS)	(6) Amount of savings (NGN)	(7) Business practices – Aggregate	(8) Self Reported Interpersonal SES	(9) Self Reported Intrapersonal SES	(10) Behavioral Interpersonal SES	(11) Behavioral Intrapersonal SES
Panel A: Women Sample											
Production (0/1)	0.01	-0.10	-0.02	-0.25	-0.47	5281.53	-0.13	-0.03	-0.10	0.10	0.12
	(0.02)	(0.11)	(0.03)	(0.39)	(0.56)	(24155.35)	(0.09)	(0.09)	(0.09)	(0.09)	(0.08)
T1: Interpersonal only	0.04*	-0.19*	0.01	0.05	0.07	20423.83	-0.05	0.10	-0.02	0.15	0.10
	(0.02)	(0.10)	(0.03)	(0.39)	(0.66)	(29023.16)	(0.10)	(0.10)	(0.10)	(0.11)	(0.10)
T2: Combination Inter Intra	0.04*	-0.02	-0.02	0.01	1.31**	58350.21*	0.01	-0.04	-0.03	0.05	-0.07
	(0.02)	(0.12)	(0.03)	(0.38)	(0.66)	(31529.97)	(0.10)	(0.11)	(0.10)	(0.10)	(0.09)
T1 x Production	-0.02	0.13	-0.02	0.55	-0.14	9047.69	0.13	0.04	0.09	-0.09	-0.17
	(0.03)	(0.15)	(0.04)	(0.49)	(0.77)	(34769.60)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)
T2 x Production	-0.01	0.17	0.02	0.67	-1.24	-32226.21	0.08	0.10	0.11	-0.05	0.01
	(0.03)	(0.16)	(0.04)	(0.47)	(0.78)	(36200.97)	(0.12)	(0.13)	(0.11)	(0.12)	(0.11)
Observations	1943	1943	1943	1870	1870	1818	1818	1818	1818	1927	1934
R-squared	0.055	0.039	0.020	0.035	0.186	0.019	0.061	0.083	0.186	0.085	0.124
Control group mean	0.94	12.31	0.90	12.22	6.42	127176.84	0.21	-0.02	0.02	-0.08	-0.00
Treatment effect of T1 | Production	0.02	-0.06	-0.01	0.60	-0.06	29471.52	0.08	0.14	0.07	0.07	-0.07
P-value: T1 + T1 x Production = 0	(0.18)	(0.59)	(0.72)	(0.04)	(0.87)	(0.12)	(0.21)	(0.03)	(0.26)	(0.31)	(0.27)
Treatment effect of T2 | Production	0.03	0.14	-0.00	0.68	0.07	26124.00	0.09	0.06	0.08	-0.00	-0.06
P-value: T2 + T2 x Production = 0	(0.07)	(0.15)	(0.93)	(0.02)	(0.87)	(0.14)	(0.18)	(0.37)	(0.19)	(0.99)	(0.31)
P-value (Marginal effect intrapersonal skills | Other Segments = 0)	(0.95)	(0.18)	(0.39)	(0.91)	(0.07)	(0.27)	(0.57)	(0.19)	(0.90)	(0.33)	(0.07)
P-value (Marginal effect intrapersonal skills | Production = 0)	(0.65)	(0.06)	(0.79)	(0.76)	(0.75)	(0.87)	(0.92)	(0.24)	(0.87)	(0.31)	(0.94)
Panel B: Men Sample											
Production (0/1)	-0.02	-0.18	0.01	0.29	-0.70	-68047.75	0.12	0.18*	0.25***	0.00	-0.05
	(0.01)	(0.11)	(0.03)	(0.42)	(0.72)	(42792.02)	(0.10)	(0.11)	(0.09)	(0.09)	(0.09)
T1: Interpersonal only	-0.02	-0.02	0.04	0.38	-0.27	31034.45	0.20*	-0.06	0.00	-0.08	-0.13
	(0.02)	(0.12)	(0.04)	(0.46)	(0.85)	(52545.22)	(0.12)	(0.13)	(0.10)	(0.11)	(0.11)
T2: Combination Inter Intra	0.01	-0.11	0.05	-0.08	0.26	-54737.27	0.15	0.12	0.07	0.06	0.00
	(0.01)	(0.13)	(0.04)	(0.47)	(0.82)	(44831.37)	(0.12)	(0.14)	(0.11)	(0.11)	(0.11)
T1 x Production	0.04*	0.17	-0.06	-0.41	0.54	-4096.75	-0.19	0.19	0.06	0.14	0.20*
	(0.02)	(0.14)	(0.04)	(0.52)	(0.94)	(57399.88)	(0.14)	(0.14)	(0.12)	(0.12)	(0.12)
T2 x Production	0.01	0.16	-0.05	0.03	-0.38	103879.25**	-0.18	-0.18	-0.10	-0.03	0.04
	(0.02)	(0.16)	(0.04)	(0.53)	(0.91)	(50590.03)	(0.14)	(0.15)	(0.13)	(0.13)	(0.12)
Observations	1947	1947	1947	1886	1886	1792	1792	1792	1792	1936	1938
R-squared	0.020	0.048	0.024	0.027	0.158	0.019	0.036	0.131	0.237	0.097	0.153
Control group mean	0.99	12.38	0.86	12.65	7.11	226592.42	-0.04	-0.15	-0.15	-0.02	-0.03
Treatment effect of T1 | Production	0.02	0.15	-0.02	-0.03	0.27	26937.70	0.01	0.14	0.06	0.06	0.07
P-value: T1 + T1 x Production = 0	(0.05)	(0.04)	(0.41)	(0.90)	(0.50)	(0.25)	(0.82)	(0.03)	(0.28)	(0.29)	(0.23)
Treatment effect of T2 | Production	0.01	0.05	-0.00	-0.05	-0.12	49141.98	-0.03	-0.06	-0.03	0.02	0.04
P-value: T2 + T2 x Production = 0	(0.20)	(0.58)	(0.83)	(0.84)	(0.76)	(0.03)	(0.65)	(0.34)	(0.64)	(0.67)	(0.50)
P-value (Marginal effect intrapersonal skills | Other Segments = 0)	(0.07)	(0.44)	(0.98)	(0.27)	(0.50)	(0.05)	(0.68)	(0.18)	(0.50)	(0.20)	(0.21)
P-value (Marginal effect intrapersonal skills | Production = 0)	(0.48)	(0.18)	(0.55)	(0.94)	(0.33)	(0.38)	(0.49)	(0.00)	(0.13)	(0.53)	(0.58)

Notes: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.
(1) Outcome variables include: *Employment* (Yes= 1; No= 0); *Total household income* (IHS); *Business in operation* (Yes= 1; No= 0); *Annual business profits* (IHS); *Value of business capital* (IHS); *Amount of savings* (NGN); *Business practices—aggregate*; *Self-reported interpersonal SES*; *Self-reported intrapersonal SES*; *Behavioral interpersonal SES*; and *Behavioral intrapersonal SES*.
(2) Panel A and B present heterogeneity analysis by production segment for women and men, respectively.
(3) T1: Interpersonal only is a binary variable for the interpersonal skills training only treatment group and T2: Combination Inter Intra is the combined interpersonal and intrapersonal skills training treatment group. Production is a binary variable equal to 1 if the respondent is engaged in the production segment and 0 if engaged in processing or marketing. T1 and T2 effects for the production subsample, and the p-value for the marginal effect of intrapersonal skills for production versus other segments, are shown at the bottom of the tables.
(4) Regressions use an ANCOVA specification, where applicable, controlling for baseline levels of the outcome variable. All regressions include controls for age, marital status, and education. For SES outcomes, results are robust to additionally controlling for a standardized social-desirability-bias index and enumerator-gender fixed effects. Randomization strata includes fixed effects for state and APPEALS WYEP value chain.
(5) Robust standard errors are reported in parentheses.

Figure 7: SES Aggregates - Treatment effects by gender norms

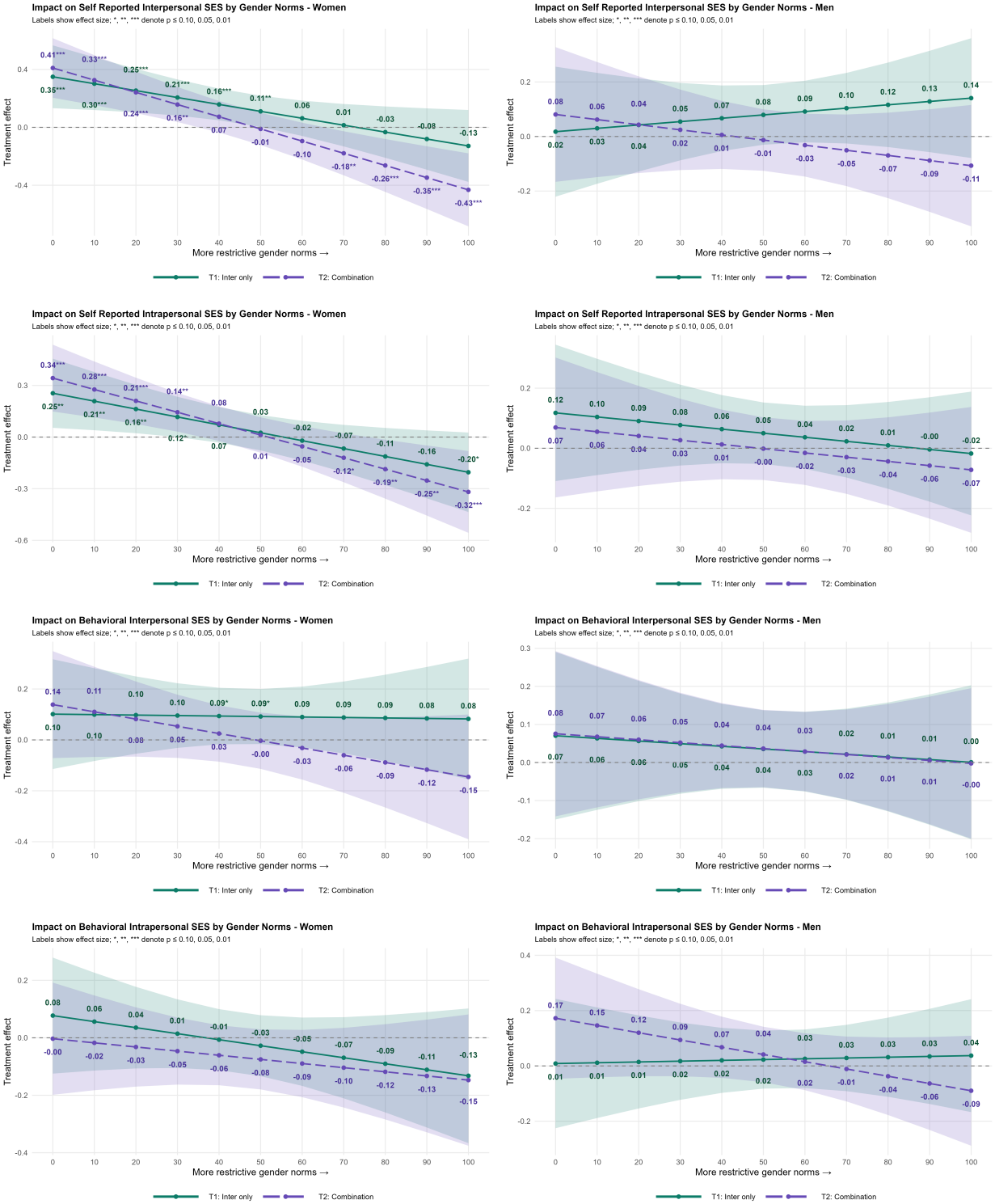


Figure 8: Self-Reported Interpersonal SES - Treatment effects by gender norms

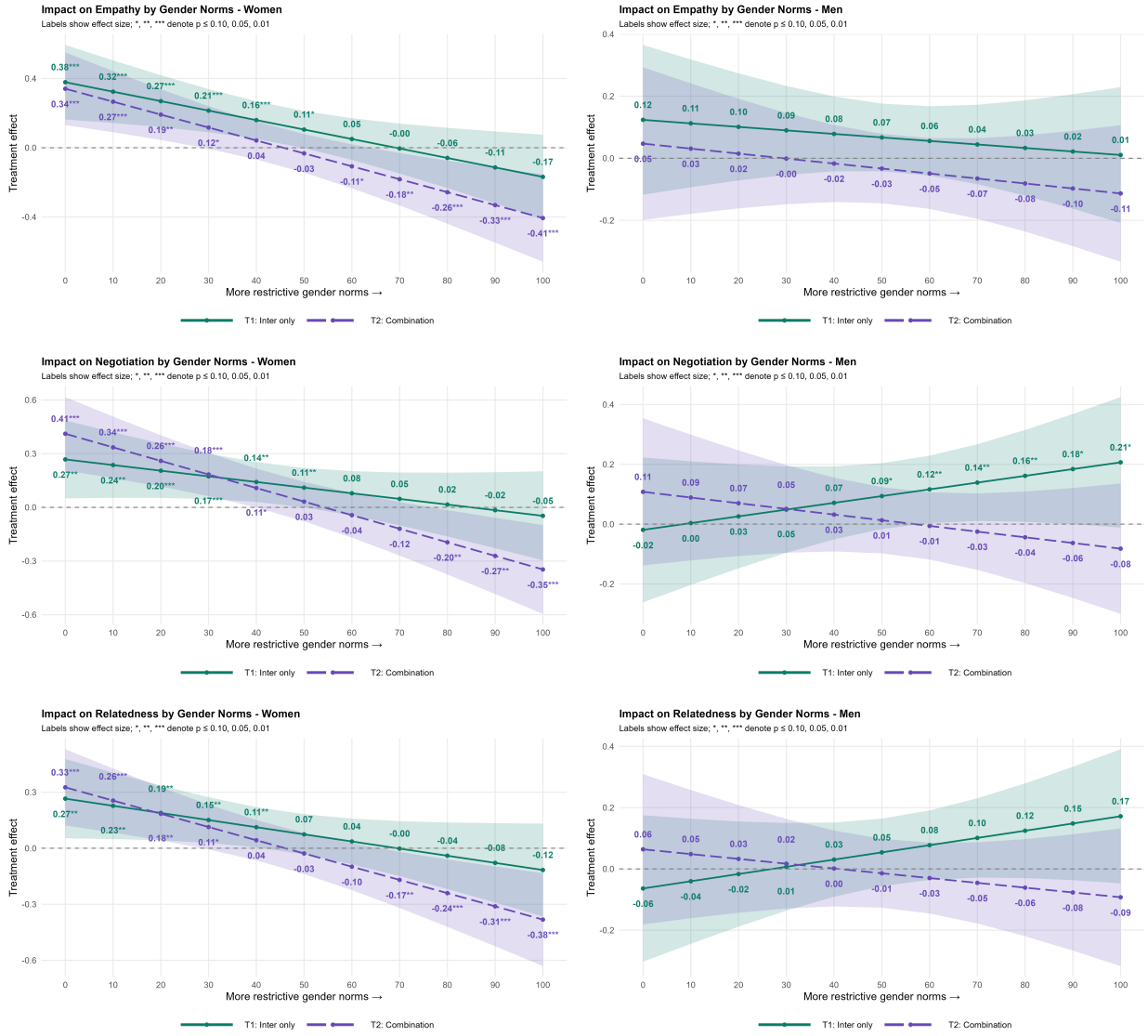


Figure 9: Self-Reported Intrapersonal SES - Treatment effects by gender norms

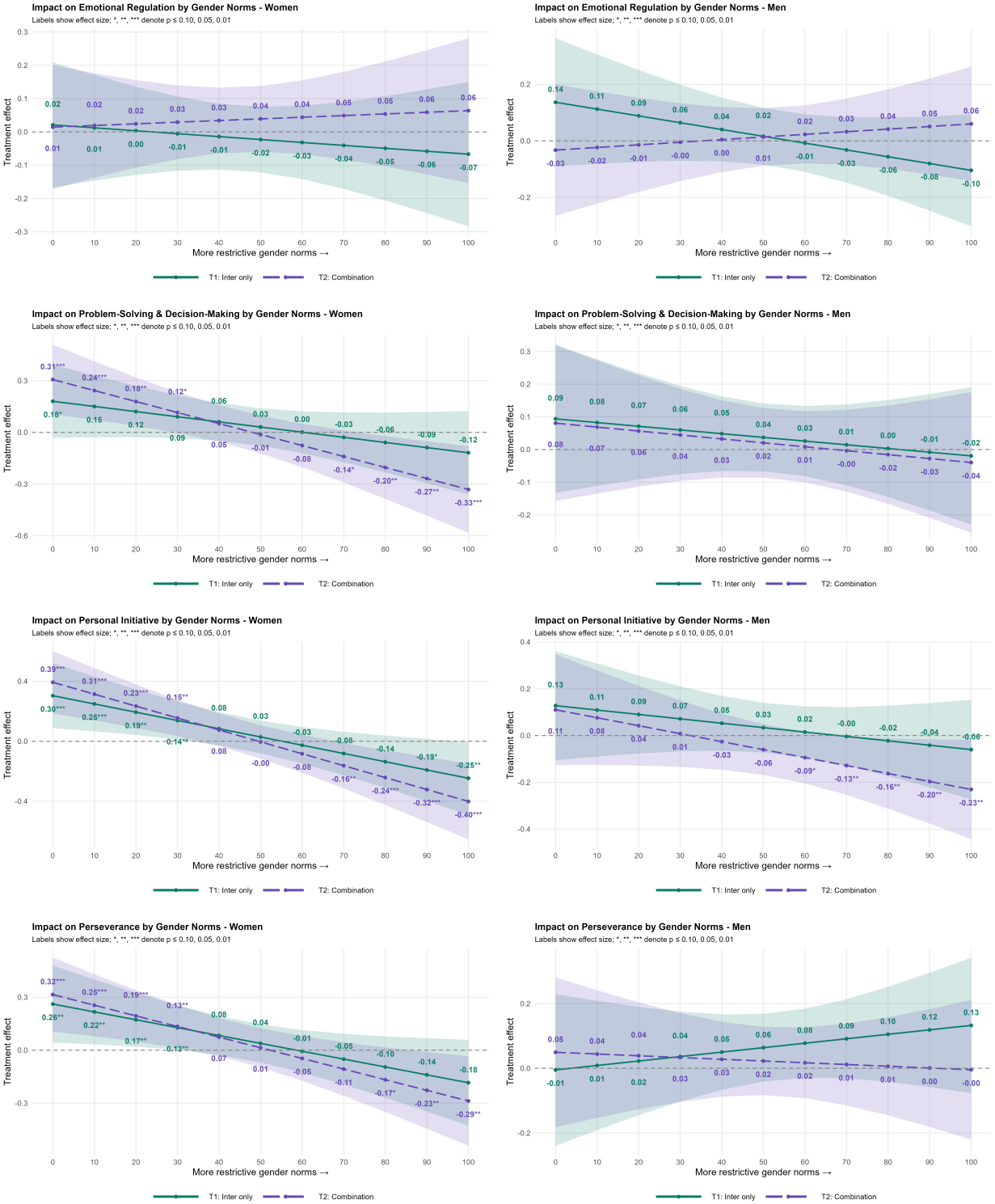


Figure 10: Behavioral Interpersonal SES - Treatment effects by gender norms (I)

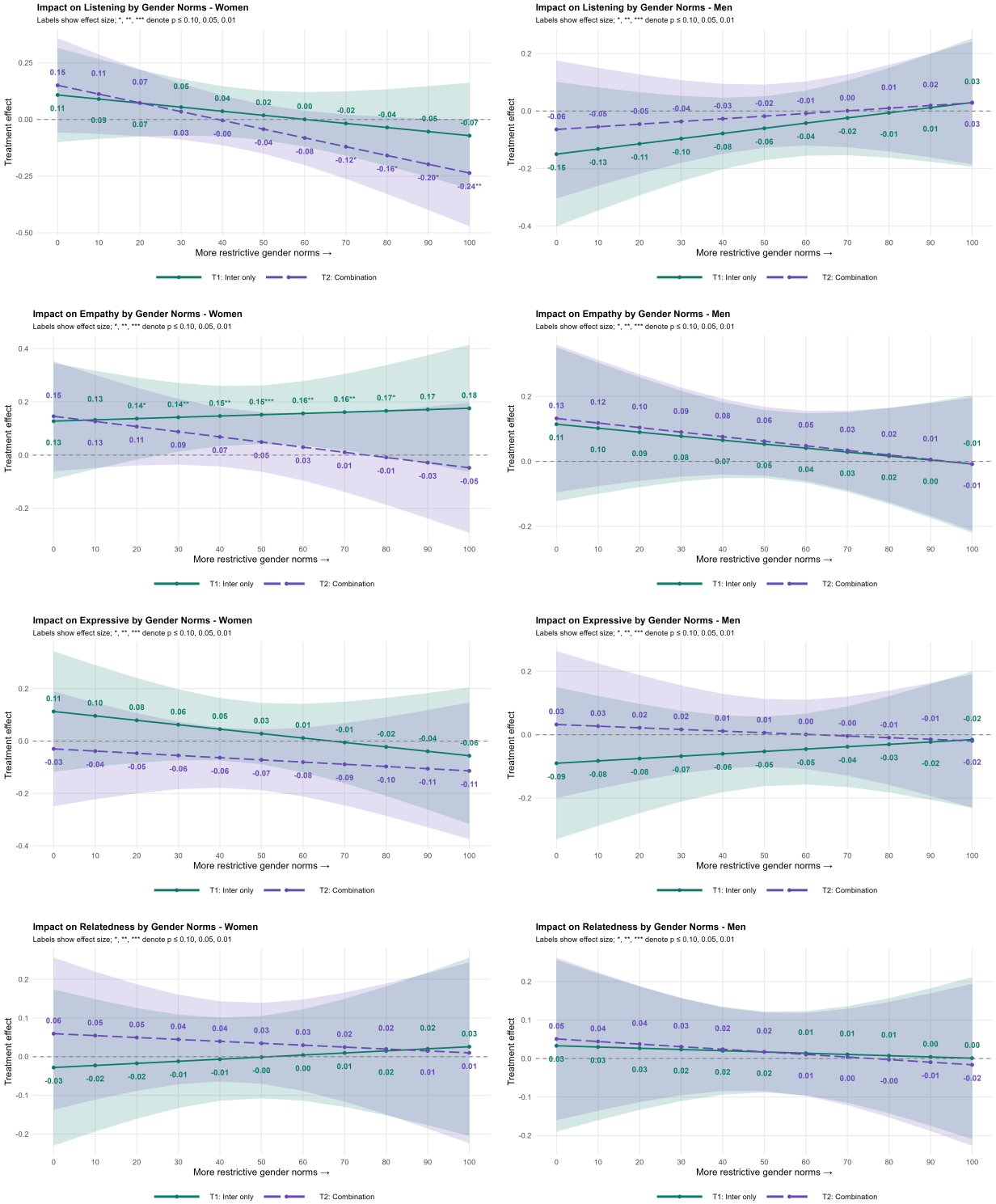


Figure 11: Behavioral Interpersonal SES - Treatment effects by gender norms (II)

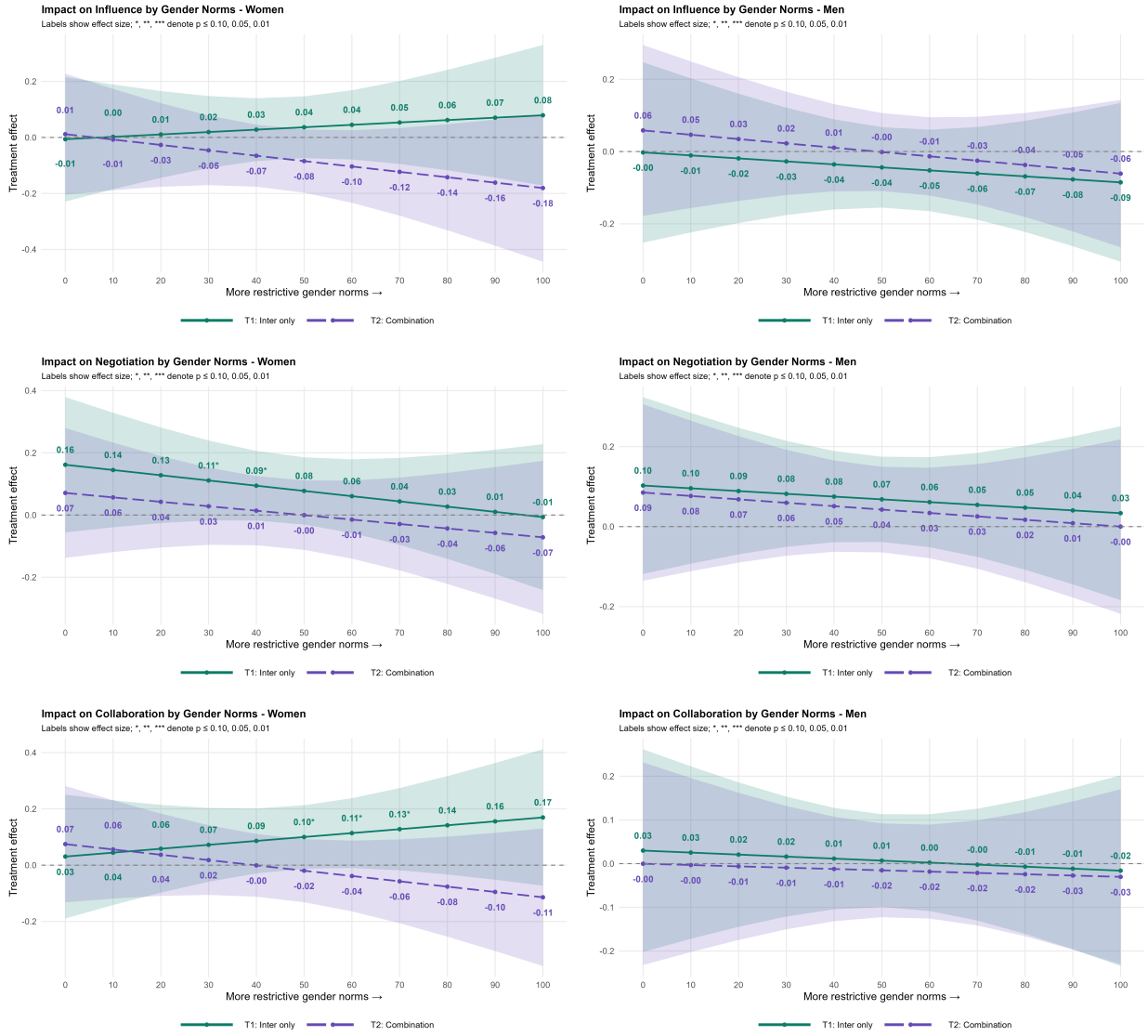


Figure 12: Behavioral Intrapersonal SES - Treatment effects by gender norms (I)

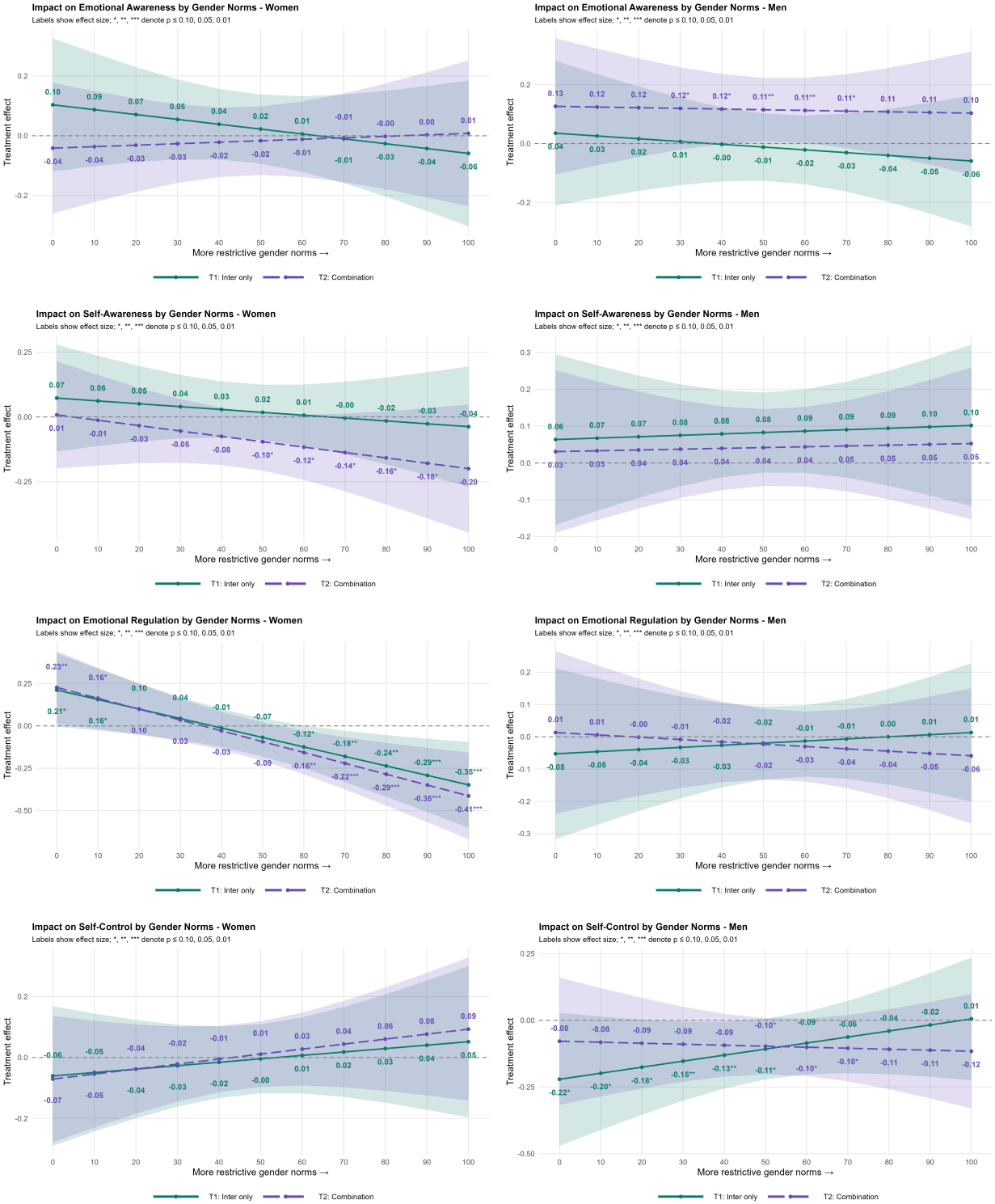
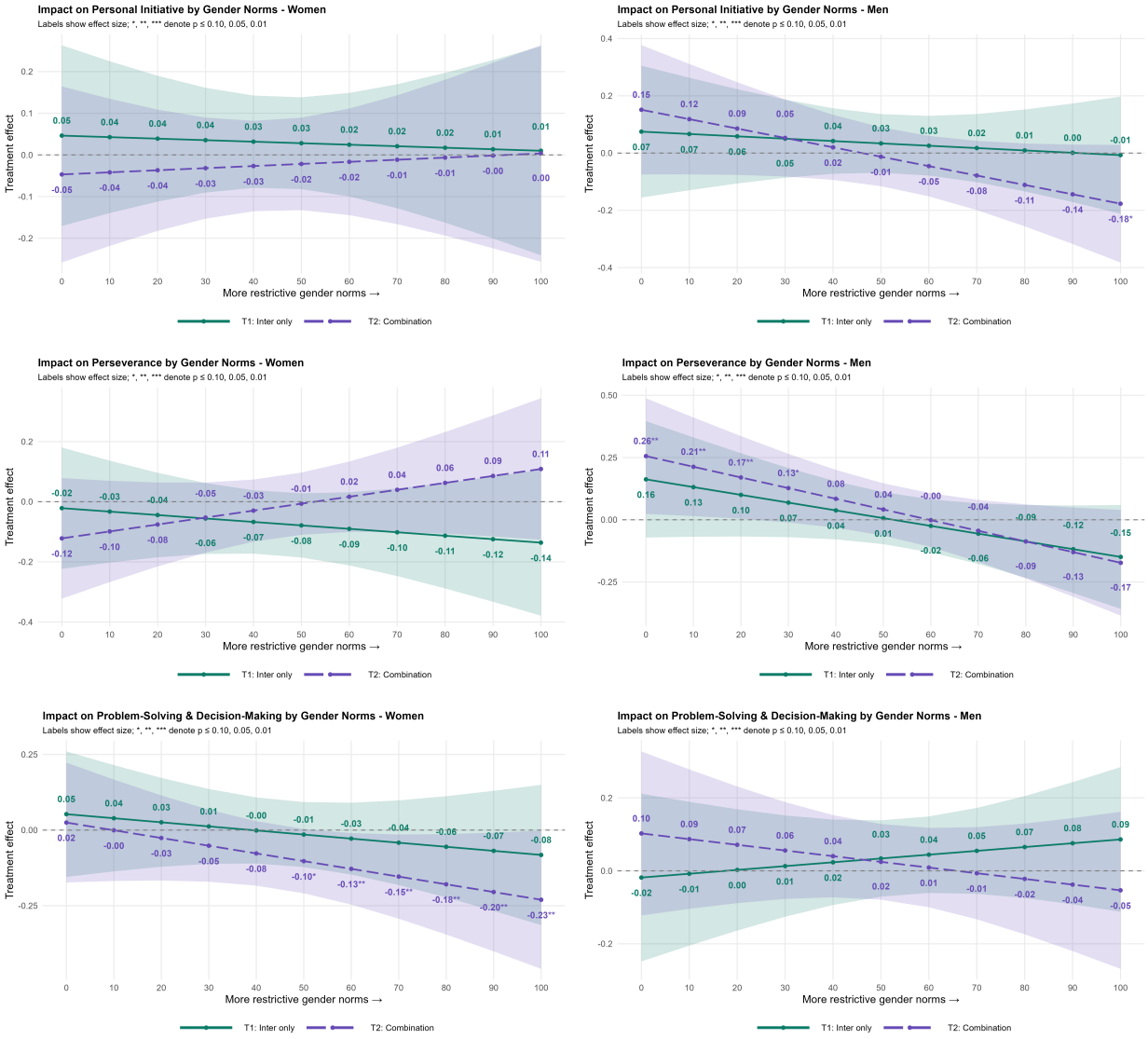


Figure 13: Behavioral Intrapersonal SES - Treatment effects by gender norms (II)



D Exploratory Residual–Residual Associations

In our pre-analysis plan, we had proposed mediation analysis to explore whether SES training affects economic outcomes through intermediate constructs (M1: SES, M2: business practices, M3: intra-household decision-making and mental models). In practice, however, all mediators and outcomes were measured simultaneously at endline, and no midline data were collected. This limits the credibility of sequential g-estimation (Acharya et al., 2016), which assumes a clear temporal ordering of treatment → mediator → outcome.

As an alternative, we implemented a residual–residual association analysis inspired by regression-with-residuals (Zhou and Wodtke, 2019). Specifically, we estimated residuals for both endline mediators and outcomes regressed on their baseline values, covariates, and randomization strata fixed effects, and then regressed outcome residuals on mediator residuals, with robust standard errors. These correlations are descriptive and do not identify causal mediation, but they provide suggestive evidence on whether variation in mediators aligns with variation in primary outcomes within our sample. For SES mediators we created baseline measures of generalized self-efficacy, emotional regulation, and maintaining relationships and constructed a standardized SES aggregate using these measures. For intra-household decision-making, time use, and mental models mediators we created sub-indices for decision-making, time use, mental models, and subjective well-being, then combined them into an index with equal weights. We present graphs showing binned scatters of rY vs rM for each mediator family (SES and intrahousehold dynamics) where pooled is for the combined treatment groups (T1 and T2). We present results for a number of outcomes.

Results are shown in Appendix Figure 14 which suggest mostly positive associations: higher-than-predicted SES scores and intra-household decision-making/mental models are generally associated with higher-than-predicted economic outcomes. Although magnitudes vary across mediator families and treatment arms, the fact that these correlations are broadly positive suggests that SES and household-level factors are linked to economic performance. Since business practices (M2) were not measured in full at baseline, we are unable to conduct the same analysis for that family of mediators.

Altogether, these patterns suggest that SES training is plausibly correlated with economic outcomes through improvements in SES and related constructs, even if the associations observed here are descriptive rather than causal.

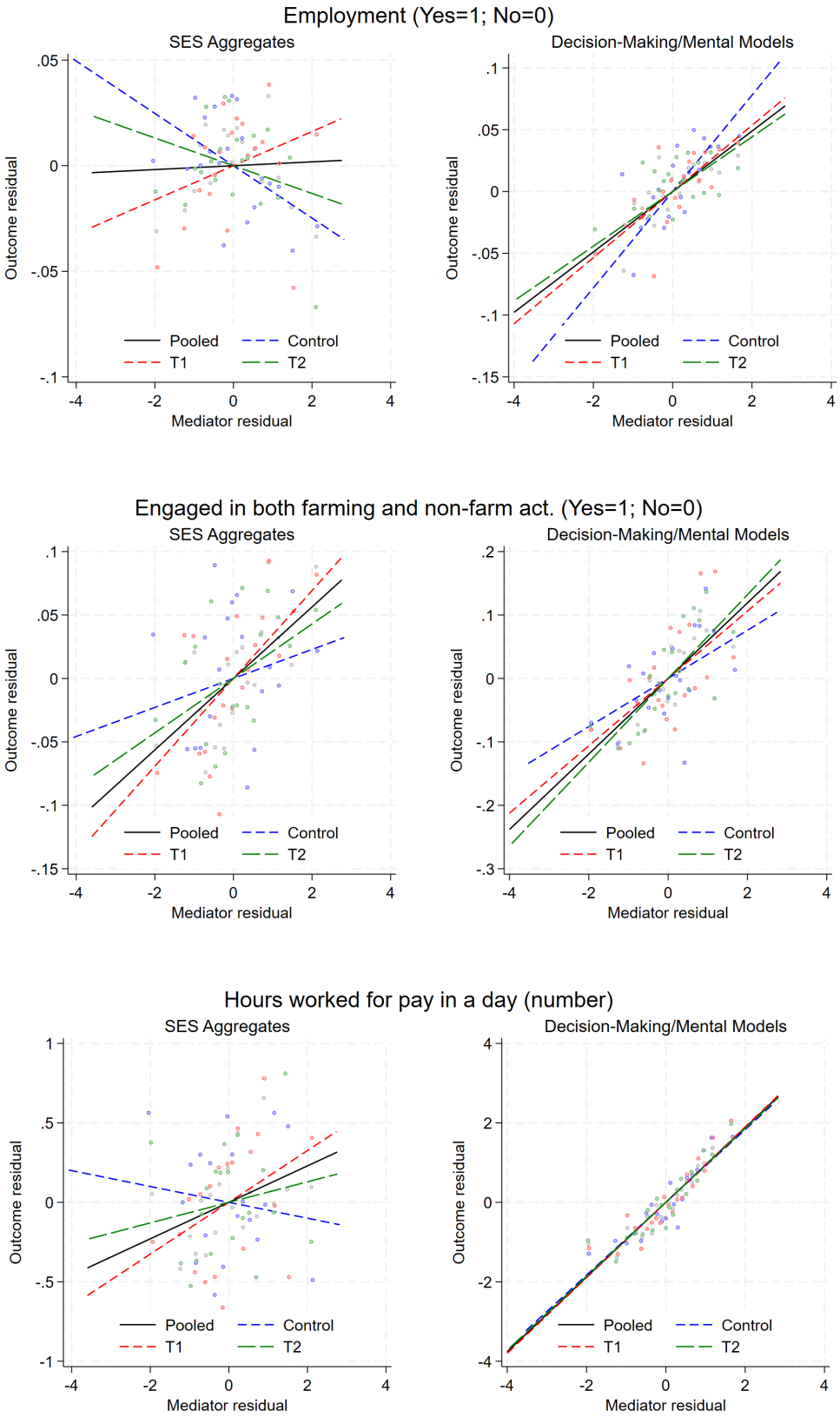


Figure 14.1: Residual–Residual plots

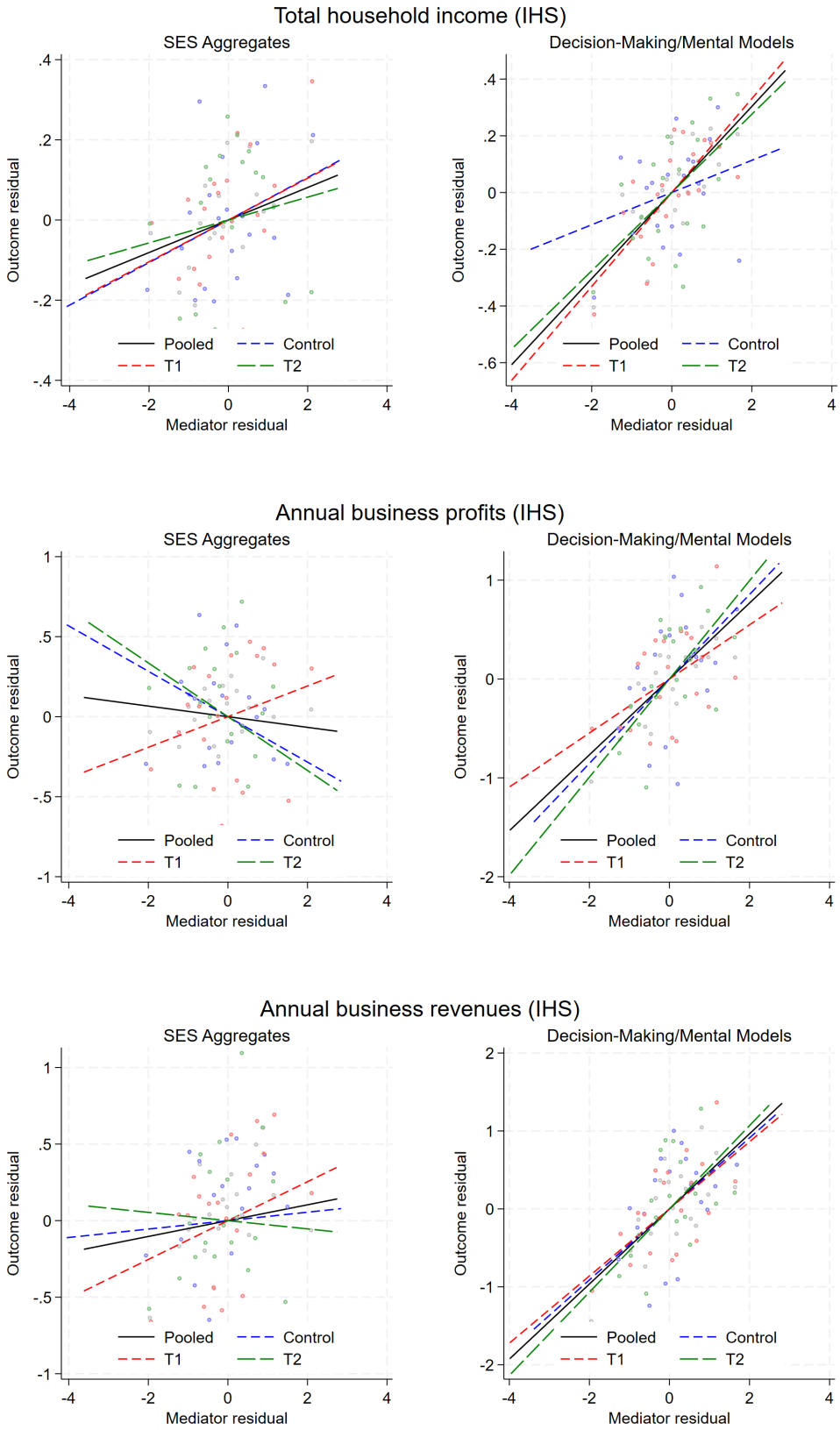


Figure 14.2: Residual–Residual plots

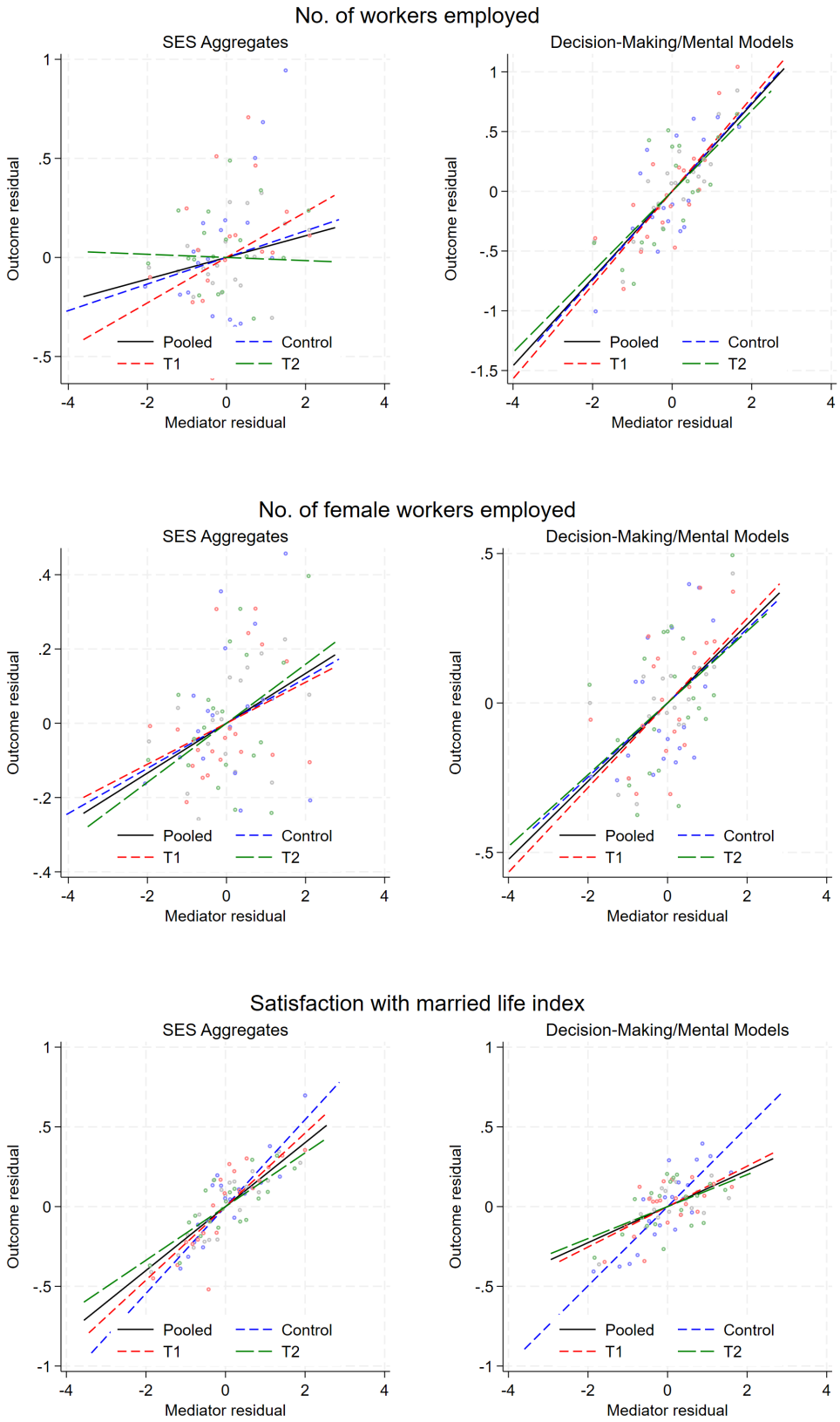


Figure 14.3: Residual–Residual plots

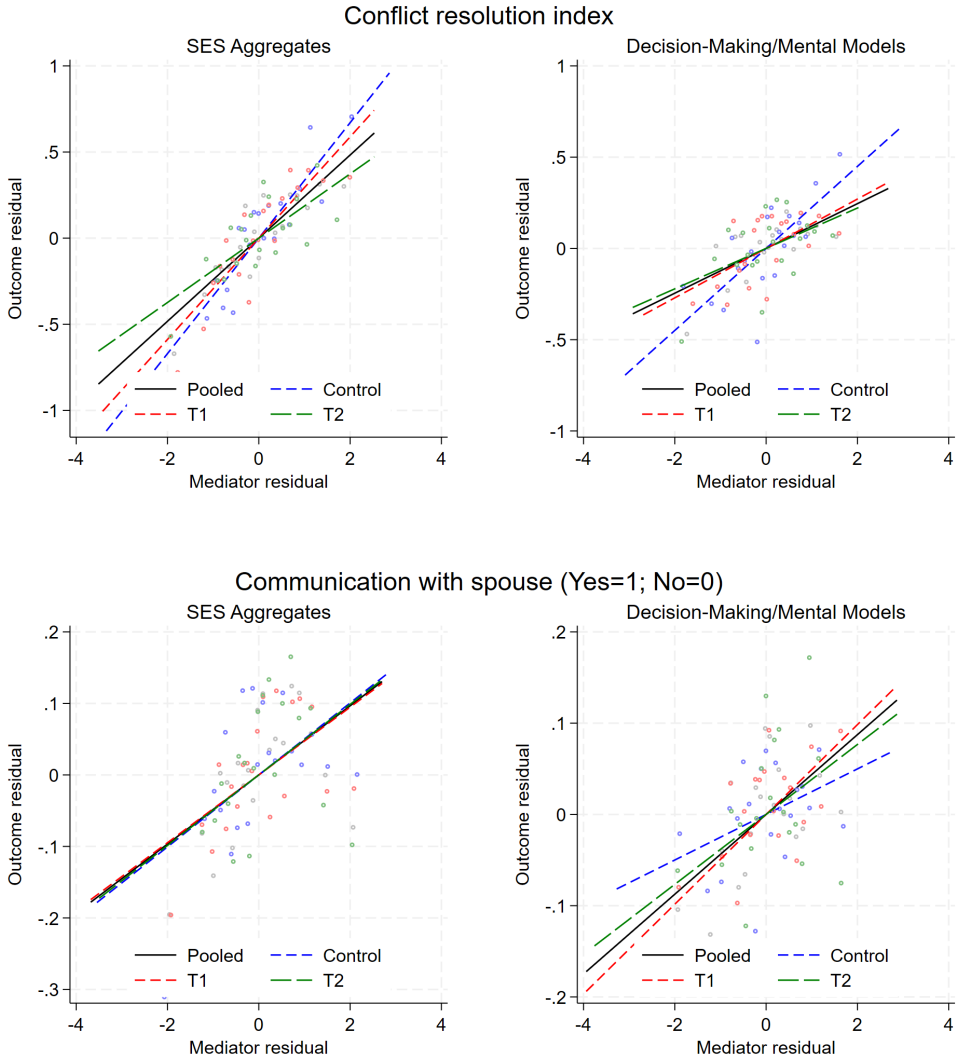


Figure 14.4: Residual–Residual plots