

**Side by Side:**  
**A Comparative Examination of the Role of Gender for**  
**Ethiopian Smallholder Farmers at the Agriculture-Nutrition Nexus**

A Thesis Presented to the Faculty of  
The Friedman School of Nutrition Science and Policy

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**DEDICATION**

To my parents and Ethan.  
Thank you.

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## ABSTRACT

Gender has increasingly become mainstreamed in agriculture-nutrition program design and policy formation. This dissertation sought to understand how gender dynamics affect the planning and implementation of agriculture development programs that are meant to benefit nutrition. Through three distinct studies all conducted in the context of the Ethiopian nutrition program, Empowering New Generations to Improve Nutrition and Economic Opportunities (ENGINE), this dissertation compared women and men's experiences regarding behavior change and empowerment in agriculture and also assessed the validity of a recently developed empowerment metric.

**The first study** was a gendered comparison of the process of nutrition behavior change within the context of nutrition-sensitive and nutrition-specific program platforms. Through a unique participatory approach, this study examined the behavior change stages through the 'Message Train', a conceptual framework developed and tested for this study which deconstructed sustainable behavior change into six distinct sub-processes. Women consistently had more contact with nutrition-specific messages and shared them more frequently than men. Contact and sharing of nutrition-sensitive messages by women regarding agricultural practices was low compared to nutrition-sensitive messages related to WASH. Results suggest that behavior change communication strategies within the context of nutrition-specific and sensitive programs warrant focused attention to the different ways in which women and men receive, internalize, share and adopt different nutrition messages both individually and collectively. **The second study** determined how smallholder farming women and men differ in their definitions of empowerment in agriculture. It also assessed the emic content validity of the Abbreviated-Women's Empowerment in Agriculture Index (A-WEAI) by comparing the emic definitions to empowerment domains operationalized in the A-WEAI. This qualitative study found that, for women, empowerment was being able to perform activities that required bravery in the face of discriminatory gender norms. For men, empowerment came through the fulfillment of their societal gender role. Men's emic definition of empowerment appeared to have a slightly closer alignment, compared to women's, with the etic A-WEAI definition of empowerment. For both genders, however, the A-WEAI domains of resources, leadership and time had little to no content validity in our study sample. The A-WEAI also omitted several concepts that respondents felt were pertinent to empowerment, including individual levels of self-efficacy, ability to multi-task, and culturally related sources of empowerment such as recognition by community. Results highlighted how the inclusion of emic perspectives in empowerment metrics can improve the design of programs that address the 'felt' barriers to empowerment as well as reinforce the achievement of a subjective state of empowerment. **The last study** assessed the etic content validity of the A-WEAI using qualitative interviews, household survey data and an online expert panel survey. Based on the criteria of content relevance, representativeness, and technical quality, the study found mixed results of content validity adequacy. All experts judged the A-WEAI items to be excellent in relevance while also suggesting that important domains such as knowledge and access to information were omitted. Individual cognitive debriefing interviews suggested that several items and item responses, such as the meaning of 'asset ownership', were not interpreted by subjects as index developers intended. For women, the Cronbach's alpha for the production, income and leadership domains was higher than 0.65, indicating acceptable internal reliability. The resources domain, however, was not homogenous with other items in the scale, suggesting that this domain may not be pertinent to women's empowerment within our study sample.

This dissertation identified the value of communication between genders as a potentially effective and sustainable vehicle for behavior change. It also highlighted the need for definition clarity in empowerment research as well as the inclusion of context specific domains and operationalizations within empowerment measurement. Together, the three studies elucidated the necessity for further research that examines effects of gender specific programming on men as well as further emic and etic based validation of gender indices, such as the A-WEAI, in different contexts.

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## CHAPTER 1

### INTRODUCTION

The potential for agriculture-based economic growth to help reduce malnutrition at global, national and community levels has been highlighted repeatedly within the literature [1]. In their analysis of the relationship between economic transformation and changing patterns of nutrition and health, Webb and Block [2] found that amongst multiyear observations of 29 countries, stunting responded positively [i.e. decreased] to “rising income in the agricultural sector but less well to nonagricultural income” [2]. The full potential of agricultural growth to positively influence nutritional outcomes, however, has yet to be realized [3, 4]. The term ‘agriculture-nutrition nexus’ refers to the relationship between agriculture development programs and nutritional outcomes. To drive effective policy, there is a need for more rigorous research on this nexus and how agricultural investments can better promote positive nutrition outcomes [3, 5, 6].

Moreover, the role of gender in this relationship has been highlighted at both the policy and programmatic level [7, 8]. ‘Gender mainstreaming’ (the effort to bring issues such as gender equality and equity, gender transformation, and women’s empowerment to the forefront of agricultural development work) is considered to be a cross-cutting and high priority theme in both nutrition and agricultural program design, monitoring and evaluation and policy formation. However, there is still a need to unpack and identify gender related assumptions and context-specific norms [9, 10], such as household decision-making processes. Through a better understanding of gender related norms, policy and programming will not only maximize impacts on women’s and men’s well-being by supporting dynamics that lead to positive outcomes but also minimize the potential marginalization of either gender. Although gender has historically been “stubbornly and persistently associated with only women”, gender research, particularly in agricultural development, can and should incorporate the perspectives and norms of men [11]. The nutritional inequities between female headed households and male headed households have been well explored [12-14]. However, households are very often dual-headed (i.e. constituted by a husband and wife)<sup>1</sup>[16]. Viewing men as merely a barrier to women’s empowerment overlooks

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<sup>1</sup> Within this dissertation, the term ‘dual headed household’ will refer to a household that has a primary married couple. Although the term in the US implies that both the primary male and female have equal ‘headship’ (or power) within a household, this does not apply to the context of this dissertation. Several works within the literature (15. Guerron-Montero, C. and G. Moreno-Black, *Household structure and dietary patterns in the Afro-Ecuadorian highlands*. Food and Nutrition Bulletin, 2001. 22(1).) have used this term for studies taken place in developing countries such as Ethiopia.

the potential contributory role of men in the reduction of undernutrition and the gender relationships and dynamics that influence women's level of empowerment in agriculture.

The overall objective of this dissertation was to investigate the role of gender at the agriculture-nutrition nexus. This dissertation sought to understand how gender dynamics affect the planning and implementation of programs through the agricultural sector that are meant to benefit nutrition. This objective was accomplished through three studies (presented as three distinct Chapters (4-6) in this dissertation) all carried out in Ethiopia.

**Chapter 4** presents '*Uptake of behavior change messages in nutrition-specific and nutrition-sensitive interventions: A gendered comparison of message contact, information sharing and decision-making*'<sup>2</sup>. This study conducted a gendered comparison of the nutrition behavior change processes within the context of nutrition-sensitive and nutrition-specific program platforms. Using qualitative methods, this study examined the behavior change stages that precede behavior adoption (message contact, information sharing and decision-making). These stages were organized into an analytical framework called the 'Message Train', which was developed to deconstruct sustainable behavior change into six distinct sub-processes.

In **Chapter 5**, the study titled '*Emic definitions of empowerment: A qualitative gendered comparison and content validity assessment of the Abbreviated – Women's Empowerment in Agriculture Index (A-WEAI)*' is described<sup>3</sup>. It sought to determine whether and how agrarian women and men in Ethiopia differ in their definitions of empowerment in agriculture. Through qualitative methods, this study also assessed the emic content validity<sup>4</sup> of the Abbreviated-Women's Empowerment in Agriculture Index (A-WEAI).

**Chapter 6** presents the study of '*Content validity and internal reliability of the Abbreviated – Women's Empowerment in Agriculture Index (A-WEAI) in Ethiopia: A mixed methods approach*'<sup>5</sup> which assessed the etic content validity and internal reliability of the A-WEAI through a mixed methods approach drawing on three different sources of data: individual interviews, a household survey administered separately to both men and women and an online expert panel survey.

The remainder of the dissertation is organized as follows: Chapter 2 presents a comprehensive critical literature review of relevant concepts, research, and knowledge gaps. Chapter 3 outlines in detail each study's respective methods. Lastly, Chapter 7 provides a

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<sup>2</sup> This study will be referred to as the 'Message study' for the remainder of the dissertation.

<sup>3</sup> This study will be referred to as the 'Empowerment study' for the remainder of the dissertation.

<sup>4</sup> "Emic" refers to the perspective of those being measured and studied. Content validity is defined as the extent to which a measure represents all facets of a given construct and excludes irrelevant components. 17. DeVellis, R., *Scale Development: Theory and Applications*. 2nd. ed. Applied Social Research Method Series. Vol. 26. 2003, Newbury Park: SAGE Publications..

<sup>5</sup> This study will be referred to as the 'A-WEAI study' for the remainder of the dissertation.

detailed and integrated summary of the entire dissertation research results, policy implications and future research steps.

## **CHAPTER 2**

### **LITERATURE REVIEW**

Chapter 2 presents a critical synthesis of the current literature relevant to this dissertation. It begins with a conceptual overview, highlighting the various ways nutrition, agriculture and gender are linked. Thereafter, commonly accepted definitions of gender and empowerment are summarized and discussed. Recent developments in the measurement of these concepts, along with a summary of pertinent published studies regarding women's empowerment and associated outcomes are then presented to provide background information for the Empowerment and A-WEAI studies (Chapters 5 and 6, respectively). This chapter concludes with a literature review for the Message study (Chapter 4), specifically examining the evidence and research gaps regarding agricultural and nutrition related behavior change in resource limited settings.

### **CONCEPTUAL PATHWAYS LINKING NUTRITION, AGRICULTURE AND GENDER**

Governments and policy makers have long recognized that agriculture policy can and should aim to benefit nutrition. In the 1960s, the relationship was mostly characterized by two separate efforts working towards the same goal of increased food supply. The nutrition community focused on addressing caloric and protein deficiencies through food provision programs, particularly at the population level, as famines began to unfold in Ethiopia and Bangladesh [18]. The agricultural community was also addressing food shortage issues through the Green Revolution, a research and technological movement which ultimately led to innovations such as high-yielding varieties of wheat and rice. The US agricultural sector further contributed to alleviating food shortage issues through its contribution to international food aid. At this time, however, the potential synergy between agriculture and nutrition programs was not emphasized [18]. Many poverty alleviation institutions such as the World Bank perceived overall increased food supply and income (through agricultural sales) to be the primary pathway through which improved nutrition could be achieved through agriculture.

In the last 50 years since the Green Revolution, the nutrition community has shifted towards a focus on direct interventions, such as deworming and micronutrient supplementation. It became clear that increased agricultural productivity alone would not be enough to alleviate food insecurity. Furthermore, the 2008 food price crisis highlighted the consequences of food price volatility. Food insecurity continued to be a salient item on the development agenda. Presently, the relationship between agriculture and nutrition has taken on a more operational nature as development agencies focus on nutrition sensitive programming. Characterized by their

complementary nature, nutrition-sensitive programs work with agriculture, social protection, early child development, education and water sectors to address the underlying determinants of nutrition (namely poverty, food insecurity and limited access to adequate resources and services) [19]. This multisectoral approach has led to development programs focusing more on the relationship between agriculture and nutrition and greater integration of nutrition messages and outcomes into agricultural program design.

Simultaneously, women and women's empowerment has been both conceptually and empirically emphasized within the agriculture-nutrition discourse within the past decade. Herforth and Harris (Figure 1) [4] who built upon the original frameworks of Gillespie et al. [20] and Headey et al. [21], present a visual representation of how women's empowerment influences nutritional outcomes through agriculture. Gillespie et al. highlights the role of women across seven pathways that link agriculture and nutrition. Headey et al.'s framework focuses on the role of income, consumption and women's time allocation. Herforth and Harris consolidate these two frameworks and focus on three pathways that represent how agriculture can leverage reductions in undernutrition: food production, agricultural income and women's empowerment.

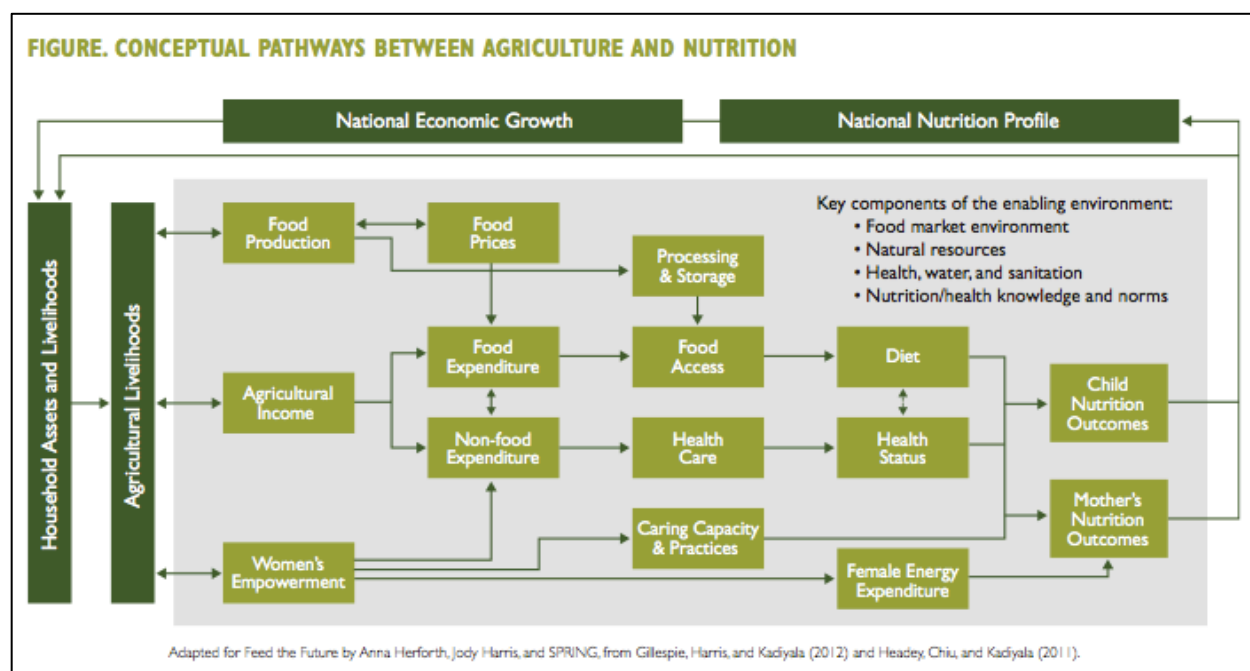


Figure 1: Conceptual pathways between agriculture and nutrition by Herforth and Harris [4]

In the Herforth and Harris framework, the **women's empowerment** pathway highlights the integral role of women within the agricultural sector. The main three factors that mediate this pathway are women's control and use of income for food and non-food expenditure, the ability of women to care for themselves and their families and, lastly, women's energy expenditure [22]. The potential positive effect of women's control over income on household well-being and child nutritional status has been repeatedly documented in food insecure and poor household settings. Hopkins et al. [23] found that in Niger changes in female annual income, while controlling for male income, affected household food expenditures positively. Upon studying the effects of Mexico's well-known conditional cash transfer program, PROGRESA, Rubalcava et al. [24] demonstrated that when the program provided additional income to women, expenditures on improved nutrition, child well-being (particularly clothing) and small livestock increased. This effect, however, was only observed in households headed by couples, compared to single-headed households, thereby suggesting that women's empowerment (through increased income) shifted household resource allocation for the betterment of household nutrition and child well-being. In 2009, Smith et al. [25] analyzed 36 nationally representative demographic and health survey datasets from South Asia, sub-Saharan Africa and Latin America. Authors concluded that in South Asia, women's empowerment in agriculture (as measured by women's decision-making power relative to men) led to improvements in self-care, prenatal care and child caring practices, such as timely initiation of breastfeeding, all of which led to powerful positive effects on the nutritional status of children [25].

Literature on the relationship between women's empowerment and female energy expenditure is less robust. In Benin, positive associations have been observed between women's empowerment (measured by an index constructed by the authors) and maternal body mass index (BMI). Malapit and Quisumbing [26], however, found that women's empowerment (as measured by the Women's Empowerment in Agriculture Index) and more specifically, participation in credit decisions, was not positively correlated with female BMI, though it was significantly correlated with women's dietary diversity. Malapit and Quisumbing hypothesized that "empowered women may be exerting greater work effort in agricultural activities and therefore have higher caloric requirements that are not necessarily met by consuming a more diverse diet" [26, p. 62]. This introduces an interesting idea that women's empowerment may have both positive and negative effects. Women who are more empowered in agriculture may have greater decision-making power or control over income, but this benefit may come at the expense of greater agricultural workloads and caloric needs. Herforth and Harris' framework captures the relationship between women's empowerment and maternal nutrition outcomes but neglects the

connection between mother's nutrition outcomes and the household's assets and livelihoods. Given their numerous roles and responsibilities both within the household and in the field, a mother's nutritional status has great implications not only for child nutritional status but also household labor. However, while many postulate that women produce anywhere from 60-80% of the world's food supply [27], Doss et al. [10] caution against referencing this statistic and argue that the percentage in reality is much lower. Although women may provide labor and keep some revenue to themselves, Doss et al. underscore that most agricultural production relies on the work of *both* women and men, making it difficult to disaggregate the exact contribution of each gender [10]. Thus, while women are important actors for household food security, contribute to improved household dietary diversity, and provide a significant contribution to marketed agricultural products [10], as highlighted in the women's empowerment pathway, the integration of men's role in these processes is just as valuable.

Herforth and Harris' decision to highlight and isolate women's empowerment as a separate pathway is a strength of the framework, as many other nutrition related frameworks merely state, as a side note and without detailed specification, that gender is a cross cutting issue [28]. By depicting women's empowerment as a separate pathway, the framework gives well-deserved emphasis to the role of women in the agriculture-nutrition linkage. However, the framework could be improved by also acknowledging how women's empowerment, and perhaps more importantly, gender, is a construct that influences several other variables in the food production and agricultural income pathways. The integration of gender, which includes men and the dynamics between men and women, within the framework would perhaps result in a more accurate representation of the necessary factors to be considered in agriculture-nutrition program design and policy formation. Literature has conclusively cautioned against categorizing all agricultural producers together, regardless of gender [29-32]. It is clear that women and men play different roles in the systems of agricultural production [33], may face different challenges and vulnerabilities [7, 34] and perhaps most importantly, may have different effects on household well-being and nutritional outcomes [35]. Overgeneralizing gender categories and deducing conclusions at inappropriate scales potentially identifies patterns that have "no meaningful connection to gender and only a tenuous connection to vulnerability for much of the population under investigation" [36]. One example of how women and men differ in their engagement with agriculture relates to their use of time expenditure. Several studies have cautioned against overlooking the potential negative effects of agricultural interventions on women's time [37, 38] and call for programs to provide support for women and their responsibilities as caregivers and contributors to securing household income and food security [39].

Lastly, when using this framework to understand the agriculture-nutrition linkage, one must remember that gender norms and inequities can differ from household to household within the same community, region and country. In order to understand fully how gender influences Herforth and Harris' food production and income pathways, the enabling environment (i.e. food markets, natural resources, health, water and sanitation and nutrition knowledge and social norms) must be considered, as is appropriately indicated in the top right corner of the grey box in Figure 1. For example, in certain African polygamous cultures, access to resources and decision making is divided among household members, according to primary and secondary spousal status [40, 41]. This contrasts with Latin and South American environments where monogamous family structures are dominant and a gendered division of labor in both industrialized crop production and peasant farming has been established [41, 42]. Other studies have shown that in certain cultural contexts, when women's crops become commercialized, men can take control of them as income generating potential is realized [43-45]. All authors for these studies caution against making assumptions that such gender dynamics are universal.

## **GENDER INEQUALITY**

The World Health Organization defines gender as “the socially constructed characteristics of women and men – such as norms, roles and relationships of and between groups of women and men “ [46]. An important feature of the term “gender” is its reference to *both* women *and* men. Additionally, gender is cultural and temporal in nature. Gender *inequality* can be defined as the presence of “discrimination on the basis of a person's sex in opportunities, and the [unequal] allocation of resources and benefits, or access to services”[47].

Nutrition-related gender inequalities have been well researched. Several studies have indicated that intra-household BMI inequality exists; women are on average thinner than men in agricultural households in countries such as India, Vietnam [48-50] while in other resource limited settings such as South Africa, greater obesity rates are found among women [51]. With micronutrient status, several gender differences are often referenced (such as ‘boys are at greater risk of xerophthalmia than girls’ or ‘women of reproductive age suffer a higher prevalence of iron deficiency than men’) but as Darnton- Hill et al. [52] point out, such differences cannot be generalized and “seem to depend on the environmental, epidemiologic and disease profiles of the communities” [52]. Women at certain points of the life cycle, such as childbearing years, have been identified as particularly vulnerable to deficiencies in diet, care and health services [48-50, 53]. At the same time, the presence of women within a household has been shown to improve levels of food insecurity [54], overall household health status [55] and reduce child malnutrition

[25]. Within the agricultural field, gender inequalities have been demonstrated in regard to property rights [56], agricultural technology adoption [57], value chains [58], and crop production [59], to name a few.

The use of different methodological approaches for the measurement of gender gaps, particularly within the context of agricultural research can affect both the analysis and interpretation of findings. De La O Campos et al.'s work [60] used data from Uganda to assess the effect of different gender variables in capturing household decision-making in agriculture. Authors found that selection of gender variables, such as being a female plot holder versus female head of household, as well as the unit of analysis (household vs. plot level) significantly changed the estimation of the gender gap in agricultural productivity [60]. They also found that in several contexts, the roles of women and men overlapped, with tasks being shared in the same plot, making it difficult to measure and differentiate the gender specific effects on productivity [60]. This type of methodological study highlights the need not only to define precisely the constructs of interest, but also to understand clearly the assumptions and implications of indicator selection.

## **EMPOWERMENT**

A wide variety of definitions of empowerment have emerged from the literature and often refer to terms such as “autonomy” [61], “self-determination” [62, 63], “liberation” [64, 65] and “self-confidence” [63, 66]. But perhaps the most commonly referenced term when defining empowerment has been “agency” [67]. Sen defines agency as “what a person is free to do and achieve in pursuit of whatever goals or values he or she regards as important” [68, p. 203]. According to this definition, empowerment is a process in which agency expands. Kabeer describes agency as the ability of an individual to set his/her own goals and act upon them and specifies that levels of agency can vary in different spheres of an individual's life [69]. An increase in agency in one domain may or may not have positive “spillover” effects on agency in other domains [63].

Other authors have focused on the relational aspect, defining empowerment in terms of power and how that power is exerted on (and at times in spite of) others. Mason & Smith [70] claim that empowerment is about “the extent to which some categories of people are able to control their own destinies, even when their interests are opposed by those of the other people with whom then interact” [70, p.1]. Uphoff [71] further distinguishes between two types of power; ‘power resources’ which can be defined as the accumulated, invested and exchanged assets and ‘power results’, which are the activities that are achieved by using these resources.

Empowerment has also been defined with a particular focus on the resources and social/institutional related preconditions required to exert agency or power. Several scholars have referenced the definition of empowerment provided in the 2000-01 World Development Report: “empowerment is the process of enhancing the capacity of poor people to influence the state institutions that affect their lives, by strengthening their participation in political processes and local decision-making. And it means removing the barriers—political, legal and social—that work against particular groups and building the assets of poor people to enable them to engage effectively in markets” [72, p.99].

Lastly, several authors have argued for definitions of empowerment to encompass intervening or barrier-specific variables, such as information and influence [63, 73]. Without these two supporting factors, people are not only not allowed to express their preferences but also denied the ability to have an effective impact on particular decisions [74]. This holds true in particular for *women’s* empowerment, as women have historically had unequal access to information and education, compared to men [75].

While some define empowerment as a process, others define it as a state of being. Of all the definitions reviewed, however, none addresses the notion that empowerment of one individual can lead to disempowerment of another. From a semantic perspective the prefix ‘em-’ suggests that power is given or put into being. If, within a household, there is a set amount of power to be had, (say for decision-making), then giving power to a woman potentially takes away power from her counterpart, the male spouse. This understanding of empowerment introduces the importance of potential negative consequences of empowerment, as tensions may arise between those who are given power and those who lose power.

Within the agriculture and nutrition fields, perhaps the most widely cited definitions of empowerment include those articulated by Narayan [76] and Kabeer [69]. Kabeer’s focuses on agency and segues into defining empowerment as a process of change, which then results in an individual being able to make strategic life choices. This process of change, of course, implies that there is an initial state of being disempowered [69]. Narayan approaches empowerment from the perspective of social justice, identifying four main elements of empowerment: access to information, inclusion and participation, accountability, and local organizational capacity [76]. Together these four elements formulate a definition of empowerment: “the expansion of assets and capabilities of poor people to participate in, negotiate with, influence, control and hold accountable institutions that affect their lives” [76, p.5]. While this definition identifies poor people as the subject of empowerment, it is particularly pertinent to women’s empowerment as women’s assets and capabilities to engage with institutions are often less, in comparison to men

[10]. Both Narayan's and Kabeer's definitions of empowerment have even been cited as a theoretical framework for development and agriculture-nutrition program design [63, 73] perhaps because they provide specific programmatic windows of opportunity, such as asset provision, which can potentially result in improved agricultural productivity and nutritional outcomes.

### **Understanding Women's Empowerment in Agriculture**

While there has been no formal definition of 'women's empowerment in agriculture', factors (such women's roles as agricultural producers and caretakers, time and labor allocation and decision-making regarding the use and distribution of agricultural resources and income) have been identified as important components of the construct [77]. The defining characteristic of the term is, of course, the word 'agriculture' and the agricultural labor and decision-making a woman may potentially participate in. Some argue that women's empowerment in agriculture is not only about the ability to make decisions but also the inputs and social resources that are needed to catalyze the decision into action [78]. Indeed, women's disadvantaged access to key agricultural inputs, such as land, human capital, and technological resources as well as intangible assets such as social capital and decision-making power, has been established in several studies [41, 79-81]. For instance, based on a household study of land tenure in Uganda, Doss et al. [82] found that women were less likely to be listed on ownership documents, and have fewer rights to the listed land plot. In Ethiopia, a significantly higher proportion of male, compared to female, respondents were involved in agricultural cooperatives (24 and 4 percent respectively) [83].

In the context of increased attention to women's empowerment programming, Alkire et al. [78] argue that, because many agriculture-related indicators are gender-blind, there is a clear need for a measurement tool that monitors the impact of agricultural interventions on women's empowerment in general and specifically in agriculture. While it is true that there is a need to measure women's empowerment, the argument for a tool that specifically measures empowerment *in agriculture* presents potential issues. Focusing on empowerment in agriculture not only disregards the other important facets of empowerment that can be influenced by agriculture (such as economic), but also neglects to acknowledge that empowerment in one realm of an individual's life can lead to empowerment in other realms.

### **Measuring empowerment and women's empowerment in agriculture**

There is no gold standard metric for empowerment. Proxy variables such as education and employment have been commonly used to measure empowerment at the household and individual

level. These proxy variables provide a picture of empowerment defined in terms of agency – the ability to make choices and act upon these choices [84].

These types of proxies were, and still are, believed to have strong positive correlations with certain dimensions of empowerment, such as decision-making power, as evidenced by the literature [61, 85]. For example, women's education was shown to be positively associated with women's self-confidence and understanding of how to operate in the world [86]. Literacy, a corollary of education, was found to be positively associated with women's independence from family networks. Literacy led to empowerment (defined as independence) through wider access to information [87].

Recently, scholars and practitioners have attempted to measure this complex concept through direct composite indices. Most of these direct measures consist of a combination of self-reported indicators that are then categorized into different domains, such as access to and control over resources, participation in economic and child-related decisions, self-esteem, mobility, freedom from domestic violence, political awareness and participation [88]. Ewerling et al. [89], creators of the Survey-based Women's emPowERment index (SWPER), used Demographic and Health Survey (DHS) data from 34 African countries to identify items related to women's empowerment. They claim the SWPER index offers a promising estimate of the effects of women's empowerment on health interventions and outcomes, while also enabling researchers to conduct within-country and between-country comparison and trend analysis [89]. Since the SWPER index has yet to be fully developed, it is unclear how women's empowerment is defined and whether the index will indeed provide an accurate measure of their definition of the construct. Derived from principal component analysis, the index is comprised of three dimensions: attitude to violence, social independence and decision-making. However, the use of DHS data to develop the index raises concern, as these datasets typically capture data on a wide variety of indicators but lack specific information on gender norms. The dimension of decision-making, for example, was derived from survey questions that asked about broad topics such as healthcare. While a mother could reply that she makes decisions about healthcare, either alone or jointly, this type of questioning does not address the nuanced and context specific nature of decision-making. Her response does not tell us what kind of decisions the mother respondent is specifically thinking of and most likely, different women are thinking about different scenarios [90].

The Indira Gandhi Institute of Development Research and University of Texas Austin are currently in the process of constructing and validating the Women's Empowerment in Nutrition Index (WENI), "a robust metric that aggregates factors that reflect nutritional empowerment across rural agricultural contexts in South Asia" whose domains will be determined by

participatory research initiatives [91]. These types of new indicators acknowledge the multi-dimensional aspects of empowerment in multiple settings. Furthermore, their integration of both qualitative and quantitative methods leads to a potentially more comprehensive, valid and reliable measurement. The trend to develop sector specific indicators of empowerment, however, is slightly contradictory to the definitions of empowerment that the developers cite. While Kabeer's definition of empowerment is consistently cited in empowerment index development literature, her point regarding the interrelated nature of agency in multiple spheres of an individual's life is not reflected in these sector specific indicators.

Indicators such as the Gender Gap Index (GGI), Gender Empowerment Measure (GEM) and the Social Watch's Gender Equity Index (GEI) have been identified as potentially useful international level indicators of women's empowerment, incorporating domains such as life expectancy, education and female representation in economic and political power [92]. This, however, is an inaccurate common practice in which indicators of gender equality are synonymously referred to as indicators of women's empowerment. While women's empowerment may be a path to achieve gender equality, and gender equity in health status can be a precursor for women's empowerment, the two constructs are not interchangeable

In an effort to meet the perceived need for an empowerment measurement tool that provides coverage of the agricultural sector and utility for both cross country and regional comparison, the International Food Policy Research Institute (IFPRI), in collaboration with other global partners, released the Women's Empowerment in Agriculture Index (WEAI) in early 2012. This survey-based index was designed to measure the empowerment, agency and economic and social inclusion of women in the agricultural sector [78]. Developers promoted the index as a way to monitor progress towards Millennium Development Goal 3, gender equality. Individual level data, for both women and men in the same household, were collected through household surveys and then aggregated into one index.

To address user feedback on the original WEAI (WEAI 1.0), a new abbreviated index was created and released in 2015, the A-WEAI (Abbreviated WEAI). The A-WEAI is advertised to require approximately 30% less in administration time and is described as 'streamlined' [93]. All questions of the A-WEAI can be found in the WEAI 1.0.<sup>6</sup> Based on the Alkire-Foster method [94]<sup>7</sup>, the A-WEAI is comprised of two sub-indices. The first sub index, the Five Domains of

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<sup>6</sup> For a detailed comparison of WEAI 1.0 and the A-WEAI, see the Appendix A of the Supplementary Materials of Chapter 6.

<sup>7</sup> The Alkire-Foster method was developed by Sabrina Alkire (OPHI) and James Foster (George Washington University and OPHI) and is a method for measuring multidimensional poverty, well-being and inequality. It measures outcomes at the individual level (person or household) against multiple criteria (domains and/or dimensions and indicators). Different domains and indicators can be chosen, depending on the context and purpose of the exercise and involves counting the different types of deprivation that individuals

Empowerment (5DE), is comprised of (1) production, (2) resources, (3) income, (4) leadership and (5) time. The second sub index is the Gender Parity Index (GPI), which reflects the percentage of women whose empowerment score meets or exceeds that of the head male figure in their household. In the A-WEAI and its sub-indices, an individual is considered empowered if he or she enjoys adequate achievements in 80 percent of the weighted indicators or more [78]. This new version of the index was piloted in the summer of 2014 in Bangladesh and Uganda and has been enthusiastically used by many programs worldwide [93].

Additionally, several other indices have been developed by others, either as adaptations or variations of the WEAI. The Women's Empowerment Index (WEI), developed by the Hunger Project, relies heavily on the WEAI's structure and content, but claims to focus on concepts that are central to overcoming the challenges of rural poverty and disempowerment and does not have a specific sector focus [96]. With an administration time significantly less than the A-WEAI (30 minutes vs. 60), the WEI also differs in some of its domains by including business ownership, literacy, and prenatal care.

Since the release of the WEAI and A-WEAI, studies have found increases in the WEAI index to be positively associated with household level dietary diversity, adult nutritional status [97, 98] and crop productivity [33]. Reduced gender disparities, measured by the GPI, have also been found to be positively associated with agricultural technical efficiency [99]. Smith and Haddad [100] have also found that improvements in gender equality from 1970 to 2012 have been a key driver in the reduction of child stunting in 116 countries.

Despite decades of work and recent strides in developing and fine-tuning ways to measure women's empowerment, many experts concur that measuring such a construct remains significantly challenging [61, 101, 102]. Richardson [84] summarizes the three main sources of 'poor' empowerment measurement; (1) lack of full theory integration into the conceptualization and selection of indicators of empowerment; (2) imprecise or biased measurement models with inadequate transparency in validity assessment; and (3) use of information that is too narrowly focused and fails to capture all dimensions [103]. Additionally, due to the myriad of definitions, operationalizations and measurements of empowerment, comparisons of research results remains challenging [104].

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experience at the same time, such as a lack of education or employment, or poor health or living standards. For example, to identify the poor, the AF Method counts the overlapping or simultaneous deprivations that a person or household experiences in different indicators of poverty. The indicators may be equally weighted or take different weights. People are identified as multidimensionally poor if the weighted sum of their deprivations is greater than or equal to a poverty cut off – such as 20%, 30% or 50% of all deprivations. 95. IFPRI, *Women's Empowerment in Agriculture Index*. 2012: Washington, DC.

## BEHAVIOR CHANGE WITHIN NUTRITION AND AGRICULTURE

### The evolution of approaches promoting behavior change

In addition to women's empowerment, a central focus of this dissertation is the role of gender in social behavior change interventions. Over the past few decades, several terms have been used to define the approaches used to mobilize positive nutritional changes. These terms are often used interchangeably, but it is helpful to understand the differences and the general evolution of terms used within the literature.

*Nutrition education* is defined as “any combination of educational strategies, accompanied by environmental supports, designed to facilitate voluntary adoption of food choices and other food and nutrition-related behaviors conducive to health and well-being” [105, p. 176]. This term is probably the oldest and most broadly used term (other than the even more generic term ‘nutrition information’). However, in the 1970s, when mass media was adopted as a mechanism for disseminating health and nutrition information, the term *Information, Education and Communication (IEC)* was developed. IEC encompassed a wide variety of methods- from one-way didactic communication to entertaining methods using a myriad of media channels, usually by a public health or medical expert who gave recommendations to an audience [106]. IEC, however, did not generally bring about as much behavior change as hoped, mainly because topics were largely limited to those identified as ‘important’ by health experts and conveyed solely from their perspective, thereby failing to take into account actual barriers to behavior change [107]. From here, health and nutrition communication practitioners looked to the commercial marketing sector for other methods to inspire behavior change. While the marketing sector provided some valuable lessons on how to use the consumer/client's point of view for defining a problem, its focus on products (such as bed nets and contraceptives) led to a focus on procurement, distribution and price subsidization of health products rather than the actual behavior change process [106].

The next ‘generation’ of health/nutrition communication was characterized by the *Behavior Change Communication (BCC)* approach. Defined as “an evidence and research based process of using communication to promote behaviors that lead to improvements in health outcomes”, BCC is a mixed media approach that uses interpersonal, group and mass-media channels [106, p.3]. BCC, which has an explicit outcome of behavior change, emphasizes the need to thoroughly understand the determinants as well as external and internal factors pertinent to the individual. Behavior change communication is still largely used in the global nutrition field. However more recently, communication experts have grown to further understand that behaviors are rooted in particular socio-ecological contexts. This has led to expanding BCC into

what is now known as *Social and Behavior Change Communication (SBCC)*. Very similar to behavior change communication, SBCC strategies are driven by research and evidence, as well as the beneficiaries' (or target audience's) perspective. What makes SBCC different, however, is its emphasis on a "comprehensive ecological theory that incorporates both individual level change and change at broader environmental and structural levels" [106, p.4]. This is particularly pertinent to the field of global nutrition, as implementation of communication programs requires a thorough understanding of not only the immediate and proximal circumstances of their target audience, but also the larger cultural and political structures and environmental systems. Elements such as gender, power and culture play salient roles in determining individual level behavior.

Two things are important to take away from this brief summary of the evolution of nutrition communication approaches. With every 'new approach', previous ones were not discarded but rather built upon. The multi-channel characteristic of IEC was integrated into BCC, and the emphasis on the role of external and internal factors in BCC were integrated into SBCC. Thus, while there are distinct terms for each 'type' of strategy, there is significant overlap. The point is not to categorize each strategy into a singular type but rather, understand the basis and theory of each approach as a starting point. Secondly, the broadest term, 'nutrition education', can encompass all of the various strategies (direct education, IEC, SBCC and BCC) discussed above. Though the literature uses the general term 'nutrition education' somewhat liberally and freely to refer to any of the types of strategies described above, when possible, this dissertation specifies the specific strategy used.

### **Behavior change in the nutrition sector**

More than 90% of nutrition programs worldwide have an educational component [107-109]. The majority of these nutrition programs have historically and overwhelmingly focused on maternal behavior change and the ways that maternal behavior affects infant and child nutritional status and overall health. Provision of nutrition and health information to mothers has achieved a reduction in the incidence of childhood morbidities and undernutrition ranging from 13 to 43 percent [110-112]. The intergenerational importance of maternal education and knowledge has been demonstrated, as highlighted by the 1000 days campaign which emphasizes the positive effects of maternal education on children's health through improved behaviors [113].

At the individual level, maternal formal education, perceptions, subjective norms and attitudes about health, self-perception, self-efficacy and autonomy have all been identified as potential determinants of maternal behavior [113]. In Mexico, a longitudinal study looked at two

clearly distinct social-ethnic communities and found that a woman's recognition and evaluation of her symptoms and her subsequent decision to seek medical care, as well as the choice of the type of healthcare service (all self-reported) were determined by her respective community's perceptions of health [113, 114]. At the household level, socioeconomic status of the household, the characteristics of the family, and familial/social support are some of the salient determinants of behavior. At the community and systems level, several studies have emphasized that health is a culturally defined concept [113], highlighting how cultural factors such as traditional medicine play a role in stagnating or promoting behavior change processes.

In regard to behavior change from the program design and evaluation perspective, perhaps one of the most well-known reviews on nutrition education within resource limited settings is that by Dr. Robert Hornick [107]. First published as a Nutrition Policy Paper for the Standing Committee on Nutrition, Hornick's review identified three specific nutrition problems (low rates and short duration of breastfeeding in urban areas, low energy intakes of young children during weaning, and the treatment and prevention of diarrhea). He argued that nutrition education could be a significant contributor to addressing and alleviating these nutritional issues. Strongly advocating for nutrition education, Hornick attempted to establish how and under what conditions effectiveness could be achieved. He found that six salient characteristics of conventional nutrition education systems led to greater nutritional change: different modes of communication for audience reach and longer time of exposure, higher quality of locally operated education systems, continual reinforcement of messages, education as a complement to material inputs, incentives for educators and clients and lastly, community involvement in financing the delivery of education [109]. Hornick's deconstruction of nutrition education systems has led to several interesting and pertinent discussions as behavior experts still discuss the questions he posed over 25 years ago: "Under what circumstances is there a role for nutrition education? In what content/behavior areas, with what educational methods, and for which populations is there evidence that education is an affordable, logistically feasible and effective intervention?" [107, p.1].

In 1995, Cerqueira and Olson conducted a systematic analysis and reviewed five 'successful' (i.e. had some degree of improvement in child nutrition or health status) nutrition projects, identifying common characteristics as well as potential reasons for success [115]. All five projects had an implementation period of at least four years and were able to present nutritional and health impact results. The five selected projects were spread out geographically,

implemented in India, Indonesia, Dominican Republic and Tanzania<sup>8</sup> [115]. Several conclusions drawn from this review have shed light on what is now known about nutritional behavior change and the programmatic elements that contribute to ‘successful’ strategies. All five programs were based on a participatory model in which the target audience or beneficiary community participated in either defining the nutrition problem and/or designing and/or implementing the program. Cerqueira and Olson also observed that there were generally two different ‘philosophies’ on nutrition education [115]. One focused on the individual as an agent of change, promoting individual ability to analyze problems, make decisions and then act within his/her socioeconomic environment. The second philosophy focuses on the specific behaviors that contribute to malnutrition and designing behavior modification programs to change these practices. Here, the target of change is the community, rather than the individual. For all five case studies, the authors point out that none of the projects explicitly referred to or described a theory of human behavior change, communication, or education. This lack of theory-based design and analysis proves to be quite detrimental to understanding why a program works or doesn’t work, let alone what appropriate modifications can, and should be made for future interventions [115].

Several studies have also supported the conclusion that nutrition education alone does not have the power to bring about significant nutritional behavior changes. A rice and cooking oil subsidy pilot project in the Philippines demonstrated that nutrition education had limited effects in improving nutritional status unless household incomes increased as well. Within just a span of seventeen months, nutrition education had a small but significant positive effect on increasing household food consumption but only when accompanied by a subsidy. Researchers found no significant effect in the nutrition education only households [116].

From this review of the literature, several lessons regarding the creation of a successful nutrition education program can be derived. Context of the intervention must be considered at all stages of design, implementation and analysis/evaluation with continual input from participants. Multiple channels/media of dissemination at different levels of society (individual, household and community) strengthen the probability of actual behavior change. Target audience/beneficiaries should not be viewed as a passive receiver but rather active participants. Longer exposures to messages increase likelihood of sustainable behavior changes. The education of mothers in particular has proven to be a worthwhile and effective investment for nutrition programs.

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<sup>8</sup> The five selected projects were the Narangwal and Tamil Nadu projects in India, the Indonesia Nutrition Communication and Behavior Change program, the Applied Nutrition Education Project from the Dominican Republic and the Iringa Nutrition Program from Tanzania.

However, while contributing factors to nutrition behavior change have been extensively researched, the actual processes of behavior change in the context of nutrition sensitive and specific interventions has yet to be fully examined. .

### **Behavior change in the agricultural sector**

While the behavior change literature in the nutrition field largely focuses on mothers, behavior change literature within the agricultural sector largely focuses on male farmers.

Throughout the calendar year, farmers face moments of decision making that influence not only their agricultural output but also household income and health and nutritional outcomes of both themselves and their family members, as depicted in the Herforth and Harris framework [4]. During each of these moments, risk and perceptions of risk play an integral role in affecting farmer behavior and farming household behavior. Due to the various unpredictable factors that affect agriculture (such as weather, crop performance and pests), risk of harvest loss is ever present. This is especially true for poor rural households who face considerable risks in the face of uncertainty and limited resources [117]. Alderman and Paxson [118] identify two types of farmer response to this uncertainty: risk management strategies and risk coping strategies. Risk management strategies are those that aim to reduce risk preemptively, such as crop and field diversification. Risk coping strategies aim to alleviate the effects of income risk through smoothing consumption over time (through savings, borrowing and storing) and smoothing consumption across households (through risk sharing behaviors such as a creation of mutual support networks) [118]. In comparison with behavior change within the nutrition field, in agriculture there is a greater focus on the circumstances and environment surrounding the individual farmer/farming household rather than focusing on specific individual characteristics such as self-efficacy and autonomy. Historically, literature examining farmer behavior change often assumed the ‘rationale action’ of farmers drawn from economic theory and focused on the surrounding pressures and environments [119]. While several authors have recently articulated the need to move away from simplified farmer behavior models [120], the previous trend in agricultural behavior change research differs from the behavior literature in the nutrition field which focuses on individual and community-based factors.

Within the technology adoption literature, there is a strong emphasis on looking at individual demographic factors, farming practices and how these factors and practices are correlated with adoption decisions. Common farming practices/technologies, such as use of improved seed varieties, integrated pest management, microdams, and natural resource management, and their predictors of adoption have been well studied [121-123]. In a review of

agricultural adoption studies focused on adoption of single technologies, Ersado et al. [122] concluded that the most common characteristics that influence adoption of behaviors include farm size, household head traits of gender, age, and availability of extension services. A few researchers have also looked at agricultural technology adoption decisions as a sequential or step-wise process where the timing of choices and decisions matter. Byerlee and Polanco [124] found that Mexican farmers generally follow a step-wise process of adoption of different technological pieces irrespective of how complementary the pieces were with each other. This perhaps suggests that operationalization and analysis of agricultural adoption of farming practices requires a deconstruction of the behaviors/practices, regardless of how they are ‘presented’ or packaged together to the farmer. The mode of technology dissemination also contributes to the level of behavior change and adoption. Information communication technology (ICT) has received increasing attention given its potential to better connect farmers with the information they need to make successful agricultural related decisions through internet and cell phone use. In his study of how to best facilitate ICT adoption, Bell [125] identified three main program principles: awareness raising of the technology through multiple channels, building of trust/emotional connection to the farmer and provision of the ability to test the technology.

A review of the literature on behavior change within the agricultural sector highlights several important points. Farmers have a unique set of behavior inclinations and circumstances. Agricultural decisions are inherently economic, as farmers consider various factors to decide what to produce, sell and consume. The role of risk in their decision-making process cannot be overlooked when trying to understand the nutrition-related behaviors of farmers and their households. Additionally, few studies use qualitative methods to understand the behavior change of smallholder farmers. Integration of focus groups discussions or interviews potentially provides a more in-depth understanding of the rationale and emotional factors that contribute to agriculture-related decisions.

These points provide important program design considerations, such as appropriate targeting and medium of message dissemination, particularly in the context of nutrition sensitive message delivery through the agricultural sector.

### **Gender differences in behavior change**

Although there are several studies that focus on the behavior change of women, particularly in the nutrition field, and the behavior change of men, particularly in the agricultural field, there is a significant literature gap related to gender differences in the factors influencing behavior change at the agriculture-nutrition nexus. Studies may state that gender is their research

focus but very often only include one gender in the data analysis. For example, the recent work by Kjeldsberg et al. [126] identifies the important nutrition-agriculture research question of ‘how does gender influence the pathway from agricultural production to improved income and control of income?’ but the study only gathered data from women. Through a qualitative inquiry, researchers concluded that the role of gender in the process by which agriculture translates into nutritional impact varies according to district in Nepal. They also found that empowerment domains operate differently at different stages of the pathway, sometimes representing barriers and at other times, opportunities. Furthermore, the selected empowerment domains (decision-making power, freedom of mobility, social support, workload and time, and self-efficacy) were so interconnected that it was difficult to disentangle their effect on the ability of women to translate agricultural production of the household into nutritional impacts [126]. While these findings are quite relevant to how nutrition-sensitive agricultural programs conduct context-specific formative research on program effectiveness, the study conducted focus groups only with women, omitting potentially valuable men’s perspective and overlooking an opportunity to examine the complex role of gender in agriculture related decision-making.

A smaller but not insignificant literature has studied men as a target of nutrition behavior change interventions. Meta-reviews of literature have identified the positive benefits of father’s involvement in nutrition-specific behaviors such as breastfeeding [127, 128] and child immunization [129]. Efforts to integrate and evaluate the role of men in nutrition-sensitive programs have been documented within the grey literature [130]. However, there are significant knowledge gaps on the role of men and the comparison between women and men in nutrition-related behavior change processes within the context of nutrition-sensitive interventions.

## **CHAPTER 3**

### **METHODS**

This methods chapter begins by describing the overall research setting for all three studies. Thereafter, methodology for each study is individually presented with detailed explanation of study design, sampling, recruitment, data collection procedures and analytical approach.

#### **RESEARCH SETTING**

All data collection for this dissertation was conducted in Ethiopia between July 2014 and February 2017 (Figure 2). Although the methods for the three studies presented in Chapters 4-6 varied according to the research objectives, the dissertation as a whole was conducted within the context of, and funded by, the Empowering New Generations to Improve Nutrition and Economic opportunities (ENGINE) program. ENGINE was a five-year (2011-2016), USAID funded, integrated nutrition program with a geographic focus on 83 woredas (districts) served by Feed the Future. Through an innovative suite of integrated interventions and technical support, ENGINE's primary goal was to help Ethiopian women of reproductive age and children less than 5 years old achieve sustainable improvements to their nutritional status, which would enable them to lead healthier and more productive lives. This doctoral research fell under ENGINE's Intermediate Result 4 (IR4): "adoption of a rigorous and innovative learning agenda" representing one of the largest monetary nutritional investments in Ethiopian history [131]. All the operational research that fell under IR4 was conducted by Tufts University in collaboration with the Ethiopian institutions of Jimma University and Hawassa University.

As a PhD Research Assistant of the ENGINE/Tufts team, the doctoral candidate was responsible for study design, instrument development, pretesting, training and data collection associated with the dissertation research presented in Chapters 4-6.

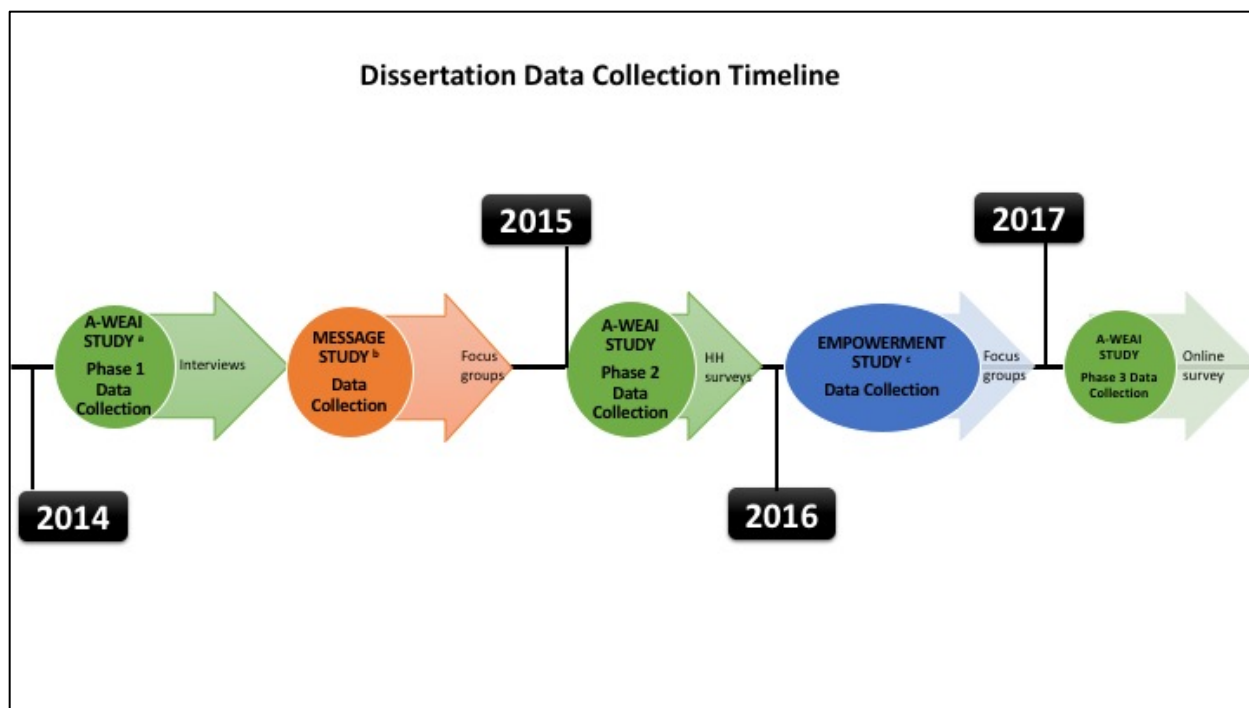


Figure 2: Dissertation data collection timeline

<sup>a</sup>A-WEAI study = Content Validity and Internal Reliability of the Abbreviated Women's Empowerment in Agriculture Index (A-WEAI) in Ethiopia: A Mixed Methods Approach (Chapter 6)

<sup>b</sup>Message study = Uptake of Behavior Change Messages in Nutrition-Specific and Nutrition-Sensitive Interventions: A Gendered Comparison of Message Contact, Information Sharing and Decision-making (Chapter 5)

<sup>c</sup>Empowerment study = Emic definitions of empowerment: A qualitative gendered comparison and content validity assessment of the Abbreviated – Women's Empowerment in Agriculture Index (A-WEAI) (Chapter 4)

## ETHICAL APPROVAL

All studies were approved by the Tufts University Social Behavioral and Educational Institutional Review Board as well as the Jimma University Institutional Review Board. Permission to conduct each study was also obtained from the respective woreda level Ministries of Health. All participants gave oral consent for participation and were given contact information for any follow-up concerns or questions.

## MESSAGE STUDY METHODS

Data collection for the Message study was conducted in 2014. It was a four-week cross sectional qualitative study where gender differences in three distinct stages of the nutrition behavior change process (message contact, information sharing and decision-making) were assessed.

### Study Context

The ENGINE program provided two types of interventions. A nutrition specific intervention, implemented across all woredas, included interventions that directly addressed inadequate dietary intake or disease through messaging about nutrition related behaviors such as exclusive breastfeeding, complementary feeding and promotion of hand washing. Within each woreda, ENGINE also provided a set of nutrition sensitive interventions to a few kebeles (communities). These interventions included demonstration gardens at schools (School), farmer trainings (FTCs) and direct provision of agriculture inputs to vulnerable households (VHH).

Additionally, ENGINE promoted a SBCC strategy to all woredas through counseling, enhanced community conversations, mNutrition<sup>9</sup>, media campaigns and cooking demonstrations. Water, sanitation and hygiene (WASH) care practices specific to young children and gender integration were also focal points of this campaign [131]. The SBCC strategy promoted messages that focused on maternal dietary diversity, optimal breastfeeding and complementary feeding practices, addition of animal source foods, vegetables and fruits in meals and integration of WASH and nutritionally focused agriculture practices.<sup>10</sup>

The community conversations were organized at the community level, targeting pregnant and lactating women, fathers, and grandmothers. The mNutrition component involved text messages sent to agriculture extension agents (called “development agents”, or DAs) with brief nutrition related content and a number they could call for more information. In addition to a radio magazine program that was aired once a week, ENGINE also worked in markets to cue better nutritional decisions at the point-of-purchase. Designated vendors who sold one or more of ENGINE’s designated “star foods” were given banners for display. ENGINE also strategically placed billboards to remind parents which foods they should purchase for their children [132] .

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<sup>9</sup> mNutrition is a mobile phone-based messaging service aimed at increasing knowledge of nutrition and health.

<sup>10</sup> Not all messages were promoted by ENGINE in all woredas. Because there was no programmatic data on which areas were exposed to which message, the Message Study only analyzed messages that were initially brought up by focus group participants.

### Study Design, Sampling and Team

Thirty-two focus groups comprised of a total of 271 participants were implemented in the Ethiopian regions of Oromia and the Southern Nations, Nationalities and Peoples' Region (SNNPR) (Figure 3).



*Figure 3: Map of Message study sample area*

This study was a substudy of a larger ENGINE Agriculture-Nutrition panel study. The panel study had a multi-stage cluster sampling scheme using probability proportional to size that selected 10 woredas within the 2 regions. This substudy randomly chose 5 of the 10 Ag-Nut panel study woredas. The five woredas were Dedhesa, Gomma, Gaserra, and Wonchi in the Oromia region and Chena in the SNNPR region (See Table 1 for the ENGINE interventions implemented in each woreda and kebele). Within each woreda, the study team and ENGINE woreda coordinator collectively chose three kebeles based on the type of ENGINE intervention that was being implemented in the area. This ensured that the Message study sample would not only reach saturation but also represent variability in exposure to both nutrition-sensitive and nutrition-specific messaging.

*Table 1: List of woredas and kebeles and ENGINE interventions*

| <b>Woreda</b> | <b>Kebele</b> | <b>ENGINE interventions</b> |
|---------------|---------------|-----------------------------|
| Dedesa        | Senso         | School                      |
|               | Sobo          | VHH                         |
|               | Yembero       | NutrSpec                    |
| Gomma         | Bulbulo       | VHH                         |
|               | Choche        | School                      |
|               | Limusapa      | NutrSpec                    |
| Gasera        | Elu Kerish    | FTC                         |
|               | Chifaro       | VHH + school                |
|               | Shalele       | VHH                         |
| Wenchi        | Kurfo Gute    | VHH + school                |
|               | Dimtu         | FTC + VHH                   |
|               | Harowenchi    | NutrSpec                    |
| Chena         | Bobabola      | VHH                         |
|               | Agaro         | FTC + VHH                   |
|               | Gorchi        | NutrSpec                    |

School = Demonstration of cooking and gardens at schools.

VHH = Direct provision of agriculture inputs to vulnerable households

FTC = Farmer trainings

NutrSpec = nutrition specific messaging given at health posts.

The research team was comprised of the doctoral candidate, one study coordinator and two interviewers. The two interviewers were trained by the doctoral candidate on relevant technical concepts, such as nutrition sensitive vs. specific messages, behavior change theory, as well as details on the ENGINE program. The interviewers also received a thorough review of good practices in focus group facilitation, note taking and mock focus group practice. During data collection, the two interviewers alternated between the role of focus group interviewer and note taker.

## **Recruitment**

The recruitment strategy for focus groups included a two-stage process. First, the research coordinator contacted the community leaders (Health Development Agents and woreda heads) informing them of the intent, structure and sampling of the study. These community leaders were knowledgeable about which kebeles received nutrition sensitive and nutrition specific programming. Then, the community leaders identified potentially eligible individuals and invited them to a central location within the community at a specific time and place to learn more about the study. At the beginning of each focus group, interested individuals were asked to review the consent form and go through an initial screening (conducted by a member of the ENGINE staff)

to ensure that they adhered to the inclusion criteria of aged 18 years or older and participation in a particular ENGINE intervention.

### **Informed Consent**

All focus group participants underwent an informed consent process at the beginning of each focus group, conducted in Amharic, Oromiffa or Kaffinga, depending on the woreda location. Since research was conducted in an area with low literacy levels and where participants may have been wary of signing a document, this study received a waiver of documentation for consent from both ethical institutions. For each focus group, the study team explained the study and administered the consent statement to each individual in private, while also answering any questions potential participants may have had. Potential participants were then given approximately 10 minutes to contemplate the decision. Participants who gave consent were invited to sit with the focus group. Additionally, participants were given a study information sheet along with a copy of the consent form.

### **Participatory Focus Groups**

Each focus group lasted approximately one hour, consisting of 6-10 individuals. Within each kebele, the research team conducted one all-male focus group and one all-female focus group. The focus group guide was pretested with two groups, appropriately amended and reviewed by the ENGINE staff, study team and doctoral candidate. Focus group discussions were conducted in the Amharic or Kaffinga languages for the Chena woreda and the Oromiffa language in the other 4 woredas. For the Chena woreda focus groups conducted in Kaffinga, a community member (gender appropriate and not a participant of any of the focus groups) was hired as a translator since the study team interviewers were not fluent in this language. In addition to the notes taken by one of the interviewers, all discussions were audio recorded with participant consent. A small beverage and snack were provided for each focus group participant at the time of discussion. Additionally, a small monetary stipend (equivalent to \$5) to help cover transportation costs was given to every participant at the end of each session.

A distinctive aspect of this study was its use of a participatory method called ‘Gender Boxes’ to help create an interactive and comfortable environment for discussion [133]. Each focus group room had two large posters hanging on the wall (Figure 4). One poster was blank, and the other poster had three large boxes labeled with the written words; ‘women only’, ‘men only’, and ‘both’. Each box also had the standard male/female picture next to its label. Every focus group

began with a group discussion on nutrition related behaviors that participants were familiar with. Study interviewers also had a prepared list (with correlating cartoon pictures) of nutrition related messages that had been disseminated in that area. This helped the interviewers to probe appropriately. As a new nutrition related message was discussed, the note taker wrote it on a small sticky note and placed it on the blank poster alongside the prepared graphical representation of the behavior. After the group identified 8-10 messages, one focus group participant was asked to volunteer to place each nutrition message in one of the gender boxes, based on who (male, female or both) he/she believed responsible for that nutrition related behavior.



*Figure 4: Sample Gender Boxes poster at the end of a focus group*

For example, if the volunteer believed that exclusive breastfeeding was the responsibility of women within the household, he/she would put the sticky note depicting exclusive breastfeeding in the ‘women only’ gender box. After all messages were placed in a box, the entire group was given an opportunity to agree/disagree with the designated boxes.

In addition to this participatory activity, which provided an excellent jumping off point for discussion on gender norms and cultural beliefs about nutrition related messages, three other

key themes were discussed. These were nutrition message access, nutrition message uptake and perceptions of gender differences.

### **Focus group analytical approach**

Focus group recordings were transcribed into English by the focus group interviewers immediately after the day's focus groups. All analysis was conducted by the doctoral candidate. Transcripts were analyzed in NVIVO 11.2.2, using the Message Train framework (described later) as a part of both deductive and inductive content analysis. Descriptive statistics for participant demographics were produced in STATA 14.2.

## **EMPOWERMENT STUDY METHODS**

The Empowerment study involved a four-week cross sectional qualitative study design, assessing how Ethiopian smallholder farming women and men differ in their emic definitions of empowerment (that is, from the perspective of the beneficiary). Additionally, the content validity of the Abbreviated-Women's Empowerment in Agriculture Index (A-WEAI) in Ethiopia was assessed from an emic perspective by comparing these definitions to the empowerment dimensions reflected in the A-WEAI.

### **Study context**

For this study, all participants were identified by the program as vulnerable households, based on food insecurity, nutrition and poverty levels. While there was no direct 'empowerment' programming associated within the ENGINE program, several kebeles included in the sample study were beneficiaries of other non-ENGINE programs focused on women's empowerment and gender equality. Data from this study was collected in 2016.

### **Study design, sampling and team**

This qualitative study included 24 focus group discussions. We sampled from two Ethiopian districts (woredas): the Semen Achefer woreda in the Amhara region and the Wondo Genet woreda in the Southern Nations, Nationalities and Peoples' Region. A total of 98 women from 14 focus groups and 69 men from 10 focus groups were interviewed. Table 2 describes the number of focus groups per subgroup category.

*Table 2: Summary of subgroups and focus groups per subgroup*

| <b>Subgroup</b>                       | <b>Number of focus groups</b> |
|---------------------------------------|-------------------------------|
| Men in farming households             | 10                            |
| Women 18-40 yrs. of age               | 3                             |
| Women over 40 yrs. of age             | 3                             |
| Women in cash cropping households     | 3                             |
| Women in households with home gardens | 3                             |
| Women in livestock farming households | 2                             |

Each focus group was approximately 60 minutes long. The research team was comprised of the principal investigator, two focus group moderators and two translators (used when necessary in each of the two woredas). All focus group discussions were conducted in the Amharic language by the two moderators. For a few select discussions in which participants were not fluent in Amharic, the community member translators were called upon to translate between Amharic and Sidaama (a local language spoken in SNNPR). A small monetary stipend (equivalent to \$5) to help cover transportation costs was given to every participant at the end of each discussion.

The two woredas were selected using a combination of purposive and convenience sampling techniques. Both Semen Achefer and Wondo Genet were ENGINE woredas that had vulnerable household beneficiaries and provided logistical feasibility in regard to recruitment, availability of focus group meeting location and general logistics (road access, available community leaders who could identify potential participants). Within each woreda, four kebeles were chosen by a local community leader, based on logistical access and the known availability of individuals who would meet the inclusion criteria (described below). While the small purposively selected sample meant that it was not statistically representative, there was a strong research-based justification for the selection of these two specific woredas. First, it was estimated that the size and location of these woredas would provide adequate variability in the types of individuals recruited. Secondly, both woredas had a similar demographic, health and nutritional profile, compared to the sample of ENGINE woredas that would be surveyed for a larger mixed methods validity study. For the FGDs, there were six subgroups; all men, all women under 40 years of age, all women over 40 years of age, all women in cash crop farming households, all

women in farming households with home gardens, and all women in livestock only farming households<sup>11</sup>. The gender and age specific subgroup classifications were created to ensure the recommended level of homogeneity [134] and optimize a comfortable and honest environment for discussion. The agricultural practice subgroup classifications (home garden, cash crop and livestock raising) were created to optimize the sharing of relatable experiences specific to the topic of empowerment in agriculture.

### **Recruitment**

The recruitment strategy for this study included a two-pronged approach. Community leaders (such as Health Development Agents and Woreda heads) were contacted and asked to identify potentially eligible individuals and invite them to the focus group. Additionally, public announcements were given at an ENGINE gathering/garden demonstration, in which the purpose, qualifications and confidentiality of the focus groups were explained. At the beginning of each focus group, interested individuals were asked to review the consent form and go through an initial screening, conducted with a member of the ENGINE staff, to ensure that they adhere to the inclusion criteria of (1) aged 18 years or older and (2) member of a dual headed household<sup>12</sup>. The study over-recruited for each focus group by approximately 10%. When the team was unable to meet a minimum number of participants for each focus group (6 individuals), a second stage of recruitment via household visits and phone calls was conducted by community leaders for the subsequent focus groups in that kebele.

### **Informed Consent**

The informed consent process was conducted at the beginning of each focus group in Amharic. This study received IRB approval for waiver of documentation for the consent. Once consent was given, participants received the study information sheet and a copy of the consent form.

### **Data Collection Instrument**

The research team was aware of the complex nature of the term ‘empowerment’ and the potential response bias. Gender equality and empowerment programming had been implemented within

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<sup>11</sup> “Cash crop farming households” were households whose primary source of agricultural income was derived from cash crops. “Farming households with home gardens” were households whose primary source of agricultural income was derived from home gardening. “Livestock only farming households” were households whose primary source of agricultural income was derived from livestock. Participants self-identified the type of household they represented.

<sup>12</sup> This inclusion criteria were based upon the fact that the A-WEAI was created for the surveying of either dual headed households or female headed households. Due to the limited number of female headed households within the catchment area, they were not included in the sample.

our sample areas and respondents could have felt the need to respond with answers that they perceived to be ‘right’, according to messages disseminated by these programs. Thus, in conference with the research team and pretest participants, the focus group interview guide went through many iterations that collectively converged on the most appropriate approach. Ultimately, the guide was crafted to begin with broad questions regarding gender norms such as “When I say the word ‘woman’ what words or things do you think of?” The guide then continued by asking participants to imagine and describe an individual who was admired within the community, had power within both the household and the community and was seen as a role model. Moderators were also trained to probe on describing such individuals in regard to agriculture specifically. The research team also asked participants to share their experiences of change in regard to gender equality with questions and probing such as “How equal do you think the two levels of power (women’s and men’s) are, within an agricultural household?” Lastly, participants were questioned on the specific A-WEAI domains of leadership and time allocation. The study chose to focus on these two specific A-WEAI domains because, in conference with local gender experts, they posed as potentially the richest topics for debate and discussion. Questions regarding the A-WEAI domains were intentionally placed last within the guide to allow for full emic development of discussion on how empowerment was perceived and defined. For a copy of the FGD guide, please see Chapter 5 Supplementary Materials, Appendix A.

### **Analytical Approach**

All Amharic recordings were transcribed and translated after data collection by an external transcriber and then reviewed by the doctoral candidate and one of the focus group moderators to ensure matching of focus group notes and precision of the translation and transcription. The analytical approach used for the first objective of this study (to determine whether and how agrarian women and men in Ethiopia differ in their definitions of empowerment in agriculture) was based on Strauss and Corbin’s inductive method of grounded theory coding [135]. Strauss and Corbin’s approach is characterized by three coding processes and one final step of theoretical saturation assessment. The coding processes are conducted in an iterative and parallel way, that enable vast amounts of qualitative data to be progressively aggregated and categorized.

Using the first process, open coding, specific phrases and concepts were identified (coded) within the transcripts as potential repeated constructs. For example, analysis identified ‘bravery’ as one potential repeated construct/category as several women used the word (or derivations of the word) “brave” when asked to describe a woman they admire. After identifying several salient constructs/categories, analysis then proceeded with the second process of axial

coding, which entailed refining and differentiating the categories (axial codes) and determining the relationship between the different open codes and categories. The third process, selective coding, identified core selective themes that were found amongst all the categories, which for this example was named ‘individual level empowerment’. As a final step to the analysis, transcripts were then reread, and then further selectively coded for any data that related to the identified core themes. This step of theoretical saturation brought analysis to the point at which no further coding or enrichment of categories provided new knowledge [136].

After the inductive approach, focus group transcripts were then deductively processed, using the (etic) A-WEAI domains as coding categories to assess the emic content validity of the A-WEAI. All analysis was conducted using NVIVO 12.2.2.

## A-WEAI STUDY METHODS

The A-WEAI study took place over a period of three years (2014-2017) and assessed the content validity and internal reliability of the Abbreviated-Women’s Empowerment in Agriculture Index (A-WEAI) using a mixed-methods approach with qualitative interviews, household survey data and an online expert panel survey.

In the field of scale/index development, **validity** is the measurement of how well an index measures the construct of interest (which in this case, was women’s empowerment in agriculture) [137]. A specific type of validity, content validity, is defined as the extent to which a specific set of items reflects a latent construct’s domain [17]. For the A-WEAI study, the question of content validity translated into “Do the A-WEAI domains and items accurately reflect the theoretical domain of women’s empowerment in agriculture in Ethiopia?” Without a set universal list of attributes or a single agreed upon definition of the term, however, it was difficult to know whether the items defined by the A-WEAI were a representative sampling of the universe of appropriate items (thereby demonstrating content validity). To meet this challenge, the assessment of content validity not only required a solid theoretical foundation but also etic assessment by experts, using both quantitative and qualitative methods [138-140].

This study used Messick’s [138] criteria for validity which perhaps provide the most useful way to conceptualize validity under the broader umbrella of *construct validity*. He defines construct validity as “nothing less than an evaluative summary of both the evidence for and the actual (as well as potential) consequences of score interpretation and use” [138, p.742]. Indeed, perhaps the most novel and thought-provoking contribution of Messick’s work is his argument that validity is important as a salient *social value* which assumes both a scientific and political role. Validity is not a property of a particular test but rather of the meaning of the test *scores*

[138]. It is this interpretation of scores (and an understanding of the potential consequences of this interpretation) that is at the core of why scale developers measure validity. Aligning with Cronbach's [141] belief that the true purpose of validity testing is to guard against adverse consequences, Messick introduces an ethical angle to the purpose of validation [141]. The question should not be 'Is the measurement valid?', he argues, but rather 'Should the test scores be interpreted and used in the manner proposed?' Messick's contribution to scale development has since had a large impact in his field; the American Psychological Association has revised its guidelines for demonstrating test validity to reflect his thinking [142], and his proposed conceptualization of validity is widely cited [139, 143]. Due to the widely accepted use of Messick's guidelines, this study drew upon his work as a useful framework for informing this study's methods.

Arguing that traditional approaches to validity only sow confusion and create dissonance within the fields of psychology and scale development, Messick proposes the unified concept of construct validity [138, 144], encompassing six aspects (content, substantive, structural, generalizability, external and consequential) which serve as criteria for validity. Messick asserts that assessments of the content aspect (which this study refers to as 'content validation') should establish content relevance, representativeness, and technical quality.

**Content relevance** is the degree to which the subject matter contained within a scale's item is relevant to the targeted latent construct. This criterion was operationalized in this study through two approaches: the content validity index (CVI) and principal component analysis (PCA). The use of experts' ratings of items to quantify content relevance has been well established in the psychometric and scale development literature [145-148]. The content validity index (CVI) is one of the most widely reported measurement of content validity [149]. First developed by Martuza [150], it involves having a cohort of experts indicate, through a 4 point Likert scale, the level of relevance of each item in a scale. Researchers can then compute two types of CVIs. The first type, the Item-CVI (I-CVI), involves the content validity of individual items and the second type, Scale- CVI (S-CVI), involves the content validity of the overall scale. The labels for the four point Likert scale are 1 = Not relevant, 2= Somewhat relevant, 3= Quite relevant and 4= Highly relevant [151]. For each item, the I-CVI score is the number of experts giving a rating of either 3 or 4 (thereby dichotomizing the ordinal scale into relevant and non-relevant), divided by the total number of experts. S-CVI can be calculated through either a universal level of agreement (i.e. all experts must agree, resulting in a dichotomous variable) or as an average of expert agreement. Due to the sample size of experts (n=12) and per the protocol set

by Polit [149], this study calculated the S-CVI average (S-CVI/AVE)<sup>13</sup>. Though the CVI has not been without criticism<sup>14</sup>, this study selected the CVI due to its clarity and wide use in the field of scale development [148, 152].

The other operationalization of content relevance was principal component analysis (PCA) with orthogonal varimax rotation applied to the responses of the quantitative survey. PCA defines “components” that essentially reduce the data to a few select variables that are able to summarize the latent construct of interest [17]. Grounded in actual data, PCA is derived from the items of a scale. Thus, the components identify items that are relevant to the construct of interest, according to the study population<sup>15</sup>. Rotation of PCA provides a statistical tool that increases interpretability of results. By organizing data such that patterns of intercorrelations are more easily visible, the user is able to ‘see’ how certain items can be categorized in a meaningful way as they strongly correlate around a single component [17]. Orthogonal varimax rotation in particular (compared to the other common rotational technique, oblique rotation) is more appropriate for validation assessment as it is much simpler to understand and interpret [153].

**Representativeness** assesses the extent to which index domains over-represent, under-represent or exclude the elements required to measure the latent construct. For this study, representativeness was operationalized as the percentage of CVI experts who indicated whether certain A-WEAI items should be deleted due to lack of relevance and/or clarity<sup>16</sup>. Representativeness was also operationalized through the deductive analysis of open-ended questions in the CVI. This identified any excluded domains that were judged as potentially beneficial to the index. Questions such as “What domain(s)/theme(s) do you think should be added to the A-WEAI?” provided rich data to assess, according to expert opinion, the level of representativeness within the content validity of the A-WEAI.

Lastly, **technical quality** refers to the extent to which both index items and response item *options* are clear, easily understood and translatable to the local language. This criterion was assessed via deductive content analysis of cognitive debriefing interviews and a quantitative calculation of the expert panel’s opinions on A-WEAI item clarity. Cognitive interviewing, which

<sup>13</sup> Polit (2006) argues the universal agreement method is overly stringent when there are many experts<sup>13</sup> on the validation panel 149.

Polit, D. and C. Beck, *The Content Validity Index: Are you sure you know what's being reported? Critique and Recommendations*. Research in Nursing & Health, 2006. 29.

<sup>14</sup> Namely that it does not adjust for chance agreement 146. Wynd, C., B. Schmidt, and M. Schaefer, *Two quantitative approaches for estimating content validity*. Western Journal of Nursing Research, 2003. 25: p. 508-518. and that it essentially “throws away information” by collapsing experts’ multipoint ordinal ratings into two categories 149. Polit, D. and C. Beck, *The Content Validity Index: Are you sure you know what's being reported? Critique and Recommendations*. Research in Nursing & Health, 2006. 29.

<sup>15</sup> Versus common factor analysis which is based on hypothetical variables and therefore only presents an “idealized, imaginary construct that presumably causes the items to be answered as they are” 17. DeVellis, R., *Scale Development: Theory and Applications*. 2nd. ed. Applied Social Research Method Series. Vol. 26. 2003, Newbury Park: SAGE Publications.

<sup>16</sup> The CVI asked experts to indicate whether items should be deleted, retained only if modified and retained as currently worded

uses think-aloud procedures and verbal probes, asks respondents to describe their thinking either concurrently, as they answer each question, or retrospectively after they complete the questionnaire [154]. This qualitative method of inquiry, whose goal is to identify any disconnect between respondent interpretation of items and developer's intentions, has been well established as a source of validity evidence [155, 156] and has been used in psychometric scale development both within and outside of the empowerment field (including by developers of the WEAI) [154, 157, 158]. Technical quality was also operationalized as the percentage of experts who indicated A-WEAI items were clear, in the expert panel survey.

**Internal reliability** refers to the proportion of variance attributable to the true score of the latent variable [17] or, more simply, the degree to which all items of a scale measure a common characteristic. Internal reliability is concerned with the homogeneity of the items within a scale [17]. Estimates of reliability are based on the average intercorrelations among all the single items within a scale/test [159]. The study used Cronbach's alpha, which is the "proportion of a scale's total variance that is attributable to a common source, presumably the true score of the latent variable underlying the items" to test the internal reliability of the scale [17].

Reliability assessments are specific to the context and samples observed [160]. This highlights the imperative to examine and report reliability estimates of a scale in each context in which it is applied. Specific factors in our study, such as culture, gender norms, history and institutional environments, can influence the reliability of the A-WEAI. As with content validity, a key component of score interpretation is understanding that reliability estimates are a function of the test *scores* yielded from an instrument (and not the test itself) [161]. Table 3 summarizes the criteria, operationalization and data sources used to assess the validity and reliability of the scale.

Table 3: Criteria, operationalization and data sources used to assess content validity and internal reliability

| Objective            | Criterion                        | Definition of criterion                                                                                                                                      | Operationalization of criterion                                                                                                                                        | Data Source                                                                            |
|----------------------|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| Content Validity     | Content relevance                | The degree to which the subject matter contained in the A-WEAI items are relevant to the construct of women's empowerment in agriculture.                    | 1. Content Validity Index (I-CVI and S-CVI/AVE) <sup>a</sup><br>2. Principal component analysis with orthogonal varimax rotation                                       | 1. Expert panel survey (n=12)<br>2. A-WEAI household survey (n=300 households)         |
|                      | Representativeness               | The extent to which the A-WEAI domains over-represent, under-represent or exclude the elements required to measure entire women's empowerment in agriculture | 1. Percentage of experts who indicated items should be deleted<br>2. Expert opinion on domains that should be deleted and/or included                                  | 1. Expert panel survey (n=12)<br>2. Open ended questions of expert panel survey (n=12) |
|                      | Technical quality                | The extent to which both A-WEAI items and response item options are clear, easily understood and translatable to the local language.                         | 1. Level of congruence between local understanding of concepts and questions and A-WEAI developer intention<br>2. Percentage of experts who indicated items were clear | 1. Cognitive debriefing interviews (n=14)<br>2. Expert panel survey (n=12)             |
| Internal Reliability | Intercorrelation of A-WEAI items | The extent to how well the A-WEAI items vary together and complement each other                                                                              | Cronbach's alpha <sup>c</sup>                                                                                                                                          | A-WEAI household survey (n=300 households)                                             |

a = where an I-CVI score of 0.78 or higher is acceptable [152].

b = where a S-CVI/AVE score of 0.90 is acceptable [149].

c = where an alpha between 0.65 and 0.70 = minimally acceptable, 0.70-0.80 = respectable and 0.80-0.90 = very good [17]

The data collection and analytical approaches of this study were divided into three phases, shown in Table 4.

Table 4: A-WEAI study data collection phases

|                   | PHASE 1                                                                                   | PHASE 2                                                                   | PHASE 3                                                                                                                           |
|-------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Purpose           | Assess the technical quality of content validity and provide preliminary data for Phase 2 | Assess internal reliability and the content relevance of content validity | Assess the content relevance, representativeness and technical quality of content validity                                        |
| Activity          | Cognitive debriefing interviews (CDI) of A-WEAI 1.0 respondents                           | Administration of the A-WEAI survey                                       | Administration of expert panel survey                                                                                             |
| Method            | Qualitative interviews                                                                    | Quantitative household survey                                             | Mixed methods online survey                                                                                                       |
| Time and Duration | Summer 2014; 6 weeks                                                                      | Summer 2015; 4 weeks                                                      | Fall 2017, 1 month                                                                                                                |
| Sampling Plan     | Semen Achefer woreda in Amhara region; Wondo Genet woreda in SNNPR region                 | 10 woredas in SNNPR and 2 woredas in Oromiya region; 2 kebeles/woreda     | Expert panel members selected based on experience/knowledge on women's empowerment, geographic focus and willingness/availability |
| Sampling Unit     | Individual (8 men and 8 women)                                                            | Household                                                                 | Individual (experts)                                                                                                              |
| Sample Size       | n = 16                                                                                    | n = 299                                                                   | n = 12                                                                                                                            |

## **Phase 1**

### **Study context**

Phase 1 was conducted in the context of the ENGINE program. All participants of Phase 1 were beneficiaries of the ENGINE program and received the nutrition specific intervention. A few select respondents also received the nutrition-sensitive package.

### **Study design, sampling, research team**

The cognitive debriefing interviews (CDIs) took place over the course of six weeks in 2014. A total of 8 married couples (8 men, 8 women) over the age of 18 years were interviewed. Female respondents were interviewed by a trained female interviewer and males interviewed male respondents. Respondents were selected by convenience sampling immediately after focus groups for a separate study [162]. Through convenience sampling based on the logistic ease of reaching participants, four couples were sampled from the Semen Achefer woreda in the Amhara region and four couples from the Wondo Genet woreda in the Southern Nations, Nationalities and Peoples' Region (SNNPR). In an effort to assess the comprehension stage of recognition<sup>17</sup>, after each section of the A-WEAI survey, enumerators probed to understand respondent understanding of questions, question topics and level of comfort in answering the A-WEAI questions, in the

<sup>17</sup> There are four stages of cognition required for an accurate response to a survey question: comprehension, retrieval, judgment, and response. This study focused on the first stage as it captures the technical quality of the A-WEAI by focusing on unknown terms, ambiguous concepts, long and overly complex questions [163]. Willis, G., *Cognitive interviewing: a tool for improving questionnaire design*. 2005, Thousand Oaks, CA: Sage Publications.

Amharic language [163]. Due to time constraints, the cognitive debriefing interview Guide (Chapter 6 Supplementary Materials, Appendix B) focused specifically on the domains of Production, Resources and Income. These domains were selected as the most potentially challenging for respondent cognition, based on pretesting results and consultation with the local research team. Interviews took approximately 45-60 minutes. The research team was comprised of one male interviewer, one female interviewer, and the doctoral candidate, who alternated between male and female interviews, observing a total of 8 interviews. A small monetary stipend (equivalent to \$5) to help cover transportation costs was given to every participant at the end of each interview.

### **Recruitment**

These interviews took place immediately after the Message study focus groups and thus participants were first recruited per the Message study methods protocol. Before each focus group, specific married couples were identified and asked by the community leader if they would be willing to stay after their respective focus group to participate in the cognitive debriefing interview. These couples were invited based on known active engagement in farming techniques and availability.

### **Informed consent**

All interview participants underwent an informed consent process at the beginning of each interview, conducted in Amharic. Since research was conducted in an area where participants were potentially wary of signing a document and the literacy level of the population was low, this study received IRB approval for waiver of documentation for the consent. Participants were given a study information sheet along with a copy of the consent form, which also included study contact information.

### **Analytical approach**

Analysis of the CDIs sought to answer the questions of 1) Can respondents understand these terms in the way they were originally intended? and 2) Can respondents paraphrase these terms in their own words?<sup>18</sup> All interviews closely followed the interview guide (Chapter 6 Supplementary Materials, Appendix D), which allowed comparisons between genders and geographic locations. After all transcripts of the CDIs were translated from an Amharic recording into English, each

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<sup>18</sup> These analytical questions were designed to closely align with the methods used by Malapit et al. (2017) in their administration of cognitive debriefing interviews in the pre-testing phase of the A-WEAI.

interview was analyzed using NVIVO 11.4. Analysis used the deductive content analysis approach which entails coding and organization of qualitative data based on exemplification of pre-determined categories [164].

## **Phase 2**

### **Study Context**

In Phase 2, the A-WEAI survey was administered to a subsample of the Tufts Agriculture-Nutrition (AgNut) Panel study.

### **Study design, sampling and research team**

Over the course of 4 weeks, the household A-WEAI survey was administered through a cross-sectional study design. A total of 598 individuals (299 men and 299 women, each pair from the same household) participated in the survey. Due to convenience and logistical reasons, this sampling plan mimicked the AgNut sampling plan as the A-WEAI enumerator team followed the AgNut enumerators with a 1-2-day lag. Sampling was from 10 woredas in SNNPR and 2 in the Oromia region. Within each woreda, 2 kebeles (neighborhoods) were sampled. Within each kebele, enumerators sampled between 10-16 households (depending on availability). When enumerators arrived in a kebele on the first day, they reviewed the Agriculture-Nutrition panel study household roster and selected houses by starting at random point within the kebele and selecting every 4<sup>th</sup> house until the targeted number of 16 household interviews (with both the male and female respondent available) was reached. Within each household, one adult male and one adult female, over the age of 18 years, were interviewed, self-identified as head male/female of the household. The A-WEAI survey (Chapter 6 Supplementary Materials, Appendix C) was pretested, and appropriately adjusted before data collection commenced<sup>19</sup>.

### **Components and construction of the A-WEAI**

The survey data described above was then used to construct the A-WEAI variables using the approach prescribed by the index developers, depicted in Figure 6. This figure shows components of the A-WEAI as well as a flow chart of how each domain indicator is constructed, based on the A-WEAI user manual.

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<sup>19</sup> For a summary of adjustments made post pre-testing, see Chapter 6 Supplementary Materials, Appendix B.

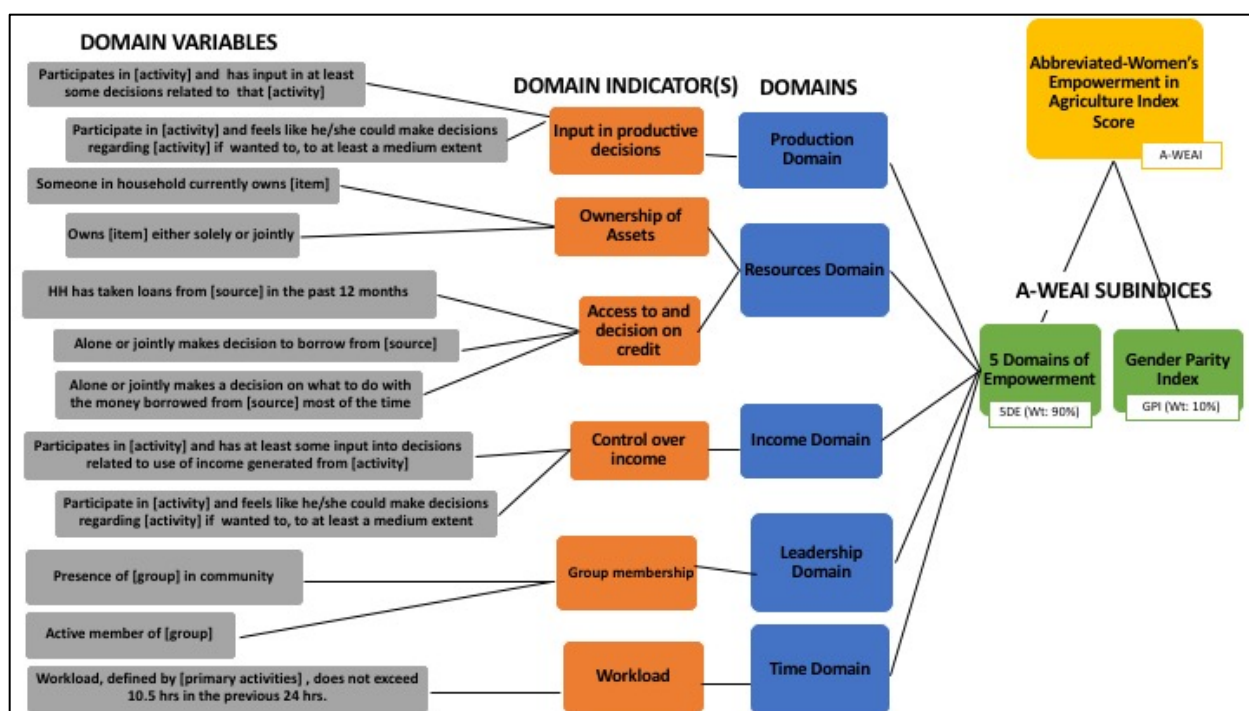


Figure 5: Components and construction of the A-WEAI

The grey boxes list the domain variables which are aggregated to form the domain indicators (shown in orange). These domain indicators are the indicators used to measure each of the 5 domains (shown in blue); production, resources, income, leadership and time. All 5 domains are then collapsed into the Five Domains of Empowerment (5DE), which is one of the two sub-indices (shown in green) of the A-WEAI. A separate 5DE score is calculated for women and men and can be further decomposed for each individual, thereby showing which domains have the largest inadequacy percentage in empowerment. The other sub-index, the GPI, represents the parity gap between women's and men's 5DE score<sup>20</sup>. For a complete summary of the A-WEAI drop down options (noted in brackets in Figure 5) as well domain adequacy definitions, see Chapter 6 Supplementary Materials, Appendix E.

## Recruitment

For each selected household, enumerators introduced the study and confirmed that individuals were the same individuals responded to the AgNut Adult Male questionnaire and the AgNut Adult Female questionnaire so that data analysis could be link the demographic data from the

<sup>20</sup> By definition, households without a primary adult male are excluded from this measure, and thus the aggregate WEAI uses the mean GPI value of dual-adult households 78. Alkire, S., et al., *The Women's Empowerment in Agriculture Index*, in *IFPRI Discussion Paper 01240*, H.a.N.D. Poverty and E.a.P.T. Division, Editors. 2012, International Food and Policy Institute: Washington, DC.

AgNut survey to the AWEAI respondent. All households interviewed for the AgNut Round 4 were notified that they may be asked to participate in this A-WEAI survey. Study enumerators also confirmed the following:

1. BOTH an adult male and adult female of that household filled out an AgNut RD 4 questionnaire one or two days before
2. The SAME adult female AND adult male interviewed for the AgNut survey were available to be interviewed.
3. The respondents were
  - a. Over the age of 18 years old
  - b. Residents of that household for at least 6 months
  - c. Married to each other

If one of the criteria could not be confirmed, enumerators moved onto the next 4<sup>th</sup> household.

### **Informed consent**

One enumerator in the pair interviewed the adult female, while another interviewed the adult male. Each enumerator read the consent form and then allowed the respondent 15 minutes to decide whether they would be willing to be interviewed. If either the adult female or adult male refused consent, enumerators moved on to the next household.

### **Analytical approach**

All data preparation, variable generation, and analysis for Phase 2 was performed using Stata 14.2. Comparative demographic statistics with relevant standard deviations were calculated. Phase 2 analysis also involved application of the published A-WEAI data preparation and calculation STATA code, which created the six main aggregated A-WEAI indicators and calculated the A-WEAI scores [93].

The main quantitative statistical test for representativeness was principal component analysis with varimax orthogonal rotation. Factors with an eigenvalue of 1 or more were retained [17]. Per conventional standards, components with a factor loading of an absolute value of 0.3 or more were retained and considered to reflect women's empowerment in agriculture [165]<sup>21</sup>. All datasets and sub-datasets yielded a Keiser-Meyer Olkin sampling adequacy value higher than 0.5, justifying the use of PCA as the statistical method of choice [166, 167].

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<sup>21</sup> Although other forms of factor analysis, such as tetrachoric analysis, can be used for variables that are binary (which is the case for the A-WEAI indicators), the purposes of this analysis are exploratory and to better understand the relationships between variables in which case PCA is an acceptable form of analysis.

### **Phase 3**

#### **Study context and design**

To compute the Content Validity Index (CVI) [152] an online survey on a Qualtrics platform was administered to 12 experts in the field of women's empowerment, gender and/or agriculture and nutrition in Ethiopia and similar resource limited areas. The selection criteria for the experts were that he/she (1) was not involved in the development/piloting of the index (for both the WEAI and A-WEAI); (2) had worked in gender, gender studies, gender and agriculture, agriculture and nutrition, or women's empowerment, and (3) had published work on the topic of gender studies, gender and agriculture or had extensive work experience in the field.

#### **Recruitment and Informed consent**

Potential experts were identified by (1) searching on the internet for authors of peer-reviewed articles that had studied pertinent topics or field practitioners of relevant government and non-governmental organizations or (2) asking colleagues of the doctoral candidate, who suggested potential expert participants. These candidates were contacted via email, and for those who agreed to participate, were sent an encrypted and password protected link to the consent form, which was then linked to an online survey. The survey took approximately 30 minutes to fill out. Out of the 17 invited experts, twelve participated. Table 5 presents a summary of the CVI's respondents' self-identifications.

*Table 5: Role of CVI Experts*

| <b>Respondent role</b>              | <b>Number (self-identified)</b> |
|-------------------------------------|---------------------------------|
| Academic only                       | 1                               |
| Research only                       | 3                               |
| Research and practitioner           | 4                               |
| Academic and research               | 1                               |
| Academic, research and practitioner | 1                               |
| Other*                              | 2                               |
| <b>Total</b>                        | <b>12</b>                       |

\*Other\* specified that their primary role was to either 'assist countries in designing, implementing them and using and interpreting survey data' or 'consultant, doing practical research amongst others'.

#### **Analytical approach**

All quantitative data for this phase were exported from Qualtrics to Excel 16.9 for data preparation and analysis. Based on the work by Lynn [152] and the sample size of 12 experts in our study, the standard for acceptable content relevance was an I-CVI score no lower than 0.78.

For the *Scale-Content Validity Index/Average* (S-CVI/AVE), the acceptable standard was 0.90 based on the work by Polit and Beck [149, 168].

Qualitative data from the open-ended questions of the CVI survey were imported into NVIVO 11.4 and analyzed through a deductive content analysis approach. The deductive analytical themes of clarity and relevance for each A-WEAI module and item were used, following common practice in CVI administration and analysis [149].

## CHAPTER 4

### **Uptake of Behavior Change Messages in Nutrition-Specific and Nutrition-Sensitive Interventions: A Gendered Comparison of Message Contact, Information Sharing and Decision-making**

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## ABSTRACT

The rise of multisectoral strategies to reduce global malnutrition has entailed increased programmatic and policy interest in identifying effective social and behavior change communication (SBCC) strategies that will reach women and men through a wide range of channels. This qualitative study assessed the gender differences in three distinct stages of a nutrition behavior change process: message contact, information sharing and decision-making. The theoretical foundation for this study was the ‘Message Train’, a conceptual framework developed for this study that deconstructs sustainable behavior change into six distinct sub-processes. This framework guided analysis of data from 32 focus groups with women and men living in two regions of Ethiopia that were exposed to SBCC through a large-scale integrated nutrition program. Gender-related factors such as gender-differentiated time allocation patterns and literacy interplayed with contextual and interpersonal factors (such as level of couples’ communication) to reveal differences in contact, sharing, and decision-making. Women consistently had more contact with nutrition-specific messages and shared them more frequently than men. For nutrition-sensitive messages, however, the gender differences in message contact and sharing varied. Rarely did contact with nutrition-specific and sensitive messages result in behavior implementation without the targeted individual engaging with another community or household member. Results from this research study suggest that behavior change communication strategies within the context of nutrition-specific and sensitive programs warrants focused attention to the different ways in which women and men receive, internalize, share and adopt different nutrition messages both individually and collectively.

**Keywords:** gender, behavior change, nutrition-specific, nutrition-sensitive, qualitative focus groups, smallholder farmer, Ethiopia

## 1. INTRODUCTION

The rise of multisectoral strategies to reduce global malnutrition has coincided with an increased programmatic and policy level interest to improve women's empowerment in the agricultural sector as one mechanism for achieving this goal. While smallholder farmers are estimated to represent half of the hungry worldwide [169], female smallholder farmers, as both heads and members of households, often suffer from inequity in time, assets and burdens of farm and non-farm labor relative to men [7]. These inequities in turn influence the ability of women to make and contribute to decisions for both themselves and the household. Evidence consistently shows that when women do have greater status and power within the household, they make decisions that improve child nutritional status more than men do, and allocate greater shares of income to food, education and health [25, 170-173]. Increasingly, both nutrition-sensitive and nutrition specific interventions<sup>22</sup> have adopted dynamic and gender-focused efforts to affect behaviors in the context of existing household power structures. However, questions remain about the effectiveness of these approaches in bringing about the desired changes and the psychological processes that women and men in households experience as they interact with service providers, other change agents and one another. In particular, very few studies have examined the stages that precede decision-making and behavior adoption.

In response to this knowledge gap, this research study (which will be referred to as the Message study for the remainder of this paper) conducted a gendered comparison of the processes associated with nutrition behavior change within the context of nutrition-sensitive and nutrition-specific program platforms. Specifically, three research questions were answered within the context of smallholder Ethiopian farming households who were exposed to a social and behavior change communication (SBCC) strategy: What are the differences between women and men in the three processes of (1) nutrition-specific and nutrition-sensitive message *contact*, (2) nutrition-specific and nutrition-sensitive message *information sharing* and (3) nutrition-specific and nutrition-sensitive message *decision-making*? Based on Quisumbing and Pandolfelli's [174]

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<sup>22</sup> Nutrition-sensitive interventions/programs/messages are those that “address the underlying determinants of fetal and child nutrition and development— food security; adequate caregiving resources at the maternal, household, and community levels; and access to health services and a safe and hygienic environment—and incorporate specific nutrition goals. Nutrition-sensitive programs can serve as delivery platforms for nutrition-specific interventions, potentially increasing their scale, coverage, and effectiveness”. This contrasts with nutrition-specific interventions/programs/messages that “address the immediate determinants of fetal and child nutrition and development— adequate food and nutrient intake, feeding, caregiving and parenting practices, and low burden of infectious diseases”. 4. Herforth, A. and J. Harris, *Understanding and Applying Primary Pathways and Principles. Brief 1*, in *Improving Nutrition through Agriculture Technical Brief Series*. 2014, USAID/Strengthening Partnerships, Results, and Innovations in Nutrition Globally (SPRING) Project: Arlington, VA.

finding that women have less access to agricultural extension services compared to male farmers because women were not perceived as agricultural decision-makers, the hypothesis for research question (1) is that men have greater contact than women with nutrition-sensitive messages that are commonly conveyed through agricultural extension workers, whereas women have greater contact with nutrition-specific messages than men given their disproportionate contact with health workers who traditionally convey such information.

The correlating hypothesis for question (2) was that, for both nutrition-specific and nutrition-sensitive messages, women and men exhibit similar tendencies in choosing to share such messages with their spouses and other members of the community. Due to the lack of evidence regarding the gender differences in message sharing, the Message study hypothesized the null; i.e. that there was no difference between genders. While several studies have examined the effectiveness of community conversations<sup>23</sup> in nutrition behavior change [175, 176], these types of interventions entailed fostering communication only among women. Conversely, the agricultural technology adoption literature has primarily focused on the role of social learning among men [177, 178]. Our review of the literature did not identify studies that examined message sharing among women and men.

The last research question (3) pertained to gender differences in the decision-making process about whether or not to adopt a new target behavior. Given that women are typically responsible for food preparation, complementary feeding, and other “nutrition-specific activities” that directly and immediately affect food consumption and utilization [179], it was hypothesized that women have greater power to make decisions about message adoption than men. Conversely, because men tend to hold more decision-making authority in the realm of agricultural production and labor allocation, we hypothesized that men would have a greater say than women in whether to implement nutrition-sensitive messages.

## **2. BACKGROUND**

### **2.1. Defining ‘gender’**

The World Health Organization defines gender as “the socially constructed characteristics of women and men – such as norms, roles and relationships of and between groups of women and men” [46]. A salient feature of the term “gender” is its reference to both women *and* men. The role of men and the dynamics and power relations (between women and men) influence nutrition

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<sup>23</sup> Community conversations are discussions among community members, guided by a trained facilitator, that support critical thinking and problem solving around key community issues.

related outcomes and other aspects of individual well-being [35]. Additionally, gender is cultural and temporal in nature. This holds importance when considering nutrition behavior change processes and the potential effect of interventions and policies on individual nutritional status.

## **2.2 Social and Behavior Change Communication (SBCC) and Gender**

Driven by empirical research and socio-ecological theory, social and behavior change communication (SBCC) has been cited as a highly recommended and effective approach for reducing malnutrition [106, 180]. SBCC strategies aim to change not only individual behavior but also social conditions through advocacy, social mobilization and behavior change communication [181]. Numerous SBCC studies within the nutrition field have focused on the behavior change of women (particularly mothers) [110-113]. A smaller but not insignificant literature has studied men as a target of nutrition behavior change interventions. Meta-reviews of literature have identified the positive benefits of father's involvement in nutrition-specific behaviors such as breastfeeding [127, 128] and child immunization [129]. Efforts to integrate and evaluate the role of men in nutrition-sensitive programs have been documented within the grey literature [130]. However, there are significant knowledge gaps on the role of men and the comparison between women and men in nutrition-related behavior change processes within the context of nutrition-sensitive interventions.

In practice, gender is continuously integrated into social and behavior change communication strategies worldwide. Programmatic and promotional literature emphasize gender's salient role in the success of social and behavior change communication strategies [182, 183]. By identifying and addressing gender inequalities during all phases of the project life cycle, program designers and practitioners believe health and nutrition messages can be more effective, stimulate equity and improve outcomes [183]. However, current practice is not well-supported by a rigorous evidence base layered on a strong theoretical foundation.

## **2.2. Commonly used theories of behavior change in the nutrition field**

Theories of behavior change can be categorized into three groups: models of individual health behavior, models of interpersonal health behavior and lastly, community and group models. The health belief model (HBM) is an example of an individual level theory where the individual's perceptions of susceptibility, severity, benefits of action and barriers to action are the focus of potential change [184]. At the interpersonal level, social cognitive theory (SCT) has been widely applied in nutrition education programs to both predict and elicit behavior change through a focus on self-efficacy and self-regulation [185]. The socio-ecological model (SEM), a community level

theory of change, emphasizes “(i) behavior affects and how they are affected by multiple levels of influence and (ii) how individual behavior shapes and is shaped by the social environment (reciprocal causation)” [186, p. 1101].

Each of these three theories of behavior change has made its mark in the nutrition field. However, these theories have limited utility in the programmatic life cycle, particularly for programs aiming to address gender inequality. The focus on the individual and his/her perceptions (as emphasized in the health belief model) as well as his/her beliefs on personal ability and likelihood of success (as described in the social cognitive theory) fails to acknowledge the importance of the actual message content promoting the behavior and associated processes [187]. Programs need to be aware of the oversimplification of the complexities of peoples’ behavior and environment when applying these well-established theories [188].

### **3. THEORETICAL FRAMEWORK: THE MESSAGE TRAIN**

#### **3.1 The Message Train**

The Message study contributes a newly constructed theoretical framework, the Message Train, to drive its qualitative assessment of gender differences in behavior change message contact, information sharing, and decision-making in the context of nutrition specific and nutrition sensitive programming. The Message Train draws upon and extends the three theories discussed above. Behavior change, according to the Message Train, is not presented as a static equation (“Intra-individual construct A” + “Extra-individual factor B” yields “Behavior Adoption X”) but rather as a fluid process with several actors and numerous factors. This framework makes the first attempt (to the doctoral candidate’s knowledge) to deconstruct the process of behavior change into distinct stages. A defining characteristic of the Message Train is its dissection of processes involved amongst the individual, the actual message disseminated, and other members of the environment.

The Message Train lays out the processes involved from the point of nutrition message contact to sustainable behavior change. As seen in Figure 6, a message is disseminated to an audience (either through a program or from another targeted individual), representing the first ‘station’ in the message train (Station 1, “point of contact”). At this station, the targeted individual receives a message through one of the three SBCC approaches; interpersonal communication, media, and/or community/social mobilization. Constructs, such as perceptions of benefit or risk can influence whether, for example, a mother leaves her household duties to attend a training session on complementary feeding practices at a nearby health post. Station 2, “message sharing”, represents the process that happens immediately after the point of contact.

The recipient of the message can either share this information with others (spouses, neighbors, children, other family members) or keep it to him/herself. Here, both intra-individual factors such as self-efficacy, relationships, and relevant power dynamics (as discussed in the social cognitive theory) between the targeted individual and others in his/her network potentially influence message sharing. This message sharing step draws in other members of the household and community, thereby increasing the potential social support for behavior adoption. Thereafter, a decision-making process occurs (Station 3). This process may solely involve the targeted individual or perhaps other individuals who have been educated on the promoted behavior or who have had contact with the messages through sharing. In addition to extra-individual factors, such as income and physical resources, cultural norms related to communication and perceived responsibility may influence this process and its outcome. Station 4, turning the message into action, represents the process needed to implement the behavior promoted by the message. For some behaviors, such as handwashing before meal preparation, this may be immediate and not a significant process. However, for behaviors that require additional resources for implementation, such as crop diversification, this process may not only require physical resources (seeds, planting tools) but also time. Station 5 represents the physical act of implementing the behavior. Across all stations, if facilitating factors outweigh barriers, the message travels along the train with the (hopeful) destination of sustainable behavior change. For Stations 4-6, all processes are occurring at every level of the socio-ecological model; individual, interpersonal, organizational, community and policy.

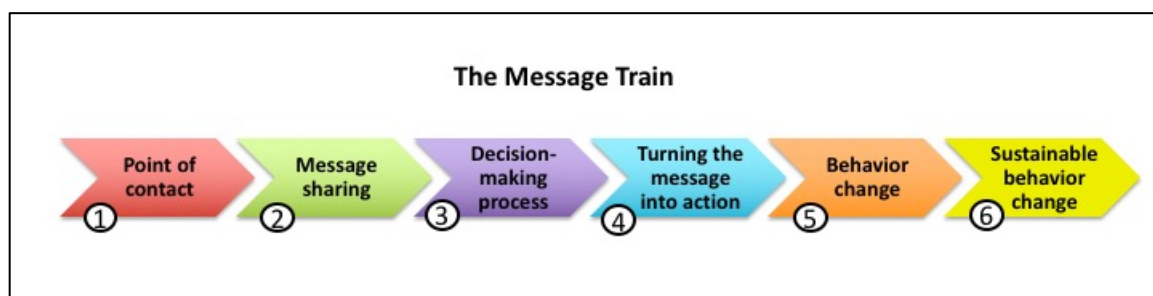


Figure 6: The Message Train: a conceptual framework on nutrition message contact, sharing and implementation.

The research questions for this study were driven by the Message Train framework and formulated such that each of the stages of the Message Train could be assessed empirically with a gendered perspective. This research study focuses only on Stations 1-3 (Point of contact, message sharing, and the decision-making process) for two reasons. First, much of the literature already focuses on adoption of nutrition-specific related messages (Stations 4-6) [180]. For

nutrition-sensitive behaviors, research regarding agricultural behavior change have been well studied but the nutritional effect of agricultural programs remains inconclusive, with the exception of biofortification of vitamin A sweet potatoes [189]. This leads to the second reason; there is no ‘express train’ to Station 4, 5 and 6. That is, each of the first three stations is imperative to behavior change. Rarely do nutrition messages turn into action without some sort of processing with another individual, particularly for cultures where family, extended family and community make up a big part of identity [190] and exercise substantial amounts of influence.

## 4. STUDY METHODS

### 4.1. Study Context

Research for the Message study was conducted within the context of the Empowering New Generations to Improve Nutrition and Economic opportunities (ENGINE) program, whose primary goal was to help Ethiopian women of reproductive age and children less than 5 years old achieve sustainable improvements in their nutritional status.

The ENGINE program provided two types of intervention packages. The nutrition-specific package included interventions that directly addressed inadequate dietary intake or disease through messaging about nutrition-related behaviors such as exclusive breastfeeding, complementary food, promotion of hand washing, etc. Within each woreda, ENGINE also provided the nutrition-sensitive package to a few kebeles (communities). This package included demonstration gardens at schools, farmer trainings (FTCs) and direct provision of agriculture inputs to vulnerable households. Additionally, ENGINE promoted a SBCC strategy to all woredas through counseling, enhanced community conversations, mNutrition<sup>24</sup>, media campaigns and cooking demonstrations. Water, sanitation and hygiene (WASH) care practices specific to young children and gender integration were also focal points of this campaign [131]. The SBCC strategy promoted messages that focused on maternal dietary diversity, optimal breastfeeding and complementary feeding practices, addition of animal source foods, vegetables and fruits to meals and integration of WASH and agriculture nutrition practices<sup>25</sup>

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<sup>24</sup> mNutrition is a mobile phone-based messaging service aimed at increasing knowledge of nutrition and health.

<sup>25</sup> Not all messages were promoted by ENGINE in all woredas. Because there was no programmatic data on which areas were exposed to which message, the Message study only analyzed messages that were initially brought up by focus group participants.

The community conversations were organized at the community level, targeting pregnant and lactating women, fathers, and grandmothers. The mNutrition component involved text messages sent to agriculture extension agents (called “development agents”, or DAs) with brief nutrition related content and a number they could call for more information. In addition to a radio magazine program that was aired once a week, ENGINE also worked in markets to cue better nutritional decisions at the point-of-purchase. Designated vendors who sold one or more of ENGINE’s designated “star foods” were given banners for display. ENGINE also strategically placed billboards to remind parents which foods they should purchase for their children [132] .

#### 4.2. Study Design, Sampling, and Data Collection

Through a four-week cross sectional qualitative study conducted in 2015, the Message study implemented 32 focus groups discussions (FGDs) in the Ethiopian regions of Oromia and the Southern Nations, Nationalities and Peoples’ Region (SNNPR) (Figure 7).

The Message study was conducted as a sub-study of a larger panel study (the Agriculture-Nutrition panel study) which used a multi-stage cluster probability proportional to size sampling method to select 10

woredas within the 2 regions. The Message study then randomly chose 5 of the 10 Agriculture-Nutrition panel study woredas for its sample<sup>26</sup>. Within each woreda, the

study team and ENGINE woreda coordinator collectively chose three kebeles based on the ENGINE package type in that area<sup>27</sup>. This ensured that the Message study sample would not only reach saturation but also represented variability in exposure to both ENGINE nutrition-sensitive and specific messaging.

The recruitment strategy for FGDs entailed a two-stage process. The Research Coordinator contacted the community leaders informing them of the study’s intent, structure and sampling design. These community leaders then identified potentially eligible individuals to participate in FGDs. The FGDs consisted of 6-10 individuals and lasted approximately one hour.

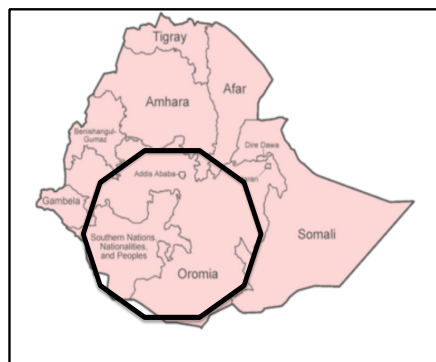


Figure 7: Map of Message study areas

<sup>26</sup> See the Chapter 4 Supplementary Materials for the specific woredas selected for the Message study.

<sup>27</sup> For a detailed description of the ENGINE programming provided for each kebele, please refer to Chapter 4 Supplementary Materials.

Within each kebele, the research team conducted one all-male focus group and one all-female focus group.

The focus group guide was pretested and amended by the research team and local individuals familiar with the language. In addition to notes taken by one of the interviewers, all discussions were audio recorded with participant consent. Saturation within each woreda was reached when the research team agreed that discussions were repetitive of previous focus groups. The research team was comprised of the doctoral candidate, one study coordinator and two interviewers.

#### **4.5 Data Analysis**

Focus group recordings were transcribed into English by the focus group interviewers immediately after the day's focus groups. All analysis was conducted by the doctoral candidate. Transcripts were analyzed through NVIVO 11.2.2, using the Message Train framework as a part of both deductive and inductive content analysis. Descriptive statistics for participant demographics were produced with STATA 14.2.

#### **4.3. Ethical Clearance and Informed Consent**

Ethical approval for the Message study was obtained from the Institutional Review Board of Tufts University, USA and the Ethical Review Board of Jimma University, Ethiopia. All focus group participants underwent an oral informed consent process at the beginning of each focus group, conducted in the appropriate local language.

### **5. RESULTS**

#### **5.1. Focus Group Demographics**

As seen in Table 6, the make-up of focus group participants was relatively even between women and men<sup>28</sup>. Men had significantly more formal education than women ( $p < 0.05$ ). Fifty-eight percent of the women had no formal education, versus only 18% of male participants. Of those with formal education, the mean years of schooling was 6.1 years for men and 4.5 for women.

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<sup>28</sup> The number of all men and all women focus groups was equal, 16 each.

Table 6: Focus group demographics

| Characteristic                                                            | Female (SD) | Male (SD)   |
|---------------------------------------------------------------------------|-------------|-------------|
| Percent of sample                                                         | 51.3        | 48.7        |
| Mean age in years                                                         | 33.3 (9.6)  | 37.1 (11.0) |
| Mean years of completed schooling                                         | 1.9 (2.8)   | 5.0 (3.3)   |
| Percent with no formal education                                          | 58.3        | 18.2        |
| Of those with formal education, mean level of highest education completed | 4.5 (2.5)   | 6.1 (2.6)   |

## 5.2. Application of the Message Train

Table 7 below presents factors that focus group participants felt either facilitated or hindered the probability that messages typically promoted by ENGINE would be able to travel from one station to the next. Factors for Stations 1-3 largely pertained to the message itself (content, context) and relationships between the targeted individual and his/her household and community.

Table 7: Factors that influence a message's journey on Stations 1-3 on the Message Train.

| Station # | Station Name            | Factors that influence whether a message reaches the station                                                                                                                                                                                         |
|-----------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1         | Point of contact        | -Content of message<br>-Contact context (agricultural, personal, social) and intensity<br>-Physical and non-physical resources/assets of message recipient                                                                                           |
| 2         | Message sharing         | -Content of message<br>-Mode of dissemination<br>-Timing of message sharing (immediately after point of contact vs. delayed)<br>-Targeted population<br>-Internal processes (efficacy, understanding of utility, perception of approval/disapproval) |
| 3         | Decision-making process | -Intra-household dynamics<br>-Community dynamics<br>-Level of spousal, family, and community support<br>-Perceived responsibility to carry the message into action                                                                                   |

Based on focus group results, a message's journey on the Message Train appeared to be greatly influenced by the recipient's environment and decisions made by the message promoting program (what is the message, where, when and how often is the message promoted). As a message

progressed towards Station 3, however, factors that reflect relationships (interpersonal, community) as well as internal qualities of the recipient had more pronounced influence on the path of the Train.

### 5.3 Gender and the Message Train

Table 8 summarizes the gender specific factors that influenced whether a message traveled onward through Stations 1-3. Some factors were found to be relevant to both women and men while others were pertinent to one specific gender. The following results are organized by Station. Within each Station subheading, results are further organized by gender.

Table 8: Gender-related factors that influence a message's journey on Stations 1-3

| Station (Number) and Name   | Gender-related factors that influence whether a message reaches the station                                                                                                         |                                                                                                                                                                                                           |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) Point of contact        | -Gender of message disseminator<br>-Gender of message recipient<br>-Perception of gendered responsibility of behavior by both recipient and disseminator                            |                                                                                                                                                                                                           |
|                             | <b>FOR WOMEN:</b><br>*Recipient's ability to attend message dissemination event, dependent on time and household obligations                                                        | <b>FOR MEN:</b><br>* Literacy level<br>* Likelihood of female spouse attending message dissemination event<br>*Likelihood of attendance at other community meetings where nutrition messages are promoted |
| (2) Message sharing         | -Gender of message disseminator<br>-Gender of message recipient<br>-Perception of gendered responsibility of behavior by recipient                                                  |                                                                                                                                                                                                           |
|                             | <b>FOR WOMEN:</b><br>* Spouse's demand for daily reporting<br>* Low literacy level                                                                                                  | <b>FOR MEN:</b><br>* Time allocation practices<br>* Familiarity with agricultural practices                                                                                                               |
| (3) Decision-making process | -Depth and frequency of couples' communication<br>-Perceived gender responsibility to 'perform' the action<br>-Power differentials between genders (within household and community) |                                                                                                                                                                                                           |
|                             | <b>FOR WOMEN:</b><br>(None from the data)                                                                                                                                           | <b>FOR MEN:</b><br>* Exposure to gender equality/women's empowerment education                                                                                                                            |

### 5.4 Station One: Point of contact

Station 1 of the 'Message Train' captures the first moment of contact between the message and message recipient. This contact opportunity varied depending on gender and type of message. Within all focus groups, the four most frequently identified nutrition-specific messages were:

exclusive breastfeeding, complementary feeding, pregnancy and lactation diet, and dietary diversity. Regarding nutrition-sensitive messages, the most commonly identified messages pertained to crop diversification (for consumption), homestead gardening, and WASH behaviors.

Table 9 reports the top two modes of message dissemination for each of these identified messages, disaggregated by gender. Down the middle column in gray is a list of all the messages, organized by type (nutrition-specific or nutrition-sensitive). Depending on the gender of interest, one can read the table out to either the left or right. For example, one can see that for the nutrition-specific message “exclusive breastfeeding”, the most prevalent mode of dissemination for women was through the Health Extension Workers (HEW). The second most prevalent mode of dissemination was through radio spots. Within each focus group, multiple modes of dissemination were reported for a particular message. Not all messages were discussed in every focus group.

*Table 9: Percentage of focus groups that report different modes of message dissemination, by message topic*

| WOMEN                                       |                                      | MESSAGE TOPIC              | MEN                                  |                                             |
|---------------------------------------------|--------------------------------------|----------------------------|--------------------------------------|---------------------------------------------|
| Second Most Prevalent Mode of Dissemination | Most Prevalent Mode of Dissemination |                            | Most Prevalent Mode of Dissemination | Second Most Prevalent Mode of Dissemination |
|                                             |                                      | <b>Nutrition-specific</b>  |                                      |                                             |
| Radio (24%)                                 | HEW (94%)                            | Exclusive breastfeeding    | HEW (29%)                            | HEW guidebook (21%)                         |
| ENGINE (13%)                                | HEW (88%)                            | Complementary feeding      | HEW guidebook (29%)                  | ENGINE (29%)                                |
| Traditional channel/ENGINE (13%)            | HEW (56%)                            | Pregnancy & lactation diet | HEW (50%)                            | HEW guidebook (36%)                         |
| ENGINE (25%)                                | HEW (73%)                            | Dietary diversity          | HEW (36%)                            | Formal education (21%)                      |
|                                             |                                      | <b>Nutrition-sensitive</b> |                                      |                                             |
| Traditional channel (25%)                   | DA (43%)                             | Crop diversity             | DA (64%)                             | Community meeting (27%)                     |
| Traditional channel (31%)                   | HEW (31%)                            | Home gardening             | DA (46%)                             | HEW guidebook (23%)                         |
| Radio (13%)                                 | HEW (81%)                            | Hygiene (WASH)             | HEW (85%)                            | Radio/Children (23%)                        |

HEW = Health Extension Workers

DA = Development Agents (Agriculture extension workers)

HEW guidebook = information booklet given by HEW to message recipient

Tradition = education from previous generations, cultural norms

ENGINE = multisectoral nutrition program within the area

Children = messages received by children at school and shared with parents and/or looking at the experiences of other children within the area

**5.4.1 Women at Station One (Point of contact)** Women largely cited the health sector as the main mode of dissemination through either home visits by the Health Extension Worker (HEW) or visits to the HEWs at health centers. HEWs were the most prevalent mode of dissemination for all nutrition-specific messages (exclusive breastfeeding, complementary feeding, pregnancy and lactation diet, dietary diversity) and most of the nutrition-sensitive messages (home gardening and hygiene).

Focus group discussions also indicated that women overwhelmingly had more contact with these nutrition-specific messages than men. When asked whether men or women access nutrition-specific messages, one woman responded (FG 5, All women), *“Women are more accessed. The reason perhaps is most of the behaviors we are dealing with are more directly of the concern of women. Breastfeeding, complementary feeding, pregnancy diet and the like.”*

Other common modes of dissemination for women recipients were traditional channels, the ENGINE nutrition program, and radio spots. When probed about what was meant by ‘tradition’, respondents described this mode as ‘something that our forefathers did’ or as simply the cultural norm.

Though some focus group participants stated that women had been invited to meetings and trainings given by DAs, many explained that women did not attend these meetings due to either scheduling conflicts or obligations in the home. The constraints of home life affected a woman’s ability to have contact with any type of message that required leaving the home or through any channel outside the health post; *“Men are usually away from home. They hear everything from everywhere they go. Women however have access to information only when they visit health post or when they are called for purpose”* (FG6, all women).

**5.4.2 Men at Station One (Point of contact)** Overall, men were less reached by the ENGINE program. The most prevalent mode of message dissemination for this gender was also HEWs. Additionally, the HEW guidebook (an informational booklet given to women by HEWs) was cited numerous times by men as a mode of dissemination. When

asked if men attended health center meetings, one male farmer responded *“To be honest, this [that men should accompany women to the event] is how we have been told and how we were guided. But we are not practicing in this way. I can’t lie about this; we are not accompanying them when they go to health facilities”* (FG 26, All men). Rather, results indicated that information received at the health centers by women was shared with men either verbally or in the form of guidebooks.

Women were the primary recipients for nutrition-specific messages. However, for over 80% of the all-female focus groups, women cited men as the primary recipients of crop diversification messages. Though some focus group participants stated that women had been invited to meetings and trainings given by Development Agents (DAs), many explained that women did not attend these meetings due to time allocation practices (with either scheduling conflicts or obligations in the home). Men consistently had greater contact with crop diversification messages, perhaps due to the mode of contact. Other than farming demonstrations at farming training centers and DA-led meetings and home visits, agriculture-focused nutrition-sensitive messages were also frequently disseminated as an ‘add-on’ to the agenda of local political gatherings (community meetings in Table 9). While this seemed to provide adequate reach for the male population, the ‘weaving in’ of nutrition-sensitive messages into other agendas may have decreased actual absorption and probability of implementation: *“The men access the messages usually when they attend the general meetings. Even in that case, because there are lots of other issues, people get bored and do not listen with concentration”* (FG 22, all men).

Results presented above support the first part of Hypothesis 1. Women had greater contact than men with nutrition-specific messages, such as exclusive breastfeeding and complementary feeding. Men, however, had greater contact with nutrition-sensitive messages focused on agriculture but did not have greater contact with nutrition-sensitive messages related to WASH.

### **5.5 Station Two: Message sharing**

The second station on the Message Train analyzes what happens to the message after the point of contact. At this station, the reasons for message sharing as well as the effects of immediate or delayed sharing come into play.

### 5.5.1 Women at Station Two (Message sharing)

Women reported sharing nutrition-specific messages with their spouses immediately after exposure; *“We necessarily tell our husbands as they ask to report them what we learned whenever we attended some educational session apart from home visit.”* (FG21, All women). This happened almost immediately (within 24 hours). All transcripts indicate a high rate of nutrition-specific message sharing from women to men, with a relatively short lag time between point of contact and point of sharing; *“We immediately share. The reason is we may forget unless we do it immediately”* (FG8, All women). This quote not only supports the immediate sharing of nutrition-specific messages but also the perceived importance and urgency (by women) in retaining the knowledge acquired.

### 5.5.2 Men at Station Two (Message sharing)

Male focus group participants did not discuss whether they shared nutrition-specific messages. Nor did women ever mention having received nutrition-specific messages from their spouses or male neighbors. However, men readily discussed the sharing of nutrition-sensitive messages. Men tended to share nutrition-sensitive messages more than women immediately after the point of contact. Additionally, when men were asked with whom they share messages, neighbors were first identified, and then female spouses cited as a secondary recipient of sharing. Several male focus group participants discussed the utility of sharing crop diversification information with their neighbors; *“We share for our neighbors because we believe that we cannot change if our neighbor is not progressing. If my neighbor is healthy, I would be healthy”* (FG 2, all men).

Results also indicated that men were more empowered to share the content of agriculture messages due to their familiarity and engagement with the topic. As one male farmer said, *“Men can play a significant role [in crop diversification] because the men can understand the messages better. And they are assumed to have more responsibility on planning and supplying resources. For example, if we take the supply issue, if the men do not take the leadership, the women may not go forward.”* (FG 7, All men).

Results from Station Two refuted Hypothesis 2 (which was that for both nutrition-specific and nutrition-sensitive messages, women and men equally share messages with their spouses and other members of the community). Rather, women were more likely to share nutrition-specific

messages with their spouse and men were more likely to share nutrition-sensitive messages with their neighbors.

### **5.6 Station Three: Decision-making process**

After contact and message sharing, the next ‘stop’ on the Message Train is the decision-making process related to whether to implement the associated behavior (or not). At this station, individual internal and interpersonal processes were examined. Focus group participants described intra-household dynamics, community dynamics and perceived responsibility, benefit and consequence as salient factors to progression to the following Station for both genders. Results indicated, however, that patterns of adoption were not based on the type of message (specific vs. sensitive), but rather depended more on whether the behavior adoption required physical resources and the availability of these resources.

#### **5.6.1 Women at Station Three (Decision-making process)**

The nature of the decision-making process was dependent on the specific message itself. Across the entire sample, women consistently reported that they exclusively breastfed. The actual *process* of decision-making to exclusively breastfeed, however, was difficult to extract from focus group transcripts. Mothers were definitive in their understanding of its benefit and implementation but did not discuss how they came to this decision.

When asked about a woman’s role in decision-making on the matters of nutrition-sensitive behaviors, a male focus group participant responded, “*She will share her idea what type of crop is required seasonally. The women know better which crops they need most on certain season. Therefore, the men usually seek the advice of their wives before deciding anything*” (FG 26, All men). This quote captures the general data trend of decision-making processes for messages that involved agricultural engagement. Both women and men acknowledged the fluidity of conversation and the degree of female involvement. Focus group participants (regardless of gender) reported that men plowed and tilled the field, and women tended to weed and harvest.

#### **5.6.2 Men at Station Three (Decision-making)**

The decision-making process for men did not particularly differ from that of women for both nutrition-specific and nutrition-sensitive messages. Like women, men reported that the choice to adopt a behavior was largely contingent on the types and quantity of

resources necessary. One male participant identified economic and physical resources as the limiting factor to behavior adoption; *“As we have mentioned earlier, there is a lot of change regarding latrine construction, personal hygiene and the like. However, with regard to the consumption of a balanced diet, it is not being practiced by many people due to resource and financial limitations”* (FG 24, All men).

Male focus group discussions on the actual process of decision-making frequently referred to the necessity of communication within the couple; *“Everything is done by agreement and discussion. If I try to force my wife, to impose what I want, she will do what she wants after some time. There is no such thing as violation of right”* (FG 11, All men). While women also discussed the importance of communication between spouses during the decision-making process, men’s focus groups discussed this subject 50% more times. One male participant reflected on this somewhat ‘new’ male perception of equality; *“There is different level of understanding on equality. Both will discuss and work together. There was no discussion in the previous time. The men do [did] not want to listen to what the women have to say. These days they both discuss and decide together”* (FG17, All men).

Results from Station Three did not support Hypothesis 3 (which was, for nutrition-specific messages, women have greater say in the decision-making process, compared to men; for nutrition-sensitive messages, men have a greater say in the decision-making process, compared to women). Message type (specific vs. sensitive) did not seem to be a factor in decision-making for women and men, as differences across type of message were not observed. Rather, the decision-making process was more related to the socio-economic status of the household and the input/resource prerequisites for behavior adoption.

## 6 DISCUSSION

The multisectoral nature of the ENGINE program, with targeting of different gender groups with different messages and different modes of delivery, was an ideal platform to test the novel Message Train framework as a way of understanding the gender differences in the process of behavior adoption. The results above indicate there are several gendered factors that may facilitate or hinder a message’s journey forward on the Message Train. In Station One, we saw that for women, message contact was often dependent on time allocation practices and

interactions within the domestic space (rather than the public realm). This was particularly true for messages surrounding agricultural techniques. Women were less likely than men to attend an event at a farmer's training center. They perceived such related behaviors to be the responsibility of their male spouses. This became a common theme throughout all the stations: messages surrounding agriculture were largely the focal point for men regarding contact and sharing (Station 1 and 2). Men were targeted more, accessed more, played bigger roles in sharing of messages and were viewed as the primary 'implementer' of the associated behavior. This finding agrees with other research studies in which agents of agriculture behavior change are solely men [117, 121, 122, 124]. Here we find that despite an increased policy level dialogue in women's empowerment in agriculture, at the programmatic level, message contact and sharing of agricultural messages is still largely within the man's domain.

Health Extension workers (HEWs) were an integral and imperative source of message dissemination for both women and men. However, although the mode of dissemination was the same, men appeared to have less interaction with HEWs. For all nutrition-specific messages, 56-94% of female focus groups reported having received messages through the HEWs (versus the 29-50% of all male focus groups). This was also true for WASH messages. Eighty-five percent of male focus groups and 81% of female focus groups reported HEW as the mode of dissemination. This perhaps reflects the pronounced potential that HEWs have within for both nutrition-specific and nutrition-sensitive behavior change programs. Although the concern of overburdening the HEWs workload should not be overlooked, the already established trusting relationship built between HEWs and families sets up a message's 'successful' journey on the Message Train.

Male message contact was often dependent on whether his spouse received the HEW guidebook and his literacy level. Commonly, a message that had contact with women (Station 1) was shared (Station 2) with their husbands so that they accessed it (Station 1) and internally processed it in their own way. This staggered process reflects both the importance of women as agents of positive nutritional change and the importance of communication between genders within the household.

Indeed, gender continued to play an important role in Station Two (Message Sharing). Women commonly reported sharing nutrition-specific messages with their spouses immediately after exposure. Most often, women 'reported back' to their husbands at the end of the evening, sharing their activities, information about to whom they talked and what they learned. Women also shared messages with their husbands out of cognitive necessity. Due to low literacy rates, women explained that they could not read or understand pamphlets distributed at meetings and health posts and thus turned to their spouses for help. Indeed, the starkest descriptive difference

between the two genders, though not surprising given the rural area and general population, was education level (58% of women had no formal education vs. 18% men). Men received messages on exclusive breastfeeding, complementary feeding and pregnancy and lactation diet from HEW guidebooks initially given to their female spouses.

For men, however, message sharing expanded outside the home and into the community. Men's message sharing with neighbors may be in part due to having more time for socializing outside the home. While home responsibilities prevent women from frequently going out to socialize, men reported that opportunities to engage with neighbors arose during travel time to and from as well as in the field. Men could have also felt more empowered to share the content of agriculture messages (compared to health and nutrition messages) due their familiarity and engagement with the topic. Here we see the beginnings of a negative cycle, at least in regard to women and nutrition-sensitive messages. Probability of message sharing (which is a potentially strong precursor to behavior adoption) was dependent on familiarity of the topic. Familiarity with a new topic can only be achieved by exposure to its messages. However, integrating women into new nutrition-sensitive activities and expecting them to share the messages was challenging when the 'baseline' levels of exposure and involvement were low.

On the other hand, women were largely the focal point for messages on food and diet (exclusive breastfeeding, complementary feeding, dietary diversity) at Stations 1 and 2. Despite interviewer probing, women were less willing to discuss the process after these nutrition-specific messages continued to Station 3 (Decision-making). Potential explanations for this lack of discussion may be (i) this type of behavior did not require a stressful amount of inputs and therefore garnered little or no need for deliberation; (ii) the intensity and length of exposure to associated messages helped facilitate a smooth and seamless adoption of behavior and/or (iii) women lacked the language and supporting environment to discuss the process of decision-making. Similar patterns of definitive knowledge but ambiguous decision-making arose with messages surrounding vaccinations and WASH. Data from this study indicated that, for nutrition messages that were not considered heavily resource dependent (exclusive breastfeeding, WASH, vaccinations), if a message had contact with a targeted individual, its correlating behavior was adopted. However, when behavior adoption required contact and ownership of lacking resources, women reported their inability to implement the behavior.

This contrasted with male focus group discussions on decision-making processes. Recall from the results section that the men's discussion frequently circulated around the necessity of communication within the couple. Furthermore, the men's references to 'violations of right' (should the wife not be consulted) may reflect the effects of gender equality education that had

occurred within the study area. Several focus groups referred to a transformation of opinions and understanding regarding gender equality. Due to this increased gender equality awareness and exposure to women's empowerment programming, a substantial component of Station 3 (decision-making), from the men's perspective, entails communication and input from their female spouses.

While one can make the statement (based on this research) that nutrition-specific messages were the domain of women, one cannot make the broad statement that nutrition-sensitive messages were the domain of men. Home gardening and WASH messages did not fall under the sole sphere of men but were either more relevant to women (home gardening) or equally relevant (WASH), thereby refuting the second part of Hypothesis 1 which stated that for nutrition-sensitive messages, men have greater contact with the messages compared to women. Results showed a collinearity between agriculture messages and men's experiences at Station 1 (Point of contact) and food/diet-based messages and women's experiences at Station 1. These experiences and dynamics at Station 1 set the course for the message's entire journey towards sustainable behavior change.

Furthermore, while the focus of the Message study was not on the actual adoption of nutrition behaviors (Station 4), one could hypothesize that messages that essentially take two 'trips' in a staggered manner could yield greater behavior adoption. Just as Lamstein et al. [180] concluded that health education programs targeting multiple individuals have a greater effect than targeting only the woman herself, this research suggests that although one individual is targeted, if message sharing is simultaneously promoted, multiple individuals can ultimately be reached thereby enhancing the probability of behavior adoption in a resource efficient manner. Further research is recommended to test whether a message that takes multiple trips (one with a woman and one with a man) increases the likelihood of adoption and sustainability (Stations 4 and 5) compared to a message only traveling with one sex.

Results from the Message study also introduced the question of the effect of quality of programming/message dissemination. The train metaphor was a useful and intentional reference to a salient and unique component of the framework. At any point, a message could 'get derailed' and be lost, never reaching the destination of sustainable behavior change. All stations of the train were essentially links between the outputs and outcomes columns of a program logical framework. While this study addressed a message's ability to stay on the Message Train for all three stations, subsequent research on the variation of message dissemination quality (was the message delivered in an effective and appropriate manner?) and the subsequent quality effect on

the other stations could provide pertinent complementary insight on how to improve nutrition behavior change.

## **7 LIMITATIONS**

The largest limitation of this study was the limited availability of information on ENGINE's Social Behavior Change and Communication strategy and its actual implementation. Knowing the specific wording of messages as well as the program activities implemented (and not just planned) would have provided pertinent contextual information to better understand results regarding message contact, enabling a clearer distinction around whether variation in contact was due to poor program implementation or to individuals who did not seek out access. A key potential factor in the Message Train is the level of message content specificity. A message of "you should not give any other liquid other than breast milk and demand feed" is quite different from a message that specifies the proper latch when breastfeeding, the minimum number of feedings and the length of feedings, for example. The quality and level of detail in message content could potentially be a critical issue to later Stations in the Message Train and should be examined. Furthermore, disaggregated information on the sex of the message disseminators within each kebele would have also better clarified the gender related dynamics of message contact and sharing.

## **8 CONCLUSION**

This study applied the Message Train framework to understand male and female processes in nutrition-sensitive and specific message contact, sharing, and decision-making and how the two gendered processes intersect. There was a gendered difference for the first three stations of the Message Train but the type and level of impact that gender had at each station varied. Gender related factors such as time allocation patterns, literacy levels and perception of responsibility interplayed with contextual and interpersonal factors (such as level of couples' communication) at each station. These nuanced differences at each station point to the need for deep and specific qualitative formative research prior to any behavior change program implementation. Understanding the cultural and interpersonal norms in the program setting is key to successful behavior change adoption. The differentiation between nutrition-specific and nutrition-sensitive message travel along the Message Train could not be summarized according to sex. Rather, women consistently 'traveled' with nutrition-specific messages more than men. Women did not often receive or share nutrition-sensitive messages related to improved nutrition-friendly agricultural practices although they were more prone to do so for messages related to water and

sanitation. For nutrition programs to effectively influence behavior change, this study suggests that one must consider how messages (regardless of ‘type’ i.e. nutrition specific vs. sensitive) travel through every station of the Message Train and how women and men process the messages at each station differently. There is no ‘express train’ to sustainable behavior adoption. Rarely do nutrition messages turn into action without some sort discussion with another individual, particularly for cultures where family, extended family and community make up a big part of identity. As gender considerations continue to cut across and overlay programmatic design frameworks, programmers should devote more attention to the actual processes associated with behavior change by using analytical tools like the Message Train during the program design and evaluation phase. While sustainable behavior change remains the goal of SBCC nutrition programs, the process of getting there is just as vital to the successful implementation of interventions that can contribute to the alleviation of global malnutrition.

## CHAPTER 5

### **Emic definitions of empowerment: A qualitative gendered comparison and content validity assessment of the Abbreviated – Women's Empowerment in Agriculture Index (A-WEAI)**

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## **Abstract**

The social, nutritional, and political benefits of women's empowerment programming have been well documented in numerous resource-limited settings. As women's empowerment (and women's empowerment in agriculture, in particular) continues to garner attention as a promising and necessary vehicle for improvements in nutrition, food security and poverty, the first critical step in articulating how we are defining and understanding empowerment is increasingly overlooked. The aims of this study were to 1) determine how Ethiopian smallholder farming women and men differ in their emic definitions of empowerment in agriculture and, 2) assess the emic content validity of the Abbreviated-Women's Empowerment in Agriculture Index (A-WEAI) in Ethiopia by comparing these emic definitions to the empowerment dimensions in the A-WEAI. Through 24 focus groups and grounded theory analysis, we found that while both women and men expressed definitions of empowerment at individual, household and cultural levels, individual definitions differed by level. Men's emic definition had a slightly closer alignment with the etic A-WEAI definition of empowerment compared to that of the women. For both genders, however, the A-WEAI domains of resources, leadership and time had little to no content validity to our study sample. The A-WEAI also overlooked several concepts that respondents felt were pertinent to empowerment individual levels of self-efficacy and bravery, ability to multi-task, and culturally related sources of empowerment such as recognition from communities. Within this study sample, bravery was a central component of empowerment for women whereas for men, identity based on being a strong farmer was a central component. Results highlight the importance of integrating emic perspectives in program design and evaluation. Including these emic perspectives provides a better understanding of the 'felt' barriers to empowerment and improves the ability to design programs that address these barriers or reinforce the achievement of a subjective state of empowerment.

**Keywords:** empowerment, gender, emic, qualitative, Ethiopia

## 1. INTRODUCTION

The social, nutritional and political benefits of women's empowerment programming have been well documented in numerous resource-limited settings. Programs and interventions with a focus on women's empowerment have been positively associated with reductions in under-nutrition [25, 191, 192], improved maternal and child dietary diversity [193], improved family planning [194] and higher child school enrollment rates [195]. Within this literature, different researchers refer to different definitions of empowerment and measurement proxies such as level of household decision-making, number of owned assets, and education level, without establishing a clear definition of empowerment to drive their measurement efforts.

Women's empowerment (and women's empowerment in agriculture, in particular) is now seen as a promising and necessary vehicle for improvements in nutrition, food security and poverty [196, 197]. However, a first critical step -- articulating a clear conceptual understanding of what is meant by "empowerment" -- has commonly been overlooked. This epistemological gap has recently been addressed by scholars working in the fields of development and nutrition, who point to the lack of a 'set definition' [198] and 'universal consensus' [199] on a definition of empowerment. Developers of indicators such as the Women's Empowerment in Agriculture Index (WEAI) (and the newer variation of it examined in this study, the Abbreviated-WEAI (A-WEAI)<sup>29</sup>) never specify the definition of empowerment that the metric was intended to operationalize, though they do reference and acknowledge other scholarly definitions of empowerment [78, 93].

The empowerment domains (or dimensions) within the A-WEAI were derived from an outside or etic perspective. Etic approaches can be contrasted with emic approaches, which draw on the perspective of those being measured and studied. The A-WEAI index was not developed from the "ground up", by considering local female and male definitions of empowerment across multiple contexts. Rather, researchers contributed etic expert knowledge about domains that were identified (by the United States Agency for International Development) [78] as both key components to agricultural/nutrition programs and seemingly important elements of empowerment. After reviewing publicly available surveys (such as the Demographic Health Survey and World Bank Living Standards Measurement Survey), studies on measurement of empowerment, and numerous surveys implemented by IFPRI, the index developers presented the

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<sup>29</sup> To address user feedback on the original WEAI, the new abbreviated index (A-WEAI) was created and released in 2015. The A-WEAI is advertised to require approximately 30% less in administration time and is described as 'streamlined'. All questions of the A-WEAI can be found in the original WEAI. The A-WEAI has largely replaced the WEAI and the remainder of this paper specifically refers to the A-WEAI.

potential indicators to a group of gender and agricultural experts to gain feedback on feasibility, specificity and generalizability of different combinations of indicators [78]. Important questions, therefore, are whether the implicit, etic based processes through which the A-WEAI was developed were too broad (or narrow) in scope and whether the index's definition of empowerment overlaps (or overlooks) the context specific emic definition of women's empowerment in agriculture. Evidence of emic perspectives of empowerment is needed to assess more fully whether the etic definitions that informed the A-WEAI are relevant to the people whose empowerment is being measured. This is particularly important for contexts where the A-WEAI has not yet been tested.

This study examines women's and men's emic definitions of empowerment in agriculture in the context of Ethiopian smallholder farming households. The objectives of this research were to 1) determine how agrarian Ethiopian women and men define empowerment in agriculture and whether their definitions differ and, 2) assess the emic content validity of the A-WEAI by comparing these definitions to the domains operationalized in the A-WEAI. Content validity is defined as the extent to which a measure represents all facets of a given construct [17]. Content validity was judged in this paper based on the criteria of whether the A-WEAI 1) captured all relevant domains and items of women's empowerment in agriculture, and 2) included any domains and/or items that appeared not to be relevant to the construct, both according to Ethiopian women's and men's emic definitions.

This paper first provides a brief background on established definitions of empowerment and the A-WEAI, followed by a description of the study's methods. The results section has two parts: the first describes and compares women's and men's definition of empowerment in agriculture. The second part assesses whether these definitions align with the A-WEAI's domains. A final section discusses overarching themes from the study and implications for future research.

## **2. BACKGROUND AND JUSTIFICATION**

### General definitions of empowerment

A wide variety of definitions of empowerment have emerged in the literature and often refer to terms such as "autonomy" [61], "self-determination" [62, 63], "liberation" [64, 65], "self-confidence" [63, 66] and "agency" [68]. Sen defines empowerment in terms of agency, which he defines as "what a person is free to do and achieve in pursuit of whatever goals or values he or she regards as important" [68, p. 203]. Kabeer describes agency as the ability of an individual to set his/her own goals and act upon them and specifies that levels of agency can vary

in different spheres of an individual's life [69]. An increase in agency in one domain may or may not have positive “spillover” effects on agency in other domains [63].

Other authors have focused on relational aspects of empowerment, defining it in terms of power and how that power is exerted on (and at times in spite of) others. Mason & Smith [70] argue that empowerment is about “the extent to which some categories of people are able to control their own destinies, even when their interests are opposed by those of the other people with whom they interact” [70, p.1]. Uphoff [71] further distinguishes between two types of power; “power resources” which can be defined as the accumulated, invested and exchanged assets, and “power results”, which are the activities that are achieved by using these resources.

Empowerment has also been defined with a particular focus on the resources and social/institutional preconditions required to exert agency or power. Several scholars have referenced the definition of empowerment provided in the 2000-01 World Development Report: “empowerment is the process of enhancing the capacity of poor people to influence the state institutions that affect their lives, by strengthening their participation in political processes and local decision-making. And it means removing the barriers—political, legal and social—that work against particular groups and building the assets of poor people to enable them to engage effectively in markets” [72, p.99].

Lastly, several authors have argued that definitions of empowerment should encompass intervening or barrier-specific variables, such as information and influence [63, 73]. When these two types of variables are overlooked, people are not only potentially prevented from expressing their preferences, but also denied the ability to have an effective impact on particular decisions [74].

As exemplified above, empowerment is a concept that has been defined in many ways and from several different perspectives. Within the agriculture and nutrition field, perhaps the most widely cited definitions of empowerment include those articulated by Narayan [76] and Kabeer [78]. As mentioned above, Kabeer [69] focuses on agency and argues that if one thinks of power in terms of the ability to make choices, empowerment is a process of change, which then results in an individual being able to make strategic life choices. This process of change, of course, implies that there is an initial state of being disempowered. Narayan [76] approaches empowerment from the perspective of social justice, identifying four main elements of empowerment: access to information; inclusion and participation; accountability; and local organizational capacity. Together these four elements underpin a definition of empowerment: “the expansion of assets and capabilities of poor people to participate in, negotiate with, influence, control and hold accountable institutions that affect their lives” [76, p.5]. Both

Narayan's and Kabeer's definitions of empowerment have even been employed as theoretical frameworks for development and agriculture-nutrition program design [63, 73].

However, despite (or because of) the many different empowerment definitions circulating throughout the development literature, there has never been agreement on a single definition [200, 201]. Furthermore, the definitions presented above appear to be theoretically derived rather than grounded in empirical realities. The origins are not entirely clear, including whether they were influenced by etic or emic perspectives, or both.

### The WEAI/ A-WEAI

The WEAI was first released in early 2012 by the International Food Policy Research Institute (IFPRI), in collaboration with other global institutions and agencies, and then further developed into the Abbreviated-WEAI (A-WEAI) in 2015. Both versions of the index are survey-based and designed to measure the “empowerment, agency and inclusion of women in the agricultural sector” [78]. They had also been promoted as a way to monitor progress towards the UN's Millennium Development Goal 3, gender equality [202]. While some have questioned the need for an index that measures women's empowerment *specifically* in the realm of agriculture (rather than a more holistic women's empowerment index), the WEAI development team argues that the prominent role of women in agriculture justifies a specific index.

To construct the A-WEAI, individual-level data are collected through household surveys, for both women and men in the same household, and then aggregated into a regional or national-level index. While the actual A-WEAI index is constructed out of quantitative data, IFPRI and its collaborators emphasize the value in complementing the index with qualitative case studies in reporting and analysis [78].

Based on the Alkire-Foster method [93]<sup>30</sup>, the A-WEAI is comprised of two sub-indices. The first sub index, the 5DE, is comprised of five domains of empowerment in agriculture;

- production (input in productive decisions)
- resources (ownership of assets and access to and decisions on credit)
- income (control over use of income)
- leadership (group membership)
- time (workload)

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<sup>30</sup> The Alkire-Foster method was developed by Sabrina Alkire (OPHI) and James Foster (George Washington University and OPHI) and is an internally consistent method for measuring multidimensional poverty, well-being and inequality, it measures outcomes at the individual level (person or household) against multiple criteria (domains and/or dimensions and indicators). Different domains and indicators can be chosen, depending on the context and purpose of the exercise 95. IFPRI, *Women's Empowerment in Agriculture Index*. 2012: Washington, DC.

The second sub index is the Gender Parity index (GPI), which measures the percentage of women whose empowerment score meets or exceeds that of the head male figure in their household. The five WEAI domains that measure women's empowerment in agriculture were identified by USAID using etic principles, under the justification that these domains "reflected priorities from its [USAID's] agricultural programs" [78]. These domains parallel Kabeer's emphasis on decision-making [102] and the resources domain which reflects Uphoff's focus on power resources [71]. The second iteration, the A-WEAI, was developed in an effort to address feedback by program implementers that the original WEAI (1.0) had a high respondent burden that affected data. The A-WEAI retains the original domains of the WEAI through a subset of WEAI items that require approximately 30% less administration time. This new version of the index was piloted in the summer of 2015 in Bangladesh and Uganda. Universities, national and international nongovernmental organizations, United Nation agencies (such as FAO and UN Women), as well as local level community nutrition, agriculture and development programs are among the many different users of the WEAI and A-WEAI [93]. In April of 2018, the WEAI team launched a pilot version of the project-level WEAI (pro-WEAI), which has been promoted specifically for use in evaluating agricultural developmental projects. The remainder of this paper refers specifically to the A-WEAI which at the time of writing is the most widely used of the WEAI variants.

The aim of A-WEAI is to measure women's empowerment using information from both women and men in the same households. This aims to reflect the relational aspect of male and female power portrayed in several of the common definitions. Indeed, several studies have demonstrated that men's view of gender norms and their experiences of empowerment vis a vis a woman are inextricably linked with, and often articulated in opposition to, feminine norms [203, 204]. Schuler et al. [204] articulate that when women's norms shift, typically due to expanded education and employment opportunities and/or gender equality/women's empowerment programming, men's norms tend to evolve in one of two directions. They may evolve to accommodate and/or support gender equality by fostering more collaborative, communicative, and collegial relationships with women including their wives [203]. Alternatively, men may respond by drawing upon existing norms of hegemonic masculinity, reacting with hostility and violence to the empowerment of women [204]. While much of the scholarly work surrounding this topic has been on reproductive health, HIV/AIDS and intimate partner violence, the foundational conclusions related to potential negative consequences of women's empowerment programming are universal to all fields of empowerment study. As Jewkes et al. [205] state in their evidence review of effective interventions that have shifted male gender norms, "men need

to both change themselves and align themselves with women to deepen and sustain the goals of women's rights and empowerment in economic, political, and domestic terms. Deepening of men's understanding of the need for this change is crucial” [205, p.14]. A precursor to this deepening is establishing a clear understanding of how women and men define empowerment in their everyday lives.

This study brings to the forefront the key question of if and how women's and men's definitions of empowerment in agriculture overlap. Many women who are the targets of empowerment programming exist in a dual-headed household where the very definition and experience of empowerment is intertwined with (and potentially contingent on) their spouse's understanding of decision-making and power. If indicators such as the A-WEAI fail to reflect women's and men's own subjective definitions of empowerment in agriculture accurately, their responses to A-WEAI items may not reflect what the index designers are intending to capture. As mentioned above, the A-WEAI domains were established from an outside, etic perspective, as they were perceived to be aligned with the priorities of USAID's agricultural programs [78]<sup>31</sup>. This etic perspective should not be discounted. But there is also potential utility in seeing whether these etic-based definitions are shared by the intended beneficiaries of empowerment interventions and, furthermore, whether the tools used to measure empowerment particularly in agriculture reflect both etic and emic perspectives. Numerous empowerment studies have suggested that programs should take into account the emic perspective in program design, as it provides insights into the local context and the culturally specific nature of the empowerment experience [205, 206]. The incorporation of the emic perspective within empowerment indicators also provides a mechanism to assess whether the perceptions of beneficiaries are being considered and addressed.

This research sought to assess the content validity of the A-WEAI for use in rural Ethiopia through two objectives: 1) determine how agrarian Ethiopian women and men define empowerment in agriculture and whether their definitions differ<sup>32</sup> and, 2) assess the emic content validity of the A-WEAI by comparing these definitions to the domains operationalized in the A-WEAI. This type of content validation can contribute to scaling up the use of indicators such as the A-WEAI across a wide range of cultural contexts.

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<sup>31</sup> It should be noted that developers of the A-WEAI did conduct “qualitative interviews and case studies with individuals” but this was for the purpose of selecting indicators for each domain, not selection of the actual domains 93. Malapit, H., et al., *The Abbreviated Women's Empowerment in Agriculture Index (A-WEAI)*, in *IFPRI Discussion Paper 01647*, H.a.N.D. Poverty, Editor. 2017, International Food Policy Research Institute.

<sup>32</sup> From this point forward, note that the paper shall refer to empowerment in agriculture as simply ‘empowerment’.

### **3. METHODS**

#### **3.1. Study context**

The data for this study were collected in the summer of 2016 in the context of the USAID-funded Empowering New Generations to Improve Nutrition and Economic opportunities (ENGINE) program, implemented from 2011-2016. Working through the nation's nutrition and agriculture sectors, ENGINE's primary goal was to help Ethiopian women of reproductive age and children less than 5 years achieve sustainable improvements in their nutritional status. While the ENGINE program did not directly implement empowerment programming, other institutions operating in several of the study sites were focused on improving women's empowerment and gender equality.

#### **3.2. Study design and sampling**

This qualitative study included 24 focus groups, comprised of "most vulnerable household" male and female beneficiaries of the ENGINE program, who were targeted by the program based on household food insecurity, nutrition, and poverty level. This study selected these "most vulnerable households" (MVHH) as the cohort of research due to their increased likelihood of individual disempowerment status [193, 207]. As a MVHH, households received, prior to data collection, agricultural inputs including livestock and tools, in addition to the standard ENGINE package of farmer training, demonstration gardens, and health/nutrition related social behavior change communication messages.

The study sample was drawn using a combination of convenience and purposive sampling techniques, as the study was carried out in conjunction with other ongoing Tufts University ENGINE research. In the first sampling stage, one woreda (district) was selected from each of the two regions and woredas where Tufts University was implementing a multi-year agriculture-nutrition panel survey and where ENGINE was providing direct support to MVHH beneficiaries (Semen Achefer woreda in the Amhara region and the Wondo Genet woreda in the Southern Nations, Nationalities and Peoples' Region (SNNPR)). The researchers and ENGINE

project were known by woreda level officers, who offered researchers necessary logistical support including helping to recruit individuals meeting the focus group inclusion criteria<sup>33</sup>.

Within each of the two selected woredas, participant selection at the kebele level was done purposively, with the assistance of the woreda level officers. Participants were stratified into 6 different subgroups and only participated in one subgroup: men in farming households (10 groups), women under 40 years of age in farming households (3 groups), women over 40 years of age in farming households (3 groups), women in cash crop farming households (3 groups), women in farming households with home gardens (3 groups), and women in livestock farming households (2 groups)<sup>34</sup> (See Table 10 for subgroup stratification). Since the experience of empowerment differs from individual to individual, the gender and age-specific subgroup classifications were created to ensure the recommended level of homogeneity in each group [134] and to achieve a comfortable and honest environment for discussion. The agricultural practice subgroups (home garden, cash crop and livestock raising) were created to optimize the sharing of relatable experiences specific to the topic of empowerment across different types of agricultural livelihoods. Since, many households may have engaged in multiple subgroup categories, agricultural practice subgroups were identified by the primary source of household income. Due to time constraints and the A-WEAI's focus on women's empowerment, men were not stratified according to agricultural subgroups. A total of 98 women and 69 men participated in 14 female and 10 male focus groups, respectively.

*Table 10: Summary of subgroups and focus groups per subgroup*

| <b>Subgroup</b>                                 | <b>Number of focus groups</b> |
|-------------------------------------------------|-------------------------------|
| Men (any age) in farming households             | 10                            |
| Women 18-40 yrs. of age in farming households   | 3                             |
| Women over 40 yrs. of age in farming households | 3                             |
| Women (any age) in cash cropping households     | 3                             |
| Women (any age) in households with home gardens | 3                             |
| Women (any age) in livestock farming households | 2                             |

FGDs were conducted in Amharic by two moderators and were observed by the doctoral candidate. For a small number of FGDs in which participants were not fluent in Amharic,

<sup>33</sup> Furthermore, these woredas were selected because their demographic, health and nutritional profiles were similar to those of the woredas surveyed for a related mixed-method A-WEAI validation study (See Min-Barron et al. 2018, 208. Min-Barron, M., et al., *Content Validity and Internal Reliability of the Abbreviated Women's Empowerment in Agriculture Index (A-WEAI) in Ethiopia: A Mixed Methods Approach*, Friedman School of Nutrition Science and Policy, Editor. 2018.)

<sup>34</sup> "Cash crop farming households" were households whose primary source of agricultural income was derived from cash crops. "Farming households with home gardens" were households whose primary source of agricultural income was derived from home gardening. "Livestock farming households" were households whose primary source of agricultural income was derived from livestock. Participants self-identified the type of household they represented.

community members who were not part of the research team translated between the local dialect of Sidaama and Amharic.

### **3.3. Data collection instrument**

Researchers developed a focus group interview guide that was intended to capture local gender norms associated with agricultural practices, women's and men's definition of empowerment, and perceptions on clarity and relevance of two of the A-WEAI domains, leadership and time. This section describes the design of the instrument, including some of the challenges and decisions that were made to capture notions of empowerment accurately in Amharic.

As with other research in Ethiopia [206], one of the primary challenges in developing the study instrument was identifying approaches to elicit participant definitions of a construct as complex as 'empowerment', particularly since there was no direct translation for the term in Amharic. After extensive field-testing, Debevec et al. [206] identified local Ethiopian definitions of empowerment by asking participants to describe a woman or man who was 'strong' or 'a role model' within or outside the community. Additionally, they asked the women and men to describe "the kind of woman they would aspire for their daughters to become" [206]. A second challenge of this Empowerment study was that many of the participants had been previously exposed to gender equality and empowerment programming. Though changes in knowledge or attitudes reflecting the impact of these interventions were expected, a concern was that respondents may have felt pressure to provide information perceived to be 'correct', according to messages disseminated by these programs.

Thus, the instrument development process was iterative and participatory, reflecting significant input from the research team, Ethiopian gender experts, and pretest participants. Ultimately, the guide was crafted to begin with broad questions regarding gender norms such as "When I say the word 'woman' what words or things do you think of?" to help introduce the topic of discussion and prompt respondents to think about their connection with the topic, per standard focus group guide development practice [134]. The guide, in an effort to circumvent the complication of no direct correspondence of empowerment terminology in Amharic, then continued by asking participants to imagine and describe an individual who was admired within the community, had power within both the household and the community and was seen as a role model. Moderators were also trained to probe about such individuals in regard to agriculture specifically to help capture definitions of empowerment in agriculture. Lastly, participants were questioned on the specific A-WEAI domains of leadership and time allocation. These two specific A-WEAI domains were chosen because local gender experts suggested that they were the

richest domains for debate and discussion. Questions regarding these A-WEAI domains were intentionally placed last within the guide to allow for full emic development of discussion on how empowerment was perceived and defined. For further details on the FGD guide, please see Chapter 5 Supplementary Materials, Appendix A.

#### **4. ANALYTICAL APPROACH**

##### **4.1. Study Objective 1**

Strauss and Corbin's qualitative method has been established by several scholars as an approach that is well suited for "generating multiple viewpoints on a phenomenon" [135, p.53], which aligns well with the study's objective of developing a description of how agrarian women and men in Ethiopia define and differ in their emic definitions of empowerment in agriculture [209]. Furthermore, the doctoral candidate intentionally developed background exposure prior to data collection, as recommended by Strauss and Corbin [135]. By contrast, other qualitative data analyst theorists such as Glaser [209] advocate for a review of the literature only post data analysis.

Strauss and Corbin's approach to data analysis includes three coding processes and one final step of theoretical saturation assessment. The coding processes are conducted in an iterative and parallel fashion, enabling qualitative data to be progressively aggregated and categorized.

The first process is open coding, in which specific phrases were identified within the transcripts as open codes, i.e. potentially repeated constructs. For example, analysis identified 'bravery' as one potential repeated construct, as several women used the word (or derivations of the word) "brave" when asked to describe a woman they admire (Table 11). After identifying several open codes within the entire dataset, analysis then proceeded to axial coding, which entailed refining and differentiating the identified categories (thereby creating axial codes) and determining the relationship between the different open codes. The third process, selective coding, identified selective codes (core themes) that cut across all axial codes. For the example in Table 11, the selective code was named 'individual level empowerment'. As a final step to the analysis, transcripts were then reread, and then further selectively coded for any data that related to the identified selective codes. This step of theoretical saturation brought analysis to the point at which no further coding or enrichment of categories provided new insight [136]. Data were analyzed by this coding process by only one individual, the doctoral candidate.

*Table 11: Example of theme (selective code) development through grounded theory coding*

| <b>Illustrative open codes</b>                                                                                                                                                                                                                                                                                                            | <b>Axial codes</b>                        | <b>Selective code</b>        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|------------------------------|
| “I never speak, because of fear”<br>“People will laugh at him and he is also afraid”<br>“A brave man”<br>“brave enough to work in the field”<br>“I am sure we can all do it, but no one has attempted it”.<br>“Leaders of the household”<br>“A sign of strength”<br>“Was respected as a strong person”<br>“We actually feel we can do it” | Bravery<br>Fear<br>Strength and endurance | Individual level empowerment |

Open coding resulted in 56 saliently repeated constructs which were then pared down to 8 axial codes (See Table 12 for a list of all 8 axial codes and Chapter 5 Supplementary Materials, Appendix B for a full list of all open, axial and selective codes applied to these data). Selective coding resulted in three selective codes (empowerment at the individual and household level and cultural related) and identification of further examples and evidence for these themes. Each process entailed careful analysis of the codes and an assessment of where certain codes could be related or considered to fall in the same category as other codes.

Due to this study’s emphasis on emic definitions, the doctoral candidate intentionally engaged in researcher reflexivity throughout all phases of analysis. Researcher reflexivity can be defined as “thinking critically about what you are doing and why, confronting and often challenging your own assumptions, and recognizing the extent to which your thoughts, actions and decisions shape how you research and what you see” [210, p.143]. Through periodic writing and thought exercises, the doctoral candidate engaged in self-criticism and introspection regarding her own perceptions of empowerment and how these could potentially influence coding and analysis. By critically looking at her own understanding of empowerment through the screens of gender, culture, age, class, social status, and prior exposure to other scholarly work, these reflexive practices were implemented in an effort to minimize bias and etic applications of analysis.

#### **4.2. Study Objective 2**

Study Objective 2 used the content validity criteria to determine whether the A-WEAI 1) captured relevant facets of women’s empowerment in agriculture, according to Ethiopian women’s and men’s emic definitions of empowerment, and 2) included any domains or items that appeared to

be irrelevant. After the inductive approach for Study Objective 1, focus group transcripts were then deductively processed, using the A-WEAI domains as coding categories.

## 5. RESULTS

### 5.1 Women's and Men's Emic Definitions of Empowerment in Agriculture (Study Objective 1)

Results from the grounded theory analysis yielded three central themes (selective codes) which were constructed from nine categories (axial codes), summarized in Table 12. Individual level empowerment encompassed definitions of empowerment that related to characteristics or feelings of the individual respondent. This contrasted with household level empowerment definitions, which related to activities performed within, or for the benefit of, the household. Lastly, the theme of culture related empowerment captured the different definitions of empowerment that revolved around engagement and disengagement with the surrounding local culture. We found that the FGDs were not different by subgroup or woreda. Thus, the results are organized by the three identified themes. Within each theme we present and compare the gender perspectives.

*Table 12: Summary of Selective and Axial Codes*

| Selective code               | Axial codes                              |
|------------------------------|------------------------------------------|
| Individual level empowerment | Bravery                                  |
|                              | Strength & Endurance                     |
| Household level empowerment  | Multi-tasking                            |
|                              | Articulation of power in decision-making |
|                              | Changing household gender norms          |
| Culture related empowerment  | Culture as a separate entity             |
|                              | Leadership through cultural norms        |
|                              | Agents of cultural change                |

#### 5.1.1. Individual level empowerment

Both women and men in the two woredas expressed empowerment as an experience that could occur at the individual level. These related to psychological/emotional experiences (bravery, fear) and individual physical capabilities (strength and endurance).

##### Bravery

In 8 of the 14 women's focus groups, women spoke of empowerment as an emotional experience manifested through acts of bravery. The term 'brave' (or '*biritu*' in Amharic) was often used in reference to women who either performed physically strenuous activities on the farm, such as

plowing, or spoke in public in community meetings. Plowing the field was perceived as a man's job due to the required strength and several of the women's focus groups discussed witnessing the uncommon practice of women plowing the field, thinking, "There is a brave woman I admire" (FG 3). For these women, the salient feature was that the woman was plowing *by herself*, i.e. with no man present in the field. This act of performing a 'typically male job' was perceived by the women in this FGD as an act of courage against standard gender norms.

Bravery was also discussed within the context of public speaking in community meetings: "A female who speaks in public is considered a strong person" (FG20). These community meetings were typically organized to discuss neighborhood issues relating to *idir* and *iquib* (traditional Ethiopian financial associations) or other neighborhood issues relating to local infrastructure and programming.

Several groups highlighted community public speaking as a form of empowerment. Speaking in public in these community meetings was typically not a part of the Ethiopian cultural fabric that was "long and deeply rooted" (FG13). Though not common, women who were able to overcome the fear of public ridicule were perceived by their peers as fearless and emboldened. When probed on why these women who spoke in a group setting were perceived as brave and empowered, many discussed how other women (who did not speak in public) were "highly afraid" of ridicule and had a sense of shame for being considered "talkative" (FG10).

### Strength and endurance

While strength and endurance did not emerge as a part of women's definition of empowerment, for men, individual-level empowerment encompassed performing activities that required physical strength and endurance. Men stated that the physical ability to use the plow and work in the field provided them with a compelling sense of identity. When asked to describe a respected man within the community, several responses aligned with a comment made by a man in Wondo Genet; "He is an individual who works all day in the field, has great strength in plowing and is ready for work" (FG24). This strong sense of identity as a farmer was repeated among members of all the male focus groups and rarely heard in the women's FGDs. Men also believed that male empowerment originated not just from having the necessary strength to execute these tasks, but also the ability to do so in an appropriately timely manner and according to plan. This was perhaps most applicable to agriculture-related tasks such as planting seeds, harvesting and market sales.

These findings suggested that, women and men differed in how they defined empowerment for themselves at the individual level. For women, empowerment was defined as

being able to perform activities in the face of gender norms. For men, empowerment came through the fulfillment of their societal gender norms. Plowing provided a clear example of the differences between women's and men's views on manifestations of empowerment. Although this activity was mentioned by both women and men, women discussed plowing from an emotional/psychological perspective, while men discussed plowing in regard to the necessary physical strength.

### **5.1.2. Household level empowerment**

Definitions at the household level related to activities performed within or for the benefit of the household. For respondents, empowerment manifested in one of three categories: (1) the ability to multi-task household activities, (2) the articulation of power in decision-making or (3) changing household gender norms.

#### Multi-tasking

Multi-tasking at the household level was identified as a measure of empowerment by six of the women's focus groups. Within this context, it meant being able to execute several obligations and responsibilities of the household, along with household finance management, sometimes simultaneously and sometimes individually. Being an empowered woman involved the multiple tasks of cooking, cleaning, greeting guests, caring for and feeding children, and managing household assets. Women felt as though they themselves were essential members of the household, or, "irreplaceable" (FG5). One focus group participant stated "It is important that a woman is involved in all activities, be it in the field or at home. Anything without the participation of women is not fruitful" (FG13). Indeed, women defined empowerment as the ability to engage in 'all activities'. This was supported by their articulation of pride when asked of the defining aspects of being a 'strong woman'. One focus group participant replied that a strong woman is not only "aware, energetic and knowledgeable" but also "does everything" (FG16). Women were able to see and value the large burden and skill required to manage the household, which they defined as encompassing housework, childcare, minor household expenditures and field labor.

#### Articulation of power in decision making

Additionally, according to women, empowerment was the ability to articulate to their husbands their desire for more decision-making power within the realm of household assets and cash income. Specifically, women consistently discussed how their ability to express to their spouses

their desire to have more power in ‘managing the money’ and ‘having control over household costs’ made them feel more empowered. Women who articulated such desires understood their rights and entitlement to have more power. For these women, increased dialogue or negotiation was one, but not the only, aspect of power in decision-making. These same women also considered decision-making power to, ideally, include full control and physical ownership of cash. They described men as “extravagant” in expenditure habits, “spending money for daily happiness and never considering the future impact” (FG9). Women’s desire for this power was not self-serving; they sought to use decision-making power and income control to benefit the household and family. One woman in the Semen Achefer woreda stated “It is the woman who is often worried about the family, so she needs to decide and manage these resources” (FG2). And similarly, a woman in Wondo Genet articulated “The family will benefit more if she has more power over the commercial matters to control income” (FG22).

Men repeatedly identified the following aspects as a part of empowerment: leadership of the household (FG 11, 12, 19, 24), involvement in ‘every decision of the household’, and frequent discussions (between husband and wife) regarding agricultural production activities. However, when men referred to ‘household decisions’, they referred those related to income, expenditure, and agriculture practices. In contrast, women’s definition of decision-making included chores and activities that specifically took place within the home. This domain of decision-making was clearly articulated by a man in Semen Achefer; “All household decisions are made by men, but, for example, the amount of spice used in cooking is decided by a woman, and the type of agricultural equipment needed and purchased is decided by a man” (FG 19).

### Changing household gender norms

In response to increased exposure to concepts such as gender equality and empowerment through local and governmental programming, certain men expressed fear that they would lose their power, superiority and “struggle for decisions” (FG11). As a result of the unintended consequences of women’s empowerment programming, men’s definition of *disempowerment* revolved around the emotion of fear and suspicion of changing dynamics within the household. Furthermore, the institutional change within communities (where women were given a more equal opportunity to present grievances to the local court) left several men fearful that women would be “running to the courts” at the slightest instance of marital dissonance (FG1).

Some men were proud to stay out of the kitchen and “take food from the wife” (FG11). Other men embraced certain aspects of the changing gender dynamics by defining empowerment as engagement in household activities typically associated with a ‘woman’s domain’. Men in

these focus groups reported having been exposed to empowerment and gender equality-promoting interventions, often by government and non-governmental organizations at the community level, which led these men to embrace their engagement with preparing food and helping with ‘women’s tasks’. These men defined empowerment as the ability to translate gender equality messages into daily actions within the household. While adamant that their status as the leaders of the family was not compromised by sharing the burden of ‘women’s work’, the men’s verbal and body language regarding their involvement in the kitchen was of great self-satisfaction; “While my wife took care of the newborn child, I washed the sheets used in delivery” (FG19).

To summarize, at the household level, empowerment for women equated having the ability to *perform* a wide variety of activities (often simultaneously), articulating a desire for increased power in making household expenditure decisions. For men, empowerment at this level meant being able to *make decisions* regarding a wide variety of activities within the household. Although both genders agreed that one aspect of empowerment was making decisions regarding household expenditure and activities, their definitions of ‘household’ differed. Men considered ‘household’ decision-making to include decisions on income and agricultural practices whereas women considered ‘household’ decisions to be about chores and activities within the physical home. For a few select communities, men also felt empowered by being able to perform ‘traditional’ women’s activities such as food preparation, in response to exposure to gender equality programming.

### **5.1.3.Culture related empowerment**

The third theme resulting from the grounded theory analysis was culture-related empowerment. This theme captured the different definitions of empowerment that integrated engagement (or lack thereof) with surrounding local culture.

#### Culture as a separate entity

Women FGDs often discussed the topic of culture. According to female FGD participants, culture-related empowerment was when (1) a woman had belief in her own capabilities despite prevailing cultural norms, and (2) a woman critiqued/disagreed with prevailing cultural norms.

Culture was perceived to be an external entity that often related to emic definitions of *disempowerment*. It was perceived as a separate, untouchable and unchangeable “firm” construct that needed to be “tolerated” (FG23). Statements such as “I feel as I am under the influence of the culture” (FG23) and “Except for the culture, we are equal with the male naturally” (FG8)

indicated that women saw themselves as not only separate from the prevailing culture but also powerless to change it. Rather than deriving empowerment from this separateness from culture, the majority of women in our focus groups expressed powerlessness in the face of culture. They spoke of culture as if it was both bigger and more powerful than themselves. When respondents were further probed on this, they shared that culture was not a specific group of individuals or an institution, but rather a general intangible entity of “how things are” (FG8).

#### Leadership through cultural norms

Men felt empowered through culture, especially when they conformed to cultural definitions and norms regarding leadership. When asked who was admired within the community, men repeatedly responded with affirmations that it was men who were leaders within the community and/or leaders of a household. As mentioned above, men used the term ‘leader’ in relation to leading and taking care of the family through income related decision-making as well as planning and executing activities in the agricultural field.

#### Agents of cultural change

Additionally, men specifically in the Semen Achefer woreda defined empowerment as a process where men were able to enable change as a moderator between governmental programming and the community; “A strong man is able to understand and change into practice the order and information given by the government” (FG12).

This last theme of culture-related empowerment conveyed the salient similarities between women’s and men’s definitions of empowerment. Culture was a common dimension, mentioned by both genders, and was considered to be a driver of empowerment (for men) *and* disempowerment (for women). Unsurprisingly, local culture was perceived to impose restrictions on women and give power to men. Thus, men defined cultural empowerment more specifically, as leadership and facilitation between public and private spheres. Women, however, defined culture empowerment more generally, as having belief in one’s own capabilities and the ability to defy prevailing cultural norms which disempowered them.

### **5.2. The emic content validity of the A-WEAI (Study Objective 2)**

This second part of the Results section provides the emic content validity assessment of the A-WEAI. Here, the index’s content validity was assessed from an emic perspective, by comparing our emic results (presented in Section 5.1) with the etic definition of empowerment articulated in

the A-WEAI domains and items. Specifically, we asked 1) Does the A-WEAI capture all relevant domains and items of women's empowerment in agriculture, according to Ethiopian women's and men's emic definition of empowerment in agriculture? and 2) Does the A-WEAI include any domains and/or items that appeared not to be relevant after analyzing these emic perspectives?

As discussed in the Background section, the five A-WEAI domains are: production, resources, income, leadership and time. (For a complete description of the domains, items, indicators and adequacy cut-offs see Table 13.) **Production** refers to decisions regarding agricultural production. This domain encompasses sole or joint decision-making practices on various agricultural activities (food and cash crop farming and livestock raising). **Resources** refers to ownership of assets and access to and decisions about credit. **Income** refers to control over use of income. **Leadership** refers to leadership in the community, measured by membership in economic and social groups. Lastly, **time** refers to the amount of time, within a 24 hour period, allocated to productive and domestic tasks, where having less committed time is considered an indication of greater empowerment [93].

Table 13: The domains, indicators, items (survey questions), aggregation method, inadequacy cut-offs, and weights in the A-WEAI [85]

| Dimension         | Indicator name                    | Survey questions                                                                                                                                                                                                                                                                                                                                                                                               | FTF Variables                | Aggregation method                                                                                                 | Inadequacy cut-off                                                                                                                                                                                                  | Weight |
|-------------------|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|--------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| <b>Production</b> | Input in productive decisions     | How much input did you have in making decisions about: food crop farming, cash crop farming, livestock raising, fish culture?   To what extent do you feel you can make your own personal decisions regarding these aspects of household life if you want(ed) to: food crop farming, cash crop farming, livestock raising, fish culture?                                                                       | G2.03 A-C, F<br>G2.04 A-C, F | Achievement in two                                                                                                 | Inadequate if individual participates BUT does not have at least some input in decisions; or she does not make the decisions nor feels she could.                                                                   | 1/5    |
| <b>Resources</b>  | Ownership of assets               | Does anyone in your household currently have any [ITEM]? Do you own any of the [ITEM]? Agricultural land, Large livestock, Small livestock, Chicks etc; Fish pond/equip; Farm equip (non-mech); Farm equip (mechanized) Nonfarm business equipment House; Large durables; Small durables; Cell phone; Non-ag land (any); Transport                                                                             | G3.01 – G3.02 A-N            | Achievement in any if not only one small asset (chickens, non-mechanized equipment and no small consumer durables) | Inadequate if household does not own any asset or if household owns the type of asset BUT she/he does not own most of it alone                                                                                      | 2/15   |
|                   | Access to and decisions on credit | Has anyone in your household taken any loans or borrowed any cash/in-kind from [SOURCE] in the past 12 months? Who made the decision to borrow/what to do with money/item borrowed from [SOURCE]? Non-governmental organization (NGO); Informal lender; Formal lender (bank); Friends or relatives; ROSCA (savings/credit group)                                                                               | G3.06 – G3.08 A-F            | Achievement in any                                                                                                 | Inadequate if household has no credit OR used a source of credit BUT she/he did not participate in ANY decisions about it                                                                                           | 1/15   |
| <b>Income</b>     | Control over use of income        | How much input did you have in decisions on the use of income generated from: Food crop, Cash crop, Livestock, Non-farm activities, Wage & salary, Fish culture?   To what extent do you feel you can make your own personal decisions regarding these aspects of household life if you want(ed) to: Non-farm economic activities? Your own wage or salary employment? Major and minor household expenditures? | G2.05 A-F<br>G2.04 D-E, G-H  | Achievement in any if not only minor household expenditures                                                        | Inadequate if participates in activity BUT has no input or little input in decisions about income generated, or does not feel she/he can make decisions regarding wage, employment and major household expenditures | 1/5    |
| <b>Leadership</b> | Group membership                  | Are you a member of any: Agricultural / livestock/ fisheries producer/mkt group; Water; Forest users'; Credit or microfinance group; Mutual help or insurance group (including burial societies); Trade and business association; Civic/charitable group; Local government; Religious group; Other women's group; Other group                                                                                  | G5.03 – G5.04 A-J            | Achievement in any                                                                                                 | Inadequate if is not part of AT LEAST ONE group; inadequate if no groups reported in community                                                                                                                      | 1/5    |
| <b>Time</b>       | Workload                          | Worked more than 10.5 hours in previous 24 hours.                                                                                                                                                                                                                                                                                                                                                              | G4.01                        | NA                                                                                                                 | Inadequate if works more than 10.5 hours a day                                                                                                                                                                      | 1/5    |

### 5.2.1. Women's emic understanding of empowerment in relation to the A-WEAI domains and items

As described in Table 13, the A-WEAI domain of **production** includes items on participation and level of decision making input in regard to food crop farming, cash crop farming, livestock raising and beekeeping. The A-WEAI's emphasis on agriculture is understandable given the objective of the indicator, to measure women's empowerment in agriculture. Women's emic definition of empowerment in our research, however, indicated that this emphasis on agriculture may not be relevant. "Agriculture" was not a salient term in our discussion. Despite the moderator's probing on what it meant to be empowered *in agriculture*, women consistently widened the discussion to empowerment in general. The identity of a "farmer" was mostly associated with men, as described in the individual level of empowerment theme. Women did not

consider themselves farmers nor highlight their engagement in agriculture, as the A-WEAI assumes. This provides a potential reason why the notion of “empowerment in agriculture” seemed irrelevant to women in our study.

Similar to the results from men’s focus groups, discussions by women suggested that the A-WEAI domain of **resources** did not align with their definition of empowerment. Women did not refer once to the concept of specific asset ownership in any of the emic themes or categories of empowerment.

The A-WEAI domain of **income**, which refers specifically to control of income within the household, had mixed alignment with the results of our study. On one hand, women’s discussions in Ethiopia indicated that decisions related to household expenditure and income control, as defined by the A-WEAI, were pertinent to the emic definitions of empowerment. Women who expressed the desire for more decision-making power did not deem increased dialogue or negotiation as the only desired outcome but also sought *full control* and physical ownership of the earned income. This contrasts with the A-WEAI which considers any level of input for at least ‘some decisions’ as a sign of empowerment.

The A-WEAI domain of **leadership** also did not align with women’s emic definition of empowerment. While groups such as the traditional Ethiopian financial associations, *idir* and *equib*, were mentioned by women, the topic of community group membership as an indication of empowerment did not arise as a central theme. Public speaking in community meetings was referred to when discussing individual and culture-related aspects of empowerment, but actual participation or membership in groups alone was not part of women’s definition of empowerment<sup>35</sup>.

Similar to the male focus group participants, women did not mention **time** allocation as part of their emic definition of empowerment. Rather than equating time allocation practices with empowerment, women merely spoke of specific examples of how their time allocation differed from their male spouses. More importantly, women did not feel any need or utility to complain about their time allocation practices; “We are just working for improving our lives; why should we complain? We work day and night” (FG18).

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<sup>35</sup> It is interesting to note, however, that the WEAI (the first iteration of the A-WEAI) did originally include public speaking as a part of what was considered leadership.

### 5.2.2. Men's emic understanding of empowerment in relation to the A-WEAI domains and items

Analysis from this study indicated that the content validity of the items in the A-WEAI domain of **production** was quite high in relation to men's emic definition of empowerment. The A-WEAI measures decision-making power around activities such as market sales, food crop and cash crop farming; the men in the focus group discussions also articulated decision-making power around these types of activities as a manifestation of empowerment, (as presented in Section 5.1.2 in the theme of household level empowerment). Participation in these agricultural production activities was identified by men as evidence of their 'leadership status'. Additionally, the level of discussion between husband and wife regarding agricultural production activities, as discussed in the individual level of empowerment subsection, was captured in the A-WEAI items that measured the level of input into agricultural production decision-making

The A-WEAI **resources** domain, which measures asset ownership and credit, however, appeared not to be relevant according to men's emic definition of empowerment. Neither ownership of assets nor access nor decisions related to credit were mentioned by men in our focus groups. Any mention of assets was in relation to the decision-making process regarding the disposition (not ownership) of assets.

Within the A-WEAI domain of **income**, women and men are asked about the level of input they have regarding decisions on the use of income generated from agricultural and non-agricultural activities. These items strongly aligned with men's emic household-level definition of empowerment. According to the A-WEAI, however, empowerment adequacy is attained by having decision-making input in *any* type of income generating activity (agricultural, non-farm, wage or salary employment). This contrasts with men in our study who did not articulate this generalization. Other sources of income did not come up in the men's FGDs. When discussing pride and respect that came from decisions on generated income, only agriculture specific activities were mentioned.

The A-WEAI defines **leadership** as "membership in any type of group". Yet, male focus group participants did not mention such membership as a relevant part of the definition of empowerment. Neither these types of groups, nor membership in them, were raised in any of the 10 male FGDs.

The last domain of the A-WEAI is **time allocation**, where empowerment adequacy is defined as having a workload less than 10.5 hours in the previous 24 hours. This was perhaps the most irrelevant domain to men's emic definition of empowerment as it was with women. When

male participants were probed on this specific domain they were more apt to discuss the workload level of women, rather than their own workload or a comparison of the two. Men consistently acknowledged that women had higher workloads and less rest/leisure time. However, this was never discussed in relation to individual empowerment or respect from the community. The time allocation practices of both women and men, were clearly perceived by men to simply be a part of the natural fabric of their local culture.

### 5.3. Summary of emic understandings of empowerment in relation to the A-WEAI domains

Table 14 summarizes the alignment between Ethiopian women's and men's emic definitions of empowerment and the A-WEAI domains.

*Table 14: Summary of study results and A-WEAI domain alignment<sup>36</sup>*

| A-WEAI Domain<br>(and related items) | Women's emic definition | Men's emic definition |
|--------------------------------------|-------------------------|-----------------------|
| Production                           | -                       | +                     |
| Resources                            | -                       | -                     |
| Income                               | +/-                     | +/-                   |
| Leadership                           | -                       | -                     |
| Time                                 | -                       | -                     |

+: denotes alignment

- : denotes minimal/no alignment

+/-: denotes inconsistent alignment

### 5.4. DISCUSSION

Empowerment is a latent construct. While indisputably pertinent to the development discourse in resource limited settings, empowerment is also intangible and complicated to measure. The A-WEAI provides a measure for this latent construct, and efforts to quantify this important construct are necessary. However, this study's findings raise questions about the relevance of the empowerment in agriculture construct to the Ethiopian male and female participants.

The A-WEAI production domain had little to no alignment with how women defined empowerment in focus group discussions. Women did not view themselves as farmers nor were their discussions about empowerment dimensions agriculture-specific. This is an

<sup>36</sup> The criteria for alignment was created by the doctoral candidate in order to provide a visual representation of women's and men's emic understanding of empowerment in relation to the A-WEAI domains and items. Alignment was assigned if the topic and both domains and items within that domain were coded by the doctoral candidate as a repeated theme/construct. Minimal/no alignment was assigned if neither the domain or any of its items were coded (but could have been mentioned once or twice within a focus group). Inconsistent alignment was assigned if either the domain or its items were coded but the definitions of empowerment adequacy did not align with coded definitions of empowerment.

especially salient finding as it suggests that empowerment *in agriculture* (as opposed to empowerment in general) lacks inherent meaning to the women we sampled, despite the population's agriculturally based livelihood. This was further supported by the themes that were excluded from the index but found to be relevant for the study participants. These themes were not specifically focused on empowerment in agriculture but rather empowerment in general at the individual and cultural/societal level. This suggests that, for women, separating empowerment in agriculture from empowerment in general may not be a useful or meaningful approach to construct measurement. Similar findings have been presented in other development work, suggesting measuring empowerment within a particular sector is not only extremely challenging, but also potentially ineffective [201].

This study found that the emic definitions of empowerment functioned at three main levels: individual, household and cultural. Women and men expressed different individual-level definitions of empowerment. Women defined empowerment as being able to perform activities that required bravery in the face of and despite gender norms/cultural expectations. For men, their own empowerment came through the *fulfillment* of their societal gender norms, and specifically the performance of activities that required physical strength. However, both genders agreed that decision making regarding agriculture was a central element in men's opportunities for potential empowerment. This is consistent with other works on empowerment which have articulated how men not only perceive themselves as farmers (more than women), but also how men have increased their empowerment levels through engagement in the agricultural sector [211, 212]. This highlights how the concept of empowerment in agriculture *for men* was very relevant, as their participation in agricultural activities was a key part of men's understanding of empowerment. For women, the household environment and community gatherings represented the spheres through which women defined empowerment, which is unsurprising given the literature on women's work and the traditional gender norms of Ethiopian women [59, 213, 214]. Both genders also agreed that one aspect of empowerment was making decisions regarding household expenditure, which has been confirmed in other empowerment literature in both country-specific settings such as Cameroon and resource-limited settings in general [69, 215, 216].

Lastly, culture was a dimension discussed by both women and men. In particular, women's focus groups identified and viewed culture as a separate entity. The perception of being separate from culture impeded women's agency for change; 'This is our culture, we [women] can't change it' (FG2). While many scholars of gender focus on the dynamics between women and men and the power struggles between them, focus groups in this study highlighted how the

source of disempowerment did not necessarily stem from a male-female dynamic but rather from women facing the prevailing culture<sup>1</sup>. However, one could also argue that women's perception of separateness from culture is the beginning of a changing female mindset. Women were able to see themselves as not a part of their surrounding gender norms. One woman from Semen Achefer stated "A woman is considered weak. A woman can't freely speak in public. This is not my personal opinion. I feel it is others' or outsiders' opinion. On my behalf, I believe a woman can do everything" (FG 13). Women stated that due to exposure to different empowerment programs and governmental initiatives, they had begun to formulate their identity and self-perception outside of the norms and culture they had grown up in and currently lived with. Through their own differentiation between the individual self and culture, women were empowered to critique culture and identify its elements that are unjust; "Once I went to the church and stood with my husband, and the community started to ridicule me, saying 'she stands with her husband.' But this a sign of bad culture and it should be changed" (FG16).

The results of this study underscore the highly nuanced and context specific nature of empowerment. Women felt empowered when plowing only if a male counterpart was not present. Decision-making could not be lumped into one vehicle for empowerment. Perceptions of empowerment were contingent not only on the types of decisions but also the level of input into the decision-making process.

This research highlights the added value of considering in depth emic definitions when developing measures of empowerment. Not only do these definitions differ according to gender, but also differ in certain ways with indicators such as the A-WEAI. While men's emic definition of empowerment aligned more closely (than women's) to the A-WEAI's etic definition, three out of the five A-WEAI domains appeared to have little to no emic content validity according to our study results. In addition, the A-WEAI did not include certain concepts that emerged in our exploration of the emic definition of empowerment. The most salient of these overlooked concepts were: individual levels of self-efficacy and bravery, ability to multi-task, and culturally related sources of empowerment such as recognition from community. This has implications for policy makers and program designers who rely on etic indicators to measure gender equality and program impact. **Etic based domains are useful for cross-country comparisons and provide a foundation to build an indicator that integrates potentially universal components.** However, the A-WEAI acknowledges the value in measuring empowerment of both women and men (so that gender parity within the household can be calculated) and the closer alignment with men's emic definition introduces a concerning programmatic implication. This bias could lead to women scoring 'lower on the index' due to 1) the inclusion of domains and items that are not emically

perceived by female respondents to be part of how empowerment is defined, and 2) the exclusion of other domains and items that are considered by women to be relevant to their empowerment. The A-WEAI would benefit from further research that compared the different measurement outcomes when certain domains and items were added and/or deleted.

Results from this study also speak to Schuler's [203] hypothesis that changes in women's norms or empowerment levels can potentially lead to unintended consequences. This was exemplified in our study results when women's empowerment programming led to a highly emotionally tense household environment, where increased gender equality led men to express fear from the changing gender-equality environment. Several works of literature have found similar, if not more extreme negative outcomes. Women with increased economic empowerment (as measured by increased income earning) have been associated with higher physical violence in both India [217] and Bangladesh [218]. Gender equality programming, however, can also have positive impacts, as seen with some of the men in our study who reported changing their gender norms by preparing food and engaging in other domestic chores.

The limitations of this research study predominantly related to the sensitivity of the topic and translation challenges. Though our study design attempted to alleviate any respondent uneasiness in talking about power and empowerment through appropriate gender selection of focus group moderators and location of discussion groups, engaging participants in an honest discussion required substantial probing. Additionally, we found that there was no direct translation of the term 'empowerment' in Amharic or any of the other local dialects. Interviews with local ENGINE staff indicated the closest Amharic word to empowerment was 'power,' which the research team deemed as potentially misleading. Therefore, through pretesting and consultation with local gender specialists, our focus group guide approached the topic of empowerment by asking participants to describe community members whom they admired or perceived to be role models and to identify ideal individual characteristics and situations. Note also that these results are specific to the context of rural agricultural communities in Ethiopia, and specifically communities that had already been the target of a gender-focused intervention. The emic/etic and gender differences in definitions of empowerment observed here might differ in other geographic and cultural contexts. Other researchers would benefit from assessing the validity of the A-WEAI within their own cultural and geographic context, keeping in mind that definitions of empowerment may differ within different regions of the same country and cross-country comparisons may not be appropriate.

## 6. CONCLUSION

Indices such as the A-WEAI must undergo rigorous evaluation and validation processes in a variety of geographic and cultural contexts, through qualitative and quantitative methods. Though these findings are specific to our study population and may not be generalizable, they demonstrate the value of comparing etic and emic based definitions, particularly when measuring empowerment in any new context. This study highlights greater epistemological questions of the purpose of empowerment programming, whose definition really matters and how, if at all, it can be operationalized in a meaningful, accurate and useful way. Additionally, the inclusion of emic perspectives may allow program designers to know what topics and components of empowerment will most likely engage beneficiaries the most and thereby have the most potential impact. A program that identifies and calls women ‘farmers’ would potentially fail to reach and effectively communicate with this study population, as results indicated that women did not see the term ‘farmer’ as a part of their identity nor an extension of empowerment.

Results clearly demonstrated how context specific the definition of empowerment can be. This study recommends that indices, such as the A-WEAI, provide users a clearly articulated definition of empowerment as well as a transparent explanation of the process through which the definition was developed. Finally, while this study demonstrated the need for validation from a qualitative lens in the Ethiopian context, it assessed content validity only from an emic perspective. Further research assessing the content validity from a statistical and quantitative perspective would complete the overall assessment of how the A-WEAI performs in the Ethiopian context; this analysis is being conducted as part of a companion study (see Min-Barron et al. [208]). Future research would also benefit from exploring effective ways to integrate etic and emic perspectives of empowerment into new metrics and programming while also considering whether the ‘one size fits all’, or ‘one definition fits both genders’ approach leads to a valid metric.

## CHAPTER 5 SUPPLEMENTARY MATERIALS

### APPENDIX A: Focus group Discussion Guide

#### **KEY TOPIC 1: Gender norms within smallholder agricultural households**

We're going to start with some very general questions. When I say the word "woman" what words or things do you think of?<sup>37</sup>

- a) What sort of activities does a woman do within her household in a typical day?
- b) Are there certain activities that a woman "should not" do (both within a household and on the farm)?
  - a. Why not?
  - b. Is there ever a time when a woman does do these activities, even though she 'should not'? Describe them.
  - c. Are there ever any consequences for this time?
  - d. From whom did you learn that these activities are not good to do?
- c) Which household and farming activities are most important for a woman to do? (for herself and for her family)
- d) What about when I say the word "man", what words or things do you think of?  
(Repeat a-c from above)

#### **KEY TOPIC 2: The concept of empowerment**

- a) If I asked you to imagine someone who was admired within your community - how would you describe that person?
  - a. (probe) What is their education level? Age? *(After probing, be sure to obtain clarity on whether they imagine a man or woman)*
  - b. If they answer that it is a man that they are describing, can you describe a woman?
- b) Why do you think some people are admired and others are not?
  - a. What factors contribute to being admired?
- c) Why do you think some people have power and others do not?
  - a. What factors contribute to someone's level of power?

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<sup>37</sup> If the group is all men, begin by asking about the word 'man' followed by 'women'.

- b. What factors hinder someone's level/ability to use this power to make a decision?
- d) How variable is a person's level of power?
  - a. What factors contribute to this change?
  - b. What occasions/times/seasons are associated with this person's level of power?
- e) Now if I asked you to imagine someone who was a role model specifically within an agricultural household, what specific resources or conditions would that person make a decision on?
  - a. What factors contribute this person having power?
  - b. What factors could inhibit this person from having power?
- f) How does women's power differ from men's power in an agricultural household?
- g) How equal do you think the two levels of power (women's and men's) are, within an agricultural household?
  - a. Have these levels of power changed over time?
  - b. What would need to change, both within the household and community, in order for these two levels to be equal?
- h) What types of decisions within the home and farm would you like to be able to make, but are not able right now?
  - a. Why would you like these decisions?
  - b. What factors are preventing you from making these decisions?
  - c. What factors could potentially help you have that power?

### **KEY TOPIC 3: WEAI DOMAINS**

#### *Leadership*

- a) How comfortable do you feel speaking up in public to help decide on infrastructure (like small wells, roads, water supplies) to be built in your community?
- b) How comfortable do you feel speaking up in public to ensure proper payment of wages for public works or other similar programs?
- c) How comfortable do you feel speaking up in public to protest the misbehavior of authorities or elected officials?
- d) Is there an association between the ability of a person to make decisions in their home and their ability/comfortableness in speaking in public?

- e) What are the gender norms of public speaking here in the community?

*Time*

1. Are women's and men's hours spent [a-d] different from each other?
  - a. Sleeping/resting
  - b. Domestic work
  - c. Farming/livestock/fishing
  - d. Social activities/hobbies/leisure
2. Why do you think this is so?
3. What your perceptions of these activities in relation to power within the household?

**APPENDIX B: Sample of Selective, Axial and Open Codes from Grounded Theory Analysis for Study Objective 1**

| Selective Codes              | Axial Codes | Open Codes                                                                                                                                                                                                                                               |
|------------------------------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Individual level empowerment | Bravery     | Female who speak at the community meeting considered as a brave by the community                                                                                                                                                                         |
|                              |             | a woman who is brave (in Amharic 'ayne wuhawa yeberalat').                                                                                                                                                                                               |
|                              |             | There is a woman which plows in the farm however some people don't accept this. There are people who consider and speak "she was plowing a land while her husband was sleeping". However, there are persons who consider it as strong and brave.         |
|                              |             | She never ploughs but if she does, she is called brave.                                                                                                                                                                                                  |
|                              |             | man means brave who works day and night without sleep.                                                                                                                                                                                                   |
|                              |             | Some women lack experience of doing in the field while others are brave enough to work in the field                                                                                                                                                      |
|                              |             | <u>A brave man</u>                                                                                                                                                                                                                                       |
|                              |             | brave enough to work in the field                                                                                                                                                                                                                        |
|                              | Fear        | <p>I never speak because of fear</p> <p>People will laugh at him and he is also afraid</p> <p>I didn't move habitually to the meetings, however I able to speak in small meeting but I couldn't speak large community meeting as a result of my fear</p> |

|  |                        |                                                                                                                                                                                                          |
|--|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |                        | She has a fear.                                                                                                                                                                                          |
|  |                        | Currently females run to the court for every reason as a result I have a great fear in my house.                                                                                                         |
|  |                        | we speak at kebele level on ideas like construction of church, school, and health institutions however we never comment the kebele administrators because we afraid to speak.                            |
|  |                        | If she speaks up in the public, she afraid the outcome so that she did not speak.                                                                                                                        |
|  |                        | I never speak because we have a fear to speak; we have no education in addition we get older                                                                                                             |
|  |                        | He also doesn't want to lose his superiority and be afraid and struggle for his decisions.                                                                                                               |
|  |                        | "The current condition is good, but in the near future if I have a fear concerning females' attitudes, because we beat her/them before as a result I might fear female start to beat male/us as revenge" |
|  |                        | Currently females run to the court for every reason as a result I have a great fear in my house.                                                                                                         |
|  | Strength and endurance | Some activities that have been done by male may not do by female as a result of difference in physical force they had.                                                                                   |
|  |                        | women are not able to do in sugar cane filed, it is mainly done by the men as powerful                                                                                                                   |

|  |  |                                                                                                                                                                                                                                      |
|--|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  | men have the energy to work on sugar cane farm.                                                                                                                                                                                      |
|  |  | she can't cultivate sugar cane, sugar cane cultivation is very difficult, it requires a lot energy, which is men's energy. that is why men are admired.                                                                              |
|  |  | Sometimes, there is a man who can have good harvest because he is strong but he unable to guide his family in a good manner, so we undermine such man. But of the one who works hard and able to lead the family that is a good man” |
|  |  | It is the strong man; hence the man owns everything, and he has the power to make the decision than woman.                                                                                                                           |
|  |  | My admired male is stronger, he is a farmer and hero.                                                                                                                                                                                |
|  |  | The community sees a man is a man, he works in the field with power and strength and enjoys with his friends outside home                                                                                                            |

## CHAPTER 6

### **Content Validity and Internal Reliability of the Abbreviated Women's Empowerment in Agriculture Index (A-WEAI) in Ethiopia: A Mixed Methods Approach**

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## ABSTRACT

Women's empowerment has been well established as a key link to improving nutritional outcomes via agriculture. However, despite the growing demand for accurate and reliable data on women's contribution to agriculture and household food security, measuring women's empowerment is challenging, in part because there is no gold standard. In response to the challenge of measuring women's empowerment specifically in agricultural contexts, the Women's Empowerment in Agriculture Index (WEAI) was developed. Since its widespread use, a second version, the Abbreviated-WEAI (A-WEAI), was released in 2015 in an effort to meet concerns expressed by WEAI users. The objectives of this study were to assess the content validity and internal reliability of the A-WEAI in the context of Ethiopian smallholder farming households using a mixed methods approach, including qualitative interviews (n=16), household survey data (n= 299), and an online expert panel survey (n=12). Based on the criteria of content relevance, representativeness, and technical quality, our study found mixed results of content validity adequacy. All experts judged the A-WEAI items to be excellent in relevance while also suggesting that important domains such as knowledge and access to information were omitted. Individual cognitive debriefing interviews with local married couples suggested that several items and item responses were not interpreted by subjects as index developers intended. Cronbach's alpha was used to assess internal reliability and indicated that only the resources domain was not homogenous with other items in the scale. This study highlights the value of assessing index context specific validity and reliability through both qualitative and quantitative methods, as well as the potential consequences of interpreting A-WEAI scores without full consideration of these types of assessments.

**Keywords:** women's empowerment in agriculture, content validity, internal reliability, gender, mixed methods, Ethiopia

## **A. INTRODUCTION**

Women's empowerment has been well established as a key vehicle to improving nutritional outcomes via agriculture [4]. However, despite the growing demand for accurate and reliable data on women's impact on agriculture and household food security, measuring women's empowerment is challenging, in part because there is no gold standard [10]. Until recently, most indices and indicators used to monitor women's empowerment did not incorporate consideration of the agricultural sector, and most agriculture-related indicators of productivity were gender-blind [78]. In response to the challenge of measuring women's empowerment specifically in agricultural contexts, the Women's Empowerment in Agriculture Index (WEAI) was released in 2012 and has been widely adopted, in particular by all USAID-funded Feed the Future (FtF) programs. More recently, a second version, the Abbreviated-WEAI (A-WEAI), was released in 2015 in an effort to meet concern, such as survey administration length, expressed by WEAI users. The A-WEAI, however, has not been validated in different contexts, outside of pilot testing in Bangladesh and Uganda [93].

The present study sought to fill this validation gap by assessing the content validity and internal reliability of the A-WEAI in the context of Ethiopian smallholder farming households. A Content validity measures the extent to which an index represents all domains of a given construct. Internal reliability assesses whether all domains and items of the index measure the same construct. The study used a mixed methods approach which included administration of a qualitative interviews, household survey data, and an online expert panel survey.

## **B. BACKGROUND**

### **B.1. Measuring women's empowerment**

The term 'empowerment' encompasses a wide variety of concepts, applied in several different fields ranging from feminist activism to social inclusion to international development [102, 201]. The interest in leveraging agriculture for improved nutritional outcomes has also sparked an emphasis on women's empowerment within the field of nutrition. Before addressing the question of how to measure empowerment, it is first useful to discuss the various definitions of empowerment used in the field of international development.

Definitions of empowerment have been categorized as either emic (i.e. from the perspective of the subject) or etic (i.e. from the perspective of an observer/outsider). Several scale development experts have argued for incorporating both emic and etic perspectives, using

both qualitative and quantitative approaches, when conducting validity and reliability assessments [17, 219]. This study focused specifically on the etic assessment of content validity as a companion to a study that focused exclusively on an emic assessment of content validity [208].

Kabeer [69] argues that empowerment is a process of change that results in an individual increasingly able to make the choices he or she desires. Disempowerment, then, is the initial state of being denied the ability to make choices [69]. Alsop et al. [73] define empowerment as having two main components: agency and the institutional environment. Agency encompasses the ability to act on the values and beliefs that one embraces, whereas the institutional environment offers people the opportunity to “exert agency fruitfully” [63, p.383]. This concept of agency is derived from Amartya Sen’s work, which describes agency as “what a person is free to do and achieve in pursuit of whatever goals or values he or she regards as important” [68, p. 203]. Sen himself defines empowerment as “altering relations of power...which constrain women’s options and autonomy and adversely affect health and well-being” [220, p.5]. Given that Kabeer’s definition is the most commonly cited in scholarly women’s empowerment work and has been referenced by the A-WEAI creators, we align this study’s definition of empowerment with Kabeer’s: “Empowerment is an expansion of people’s ability to make strategic life choices, particularly in contexts where this ability has been denied to them” [69, p.437].

As with any well thought out conceptual definition, there are a few amendments and considerations that can (and must) be made based on particular context and subject, which in the case of this study is agriculture and women, respectively. ‘Empowerment of *women*’ encompasses several distinctive elements from the general term ‘empowerment’. Malhotra et al. [220] remind us that women are not just one disempowered group amongst others (such as the poor, certain ethnic minorities, etc.), but rather a cross cutting category of individuals that spans across all other groups. In the context of smallholder farming households, the household and intrafamilial relations are “a central locus of women’s disempowerment in a way that is not true for other disadvantaged groups” [220, p.5]. Moreover, the defining characteristic of ‘women’s empowerment in agriculture’ is the word ‘agriculture’, introducing relevant concepts such as agriculture-specific labor and decision-making on agriculture related issues. Factors such as women’s roles as agricultural producers and caretakers, time and labor allocation and decision-making roles relative to the use and distribution of resources and benefits all contribute to this specific type of empowerment [78]. Women’s disadvantaged access to key agricultural inputs, such as land, human capital, and technological resources as well as intangible assets such as social capital and decision-making power, has been established in several studies [81].

Additionally, assessing the relevance of this definition in the context of Ethiopia requires a careful consideration of specific local gender norms, cultural pressures, and institutional environments.

## **B.2. The Women’s Empowerment in Agriculture (WEAI) and Abbreviated Women’s Empowerment in Index (A-WEAI)**

In early 2012, the International Food Policy Research Institute (IFPRI), in collaboration with other global partners, released the Women’s Empowerment in Agriculture Index (WEAI). This survey-based index was designed to measure the “empowerment, agency and inclusion of women in the agricultural sector” and had been promoted by its developers as an indicator of gender equality, Millennium Development Goal 3 [78]. Individual level data, for both women and men in the same household, were collected through household surveys and then aggregated into one index, which was reported at the country or regional level. While the WEAI was constructed out of quantitative data, IFPRI and its collaborators emphasized the value of complementing the index with qualitative case studies in reporting and analysis [78].

To address user feedback on the original WEAI (WEAI 1.0), a new abbreviated index, the A-WEAI (Abbreviated-WEAI), was created and released in 2015. The A-WEAI is advertised to require approximately 30% less in administration time and is described as ‘streamlined’ as six of the ten original indicators were retained. Among the indicators that were retained, the definitions, cutoffs, and aggregation rules remained the same<sup>38</sup>. Based on the Alkire-Foster method [94]<sup>39</sup>, the A-WEAI is comprised of two subindices. The first subindex, the 5DE, is comprised of five domains of empowerment in agriculture: (1) production, (2) resources, (3) income, (4) leadership, and (5) time. The second subindex is the Gender Parity index (GPI), which reflects the percentage of women whose empowerment score meets or exceeds that of the head male figure in their household. In the A-WEAI and its subindices, an individual is considered empowered if he or she enjoys adequate achievements in 80 percent of the weighted indicators or more [78]. This new version of the index was piloted in the summer of 2014 in Bangladesh and Uganda and has been enthusiastically used by many programs worldwide.

<sup>38</sup> See Appendix A for a comparison of the WEAI and A-WEAI.

<sup>39</sup> The Alkire-Foster method was developed by Sabrina Alkire (OPHI) and James Foster (George Washington University and OPHI) and is a method for measuring multidimensional poverty, well-being and inequality, it measures outcomes at the individual level (person or household) against multiple criteria (domains and/or indicators). Different domains and indicators can be chosen, depending on the context and purpose of the exercise 95. IFPRI, *Women’s Empowerment in Agriculture Index*. 2012: Washington, DC.

### B.3. Validation efforts of the WEAI & A-WEAI

According to WEAI developers, as of June 2016, the WEAI has been used, adapted and modified in 28 countries in Asia, Africa, and Latin America [93]. However, to date, little detailed documentation has shown rigorous validation of either the WEAI or the A-WEAI in any country. Through quantitative analysis in Bangladesh, Uganda and Guatemala, the WEAI team pilot tested the internal reliability of questions within two modules: (1) “Role of household decision-making around production and income generation” and (2) the “Decision-making” module. Alkire et al. [78] reported that in in these three countries, the value of Cronbach’s alpha was greater than 0.85 for nearly all cases<sup>40</sup> [78], but only at the item level for the production/income and decision-making module. For two of the question groupings in the production module in Bangladesh, the Cronbach’s alpha was 0.71 and 0.79, respectively [78]. In 2012, Johnson and Diego-Russell [221] tested the cognitive validity of the WEAI through qualitative interviews in Haiti (n= 20 individual interviews) and found that, overall, the questions in the WEAI were judged to be “well-understood”. Additionally, Alkire [78] reported that the indicators used to construct the WEAI were not highly correlated based on tetrachoric correlation analysis (a statistical test used to measure interrater agreement for binary data)<sup>41</sup>. A high correlation would potentially suggest an implicitly greater than intended weight being assigned to an indicator pair. The low correlation (0.44) therefore suggested that the index weights assigned to each domain indicator were appropriate<sup>42</sup>. In order to further refine the A-WEAI, developers conducted cognitive debriefing interviews during the 2014 pre-testing phase in Bangladesh and Uganda, based on the cognitive debriefing methods used by Johnson and Diego-Russell [158]. Cognitive interviewing, which uses think-aloud procedures and verbal probes, asks respondents to describe their thinking either concurrently, as they answer each question, or retrospectively after they complete the questionnaire [154]. Beyond these two quantitative tests on two of the six modules of the WEAI and the two cognitive debriefing interview studies on a few countries for the WEAI and A-WEAI, no other published information was identified on any other validation efforts. This creates a concerning knowledge gap in whether the A-WEAI comprehensively and reliably measures

<sup>40</sup> Conventionally, a Cronbach’s Alpha value above 0.70 is considered “good” internal reliability for confirmatory purposes 17.

DeVellis, R., *Scale Development: Theory and Applications*. 2nd. ed. Applied Social Research Method Series. Vol. 26. 2003, Newbury Park: SAGE Publications.

<sup>41</sup> For input into productive decisions, control over use of income and ownership of assets and purchase, sale, or transfer of assets, the tetrachoric correlation coefficients remained less than 0.67. The remaining A-WEAI indicators had tetrachoric correlation coefficients less than 0.44.

<sup>42</sup> Note, however, that Alkire et al. also admit that this issue deserves “further thought” as the domain indicator weights were fixed a priori by the United States Agency for International Development and the sub index construction and indicator cut-offs were managed such that the weights on the sub-indicators and the cut-offs chosen were consistent with the USAID weights. Authors point out that it would be inaccurate to say that they were looking for low correlations across the board. ” 78. Alkire, S., et al., *The Women’s Empowerment in Agriculture Index*, in *IFPRI Discussion Paper 01240*, H.a.N.D. Poverty and E.a.P.T. Division, Editors. 2012, International Food and Policy Institute: Washington, DC.

women's empowerment in agriculture in different contexts, particularly in Ethiopia, where over 70% of rural women engage in the agricultural sector [88]. This study is the first to assess the content validity and internal reliability of the A-WEAI outside of its developmental stage and the first to test the contextual soundness of the index for Ethiopia through mixed methods. The results are intended to provide guidance on whether and how the A-WEAI should be modified for use in Ethiopia while also providing insight into its validity for cross-country comparisons.

## C. METHODS

This section begins by defining key study objective terms and identifying the assessment criteria and assessment approaches for each study objective. The different phases of data collection and analytical approaches are described thereafter.

### C.1. Definitions and assessment approaches of content validity and reliability

#### Content validity

In the field of index development, validity is defined as the level of adequacy with which an index assesses the construct of interest (which, in our case, is women's empowerment in agriculture) [137]. Content validity, a specific type of validity, is defined as the extent to which a specific set of items reflects a latent construct's domain [17]. For this study, the question of content validity translates into "Do the A-WEAI domains and items accurately reflect the theoretical domain of women's empowerment in agriculture?" Measurement of content validity by this definition can be challenging when the construct of interest is an attribute such as empowerment. Without a universal list of attributes or a single agreed upon definition of the term, it is difficult to know whether the items defined by the A-WEAI are representative of the universe of appropriate items (thereby demonstrating content validity). To meet this challenge, the assessment of content validity not only requires a solid theoretical foundation but also etic assessment by experts, using both quantitative and qualitative methods [138-140].

Unfortunately, confusion regarding what content validity actually means and how best to demonstrate its fulfillment can be found in both the published and programmatic grey literature [143]. While several other scale development experts have defined content validity in similar ways to the definition given above [222, 223], there is relatively little comprehensive discussion and consensus on the details involved in establishing and assessing content validity [224-226].

Messick [138] perhaps provides the most useful way to conceptualize validity by grouping all types of validity under the broader umbrella of *construct validity*, which he defines

as “nothing less than an evaluative summary of both the evidence for and the actual (as well as potential) consequences of score interpretation and use” [138]. Construct validity, according to Messick, is comprised of six aspects (content, substantive, structural, generalizability, external and consequential) which serve as criteria for validity. Messick asserts that assessments of the content aspect (which this study refers to as ‘content validation’) should establish content relevance, representativeness, and technical quality.

**Content relevance** can best be described as the degree to which the subject matter contained within a scale’s items are relevant to the targeted latent construct. This criterion was operationalized through two approaches in this study: an expert rating-generated content validity index (CVI) and principal component analysis (PCA) of A-WEAI items using Ethiopian survey data. The use of experts’ ratings of items to quantify content relevance has been well established in the psychometric and scale development literature [145-148]. The content validity index (CVI), the most widely reported measurement of content validity [149] first developed by Martuza [150], specifically involves having a cohort of experts indicate, through a 4 point Likert scale, the level of relevance of each item in a scale. Researchers can then compute two types of CVIs. The first type, the Item-CVI (I-CVI), involves the content validity of individual items, and the second type, Scale- CVI (S-CVI), involves the content validity of the overall scale. The labels for the four point Likert scale are 1 = Not relevant, 2= Somewhat relevant, 3= Quite relevant and 4= Highly relevant [151]. For each item, the I-CVI score is the number of experts giving a rating of either 3 or 4 (thereby dichotomizing the ordinal scale into relevant and non-relevant), divided by the total number of experts. S-CVI can be calculated through either a universal level of agreement (i.e. all experts must agree) or as an average of expert agreement. Due to the sample size of experts (n=12) and per the protocol set by Polit [149], this study calculated the S-CVI average (S-CVI/AVE)<sup>43</sup>. Though the CVI has not been without criticism<sup>44</sup>, this study selected the CVI approach due to the published guidance on calculation and use as well as its wide use in the field of scale development [148, 152].

The other way that content relevance was assessed was through principal component analysis (PCA) with orthogonal varimax rotation. PCA defines “components” that essentially

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<sup>43</sup> Polit (2006) argues the universal agreement method is overly stringent when there are many experts<sup>43</sup> on the validation panel 149. Polit, D. and C. Beck, *The Content Validity Index: Are you sure you know what's being reported? Critique and Recommendations*. Research in Nursing & Health, 2006. 29.

<sup>44</sup> Namely that it does not adjust for chance agreement 146. Wynd, C., B. Schmidt, and M. Schaefer, *Two quantitative approaches for estimating content validity*. Western Journal of Nursing Research, 2003. 25: p. 508-518. and that it essentially “throws away information” by collapsing experts’ multipoint ordinal ratings into two categories 149. Polit, D. and C. Beck, *The Content Validity Index: Are you sure you know what's being reported? Critique and Recommendations*. Research in Nursing & Health, 2006. 29.

reduce the data to a few select variables that are able to provide a summary of the latent construct of interest [17]. Grounded in actual data, PCA is derived from the items of a scale. Thus, the components identify items, according to the population of study, that are relevant to the construct of interest<sup>45</sup>. Rotation of PCA provides a statistical tool that increases interpretability of results. By organizing data such that patterns of intercorrelations are more easily visible, the user is able to see how certain items can be categorized in a meaningful way as they strongly correlate around a single component [17]. Orthogonal varimax rotation in particular (compared to the other common rotational technique, oblique rotation) is more appropriate for validation assessment as it is simpler to understand and interpret [153].

**Representativeness** assesses the extent to which index domains over-represent, under-represent or exclude the elements required to measure the latent construct, both in the Ethiopian specific and more universal context. For this study, representativeness was operationalized as the percentage of CVI experts who indicated whether certain A-WEAI items should be deleted<sup>46</sup>. Representativeness was also operationalized through the deductive analysis of open ended questions in the CVI to identify any excluded domains that were judged as potentially beneficial to the index. Questions such as “What domain(s)/theme(s) do you think should be added to the A-WEAI?” provided rich data to assess, according to expert opinion, the level of representativeness of the content validity of the A-WEAI.

Lastly, **technical quality** refers to the extent to which both index items and response item *options* are clear, easily understood and translatable to the local language. This criterion was assessed via deductive content analysis of cognitive debriefing interviews conducted with rural Ethiopian male and female respondents after they were administered the A-WEAI and a quantitative calculation of the expert panel’s opinions on A-WEAI item clarity. This qualitative method of inquiry, whose goal is to identify any discrepancies between respondent interpretation of items and developer’s intentions, has been well established as a source of validity evidence [155, 156] and has been used in psychometric scale development both within and outside of the empowerment field (including by developers of the WEAI) [154, 157, 158]. Technical quality was also operationalized as the percentage of experts who indicated A-WEAI items were clear, in the expert panel survey.

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<sup>45</sup> Versus common factor analysis which is based on hypothetical variables and therefore only presents an “idealized, imaginary construct that presumably causes the items to be answered as they are” 17. DeVellis, R., *Scale Development: Theory and Applications*. 2nd. ed. Applied Social Research Method Series. Vol. 26. 2003, Newbury Park: SAGE Publications.

<sup>46</sup> The CVI asked experts to indicate whether items should be deleted, retained only if modified and retained as currently worded.

### Reliability

Reliability refers to the proportion of variance attributable to the true score of the latent variable [17] or, more simply, the degree to which all items of a scale measure a common characteristic. Internal reliability is specifically concerned with the homogeneity of the items within a scale [17]. Estimates of reliability are based on the average intercorrelations among all the single items within a scale/test [159]. Perhaps the most popular method to test internal reliability in the behavioral sciences is Cronbach's alpha, which is the "proportion of a scale's total variance that is attributable to a common source, presumably the true score of the latent variable underlying the items" [17, p.54].

Reliability is not a static function of an index but can change with different populations/samples. Reliability assessments are often specific to the context and samples observed [160]. This highlights the imperative to examine and report reliability estimates of an index in each different context in which it is applied. Factors in our study, such as culture, gender norms, history and institutional environments, can influence the context-specific reliability of the A-WEAI. As with content validity, a key component of score interpretation is understanding that reliability estimates are a function of the test *scores* yielded from an instrument (and not the test itself) [161].

Table 15 summarizes the criteria, assessment approaches and data sources used to assess the study objectives.

Table 15: Criteria, assessment approaches and data sources used to assess content validity and internal reliability

| Objective            | Criterion                        | Definition of criterion                                                                                                                                      | Assessment approaches of criterion                                                                                                                                         | Data Source                                                                                |
|----------------------|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| Content Validity     | Content relevance                | The degree to which the subject matter contained in the A-WEAI items are relevant to the construct of women's empowerment in agriculture.                    | 1. Content Validity Index (I-CVI and S-CVI/AVE) <sup>a</sup><br><br>2. Principal component analysis with orthogonal varimax rotation                                       | 1. Expert panel survey (n=12)<br><br>2. A-WEAI household survey (n=299 households)         |
|                      | Representativeness               | The extent to which the A-WEAI domains over-represent, under-represent or exclude the elements required to measure entire women's empowerment in agriculture | 1. Percentage of experts who indicated items should be deleted<br><br>2. Expert opinion on domains that should be deleted and/or included                                  | 1. Expert panel survey (n=12)<br><br>2. Open ended questions of expert panel survey (n=12) |
|                      | Technical quality                | The extent to which both A-WEAI items and response item options are clear, easily understood and translatable to the local language.                         | 1. Level of congruence between local understanding of concepts and questions and A-WEAI developer intention<br><br>2. Percentage of experts who indicated items were clear | 1. Cognitive debriefing interviews (n=16)<br><br>2. Expert panel survey (n=12)             |
| Internal Reliability | Intercorrelation of A-WEAI items | The extent to which the A-WEAI items vary together and correlate with each other                                                                             | Cronbach's alpha <sup>c</sup>                                                                                                                                              | A-WEAI household survey (n=300 households)                                                 |

a = where an I-CVI score of 0.78 or higher is acceptable [152].

b = where a S-CVI/AVE score of 0.90 is acceptable [149].

c = where an alpha between 0.65 and 0.70 = minimally acceptable, 0.70-0.80 = respectable and 0.80-0.90 = very good [17]

## C.2. DATA COLLECTION AND ANALYTICAL APPROACHES

The data collection and analytical approaches of this study were divided into three phases (summarized in Table 16). Phase 1 entailed 16 qualitative cognitive debriefings (8 husband-wife pairs) on the A-WEAI. For Phase 2, the A-WEAI survey was administered to a total of 598 individuals (299 men and 299 women, each pair from the same household). Phase 3 encompassed calculation of the A-WEAI Content Validity Index (CVI) using data from an online expert panel survey of 12 experts. Further information on the data collection and analytical approach for each Phase is detailed in Table 16.

Table 16: Data Collection Phases

|                          | PHASE 1                                                                        | PHASE 2                                                                   | PHASE 3                                                                                                                           |
|--------------------------|--------------------------------------------------------------------------------|---------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| <b>Purpose</b>           | Assess the technical quality of items and provide preliminary data for Phase 2 | Assess internal reliability of items and the content relevance of domains | Assess the content relevance, representativeness and technical quality of items                                                   |
| <b>Activity</b>          | Cognitive debriefing interviews (CDI) of A-WEAI 1.0                            | Administration of the A-WEAI survey                                       | Administration of expert panel survey                                                                                             |
| <b>Method</b>            | Qualitative interviews of male and female household members                    | Quantitative household survey of male/female pairs in households          | Mixed methods online survey of experts                                                                                            |
| <b>Time and Duration</b> | Summer 2013; 6 weeks                                                           | Summer 2015; 4 weeks                                                      | Fall 2017, 1 month                                                                                                                |
| <b>Sampling Plan</b>     | Semen Achefer woreda in Amhara region; Wondo Genet woreda in SNNPR region      | 5 woredas in SNNPR and 1 woreda in Oromiya region; 3 kebeles/woreda       | Expert panel members selected based on experience/knowledge on women's empowerment, geographic focus and willingness/availability |
| <b>Sampling Unit</b>     | Married couples (8 pairs)                                                      | Household                                                                 | Individual (experts)                                                                                                              |
| <b>Sample Size</b>       | n = 16                                                                         | n = 299                                                                   | n = 12                                                                                                                            |

### C.2.1. Data Collection Phase 1

Phase 1 was conducted in the context of the Empowering New Generations to Improve Nutrition and Economic opportunities (ENGINE) program, which was implemented between the years 2011 and 2016. All participants of Phase 1 were beneficiaries of the ENGINE program, whose primary goal was to help Ethiopian women of reproductive age and children less than 5 years old achieve sustainable improvements in their nutritional status. For the cognitive debriefing interviews (CDIs), a total of 8 married couples, over the age of 18 years, were individually interviewed in Amharic. Female respondents were interviewed by a trained female interviewer and male respondents were interviewed by a male. These CDIs took place through convenience sampling immediately after focus groups for a separate study that explored emic definitions of empowerment in agriculture [162]. Four couples were sampled from the Semen Achefer woreda (district) in the Amhara region and four couples from the Wondo Genet woreda in the Southern Nations, Nationalities and Peoples' Region (SNNPR). In an effort to assess the comprehension stage of recognition<sup>47</sup>, after each section of the A-WEAI survey enumerators probed to understand respondent cognition of questions, question topics, and level of comfort in answering the A-WEAI questions [163]. Due to time constraints, the cognitive debriefing interview guide (Chapter 6 Supplementary Materials, Appendix B) focused specifically on the domains of

<sup>47</sup> There are four stages of cognition required for an accurate response to a survey question: comprehension, retrieval, judgment, and response. This study focused on the first stage as it captures the technical quality of the A-WEAI by focusing on unknown terms, ambiguous concepts, long and overly complex questions [163]. Willis, G., *Cognitive interviewing: a tool for improving questionnaire design*. 2005, Thousand Oaks, CA: Sage Publications.

production, resources and income. These domains were selected as the most potentially challenging for respondent cognition, based on pretesting results and consultation with the local research team.

### Analytical approach

Analysis of the CDIs sought to answer the questions of 1) Can respondents understand these terms in the way they were originally intended? and 2) Can respondents paraphrase these terms in their own words?<sup>48</sup> All interviews closely followed the interview guide which allowed comparisons between genders and geographic locations. After all transcripts of the CDIs were translated from an Amharic recording into English, each interview was analyzed using NVIVO 11.4. Analysis used the deductive content analysis approach, which entails coding and organization of qualitative data based on pre-determined categories [164].

### **C.2.2. Data Collection Phase 2**

In Phase 2, the A-WEAI survey was administered to a subsample of the sample for the Tufts Agriculture-Nutrition (AgNut) Panel study, which was an operational study for ENGINE. The sampling plan for this phase involved sampling from 5 woredas in SNNPR and 1 woreda in the Oromia region. Within each woreda, 2 kebeles (neighborhoods) were sampled. Due to convenience and logistical reasons, this sampling plan mimicked the AgNut sampling plan, as the A-WEAI enumerator team followed the AgNut enumerators with a 1-2-day lag. In each household, one adult male and one adult female, over the age of 18 years, were interviewed, self-identified as head male/female of the household. The A-WEAI survey (Chapter 6 Supplementary Materials, Appendix C) was pretested, and appropriately adjusted before data collection commenced. The majority of the adjustments addressed context specific agricultural practices, appropriate probing questions and provision of examples as well as clarification on allowed number of response options (See Chapter 6 Supplementary Materials, Appendix B for a complete list of adjustments). For example, the agricultural activity of beekeeping substituted the published A-WEAI agricultural activity of fishing, since fishing was not an applicable activity to the study context.

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<sup>48</sup> These analytical questions were designed to closely align with the methods used by Malapit et al (2017) in their administration of cognitive debriefing interviews in the pre-testing phase of the A-WEAI.

### Components and construction of the A-WEAI

The survey data described above was then used to construct the A-WEAI variables using the approach depicted in Figure 9. This figure shows components of the A-WEAI as well as a flow chart of how each domain indicator was constructed, per the A-WEAI manual instructions.

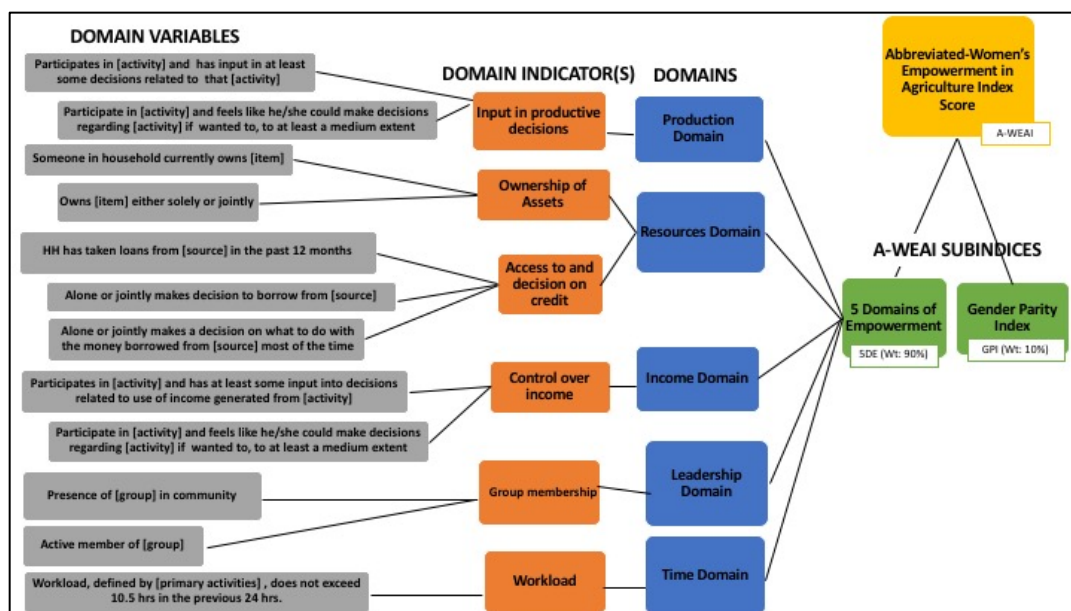


Figure 8: Components and Construction of the A-WEAI

The grey boxes list the domain variables which are aggregated to form the domain indicators (shown in orange). These domain indicators are used to measure each of the 5 domains (shown in blue); production, resources, income, leadership and time. All 5 domains are then collapsed into the 5DE, which is one of the two subindices (shown in green) of the A-WEAI. The 5DE score can be decomposed into its separate domains, for each individual, thereby showing which domains contribute the most to inadequacy in empowerment. The other subindex, the GPI, represents the parity gap between women's and men's 5DE score<sup>49</sup>. For a complete summary of the A-WEAI drop down options (noted in brackets in Figure 8) as well domain adequacy definitions, see Chapter 6 Supplementary Materials, Appendix E.

<sup>49</sup> By definition, households without a primary adult male are excluded from this measure, and thus the aggregate WEAI uses the mean GPI value of dual-adult households 78. Alkire, S., et al., *The Women's Empowerment in Agriculture Index*, in *IFPRI Discussion Paper 01240*, H.a.N.D. Poverty and E.a.P.T. Division, Editors. 2012, International Food and Policy Institute: Washington, DC.

### Analytical approach

All data preparation, variable generation, and analysis for Phase 2 was performed using Stata 14.2. Comparative demographic statistics with relevant standard deviations were calculated (see Table 18). Phase 2 analysis also involved application of the published A-WEAI data preparation and calculation STATA code, which created the six main aggregated A-WEAI indicators and calculated the A-WEAI scores (see Table 19) [93].

The main quantitative statistical test for representativeness was principal component analysis with varimax orthogonal rotation. Factors with an eigenvalue of 1 or more were retained [17]. Per conventional standards, components with a factor loading of an absolute value of 0.3 or more were retained and considered to reflect women's empowerment in agriculture [165]<sup>50</sup>. All datasets and the two subdatasets (women's only dataset and men's only dataset) yielded a Keiser-Meyer Olkin sampling adequacy value higher than 0.5, justifying the use of PCA [166, 167].

### **C.3. Phase 3**

The Content Validity Index (CVI), an online survey on a Qualtrics platform, was administered to 12 experts in the field of women's empowerment, gender and/or agriculture and nutrition in Ethiopia and similar resource limited areas. The selection criteria for the experts were that he/she (1) was not involved in the development/piloting of the index (for both the WEAI and A-WEAI); (2) had worked in gender, gender studies, gender and agriculture, agriculture and nutrition, or women's empowerment, and (3) had published work on the topic of gender studies, gender and agriculture or had extensive work experience in the field.

Potential experts were identified by (1) searching on the internet for authors of peer-reviewed articles that had studied pertinent topics or field practitioners of relevant government and non-governmental organizations or (2) asking colleagues of the doctoral candidate, who suggested potential expert participants. These candidates were contacted via email, and those who agreed to participate were sent an encrypted and password protected link to the consent form, which was then linked to an online survey. The survey took approximately 30 minutes to fill out. Out of the 17 invited experts, twelve participated. Table 17 presents a summary of the CVI respondents' self-identifications.

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<sup>50</sup> Although other forms of factor analysis, such as tetrachoric analysis, can be used for variables that are binary (which is the case for the A-WEAI indicators), the purposes of this analysis are exploratory and to better understand the relationships between variables in which case PCA is an acceptable form of analysis.

Table 17: Role of CVI Expert Respondents

| Respondent role                     | Number (self-identified) |
|-------------------------------------|--------------------------|
| Academic only                       | 1                        |
| Research only                       | 3                        |
| Research and practitioner           | 4                        |
| Academic and research               | 1                        |
| Academic, research and practitioner | 1                        |
| Other*                              | 2                        |
| <b>Total</b>                        | <b>12</b>                |

\*Other\* specified that their primary role was to either 'assist countries in designing, implementing them and using and interpreting survey data' or 'consultant, doing practical research amongst others'.

### Analytical approach

All quantitative data for this Phase was exported from Qualtrics to Excel 16.9 for data preparation and analysis. Per Lynn [152], our sample size of 12 experts determined that the standard for acceptable content relevance was an I-CVI score no lower than 0.78. For the *Scale-Content* Validity Index/Average (S-CVI/AVE), the acceptable standard for this index was 0.90 per the work of Polit and Beck [149, 168].

Qualitative data from the open-ended questions of the CVI survey were imported into NVIVO 11.4 and analyzed through a deductive content analysis approach. The deductive analytical themes of clarity and relevance for each A-WEAI module were used, following common practice in CVI administration and analysis [149].

## **D. RESULTS**

This section is organized by first presenting summary statistics of the sample, followed by A-WEAI scores and a decomposition of the A-WEAI 5DE. Thereafter, the results of this study are presented under two headings; content validity results and internal reliability results.

### **D.1. Summary statistics**

The mean age of women in this sample was 35.2 years and for men, 44.1 years (see Table 18). Education levels were relatively low for both women and men (2.4 and 1.2 years of schooling completed, respectively). The majority of households were of Muslim religion.

Table 18: Sample summary statistics

|                           | Female         |     | Male           |     | Household      |     |
|---------------------------|----------------|-----|----------------|-----|----------------|-----|
|                           | Mean (SD) or % | n   | Mean (SD) or % | n   | Mean (SD) or % | n   |
| Age (years)               | 35.2 (9.7)     | 284 | 44.1 (12.4)    | 285 |                |     |
| Years of school completed | 1.2 (2.3)      | 284 | 2.4 (2.9)      | 285 |                |     |
| Religion                  |                |     |                |     |                | 299 |
| Orthodox                  |                |     |                |     | 19.2%          |     |
| Catholic                  |                |     |                |     | 0.4%           |     |
| Protestant                |                |     |                |     | 11.8%          |     |
| Muslim                    |                |     |                |     | 68.6%          |     |

## D.2. A-WEAI Scores and Domain Decomposition

Per the published A-WEAI standards, an individual who has achieved ‘adequacy’ in 80% or more of the A-WEAI weighted indicators was considered empowered [93]. For all three indicators (A-WEAI, 5DE and GPI), scores increase from 0 to 1 as empowerment improves. This study’s sample had a high level of women’s empowerment in agriculture (A-WEAI score = 0.97). Additionally, both women and men scored very high in the five domains of empowerment (5DE = 0.93 for women and 0.99 for men). Ninety-seven percent of households had gender parity (GPI = 0.97), indicating 97% of women had a 5DE score greater than or equal to her spouse or were empowered, according to the adequacy criteria. [227] .

Table 19: A-WEAI Scores and sub-indices

| Indicators                               | Women | Men  |
|------------------------------------------|-------|------|
| No. of observations                      | 240   | 217  |
| 5DE score                                | 0.93  | 0.99 |
| Disempowered individuals (%)             | 21.30 | 4.60 |
| GPI score                                | 0.97  |      |
| Women with no gender parity (%)          | 21.05 |      |
| Average empowerment gap (%) <sup>a</sup> | 14.58 |      |
| A-WEAI score                             | 0.93  |      |

<sup>a</sup> = for those households with a gender gap

The 5DE decomposition figure (Figure 9) shows that the domains of time and production contributed most to Ethiopian women’s disempowerment (approximately 31% and 25% respectively). For men, the domains of time and one of the resources indicators (access to and decisions on credit) were the only contributors to Ethiopian men’s disempowerment. The absence of the production, income and leadership domains in Figure 9 reflects that men were fully empowered in those areas.

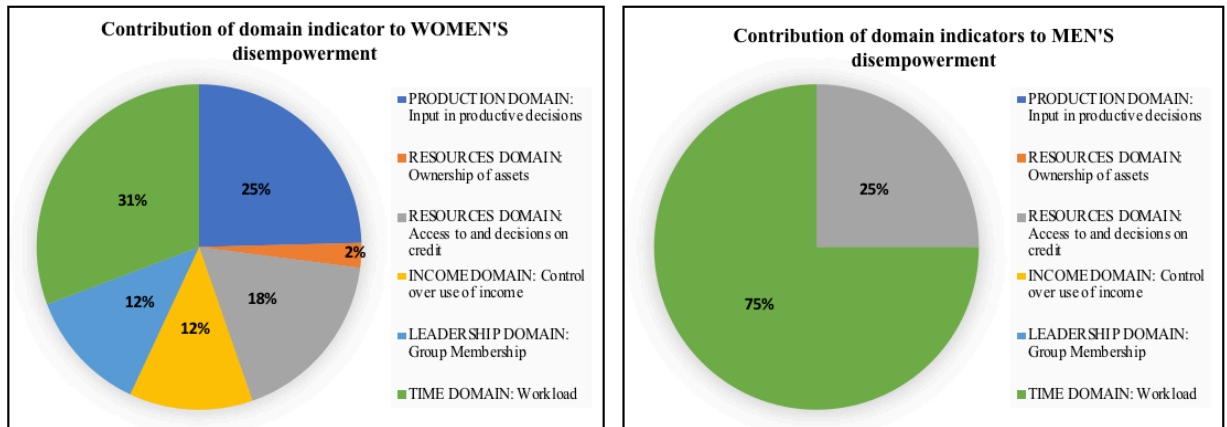


Figure 9: Contribution of domain indicators to disempowerment of women and men<sup>51</sup>

### D.3. Content Validity Results

#### D.3.1. Content Relevance

##### Content Validity Index (CVI) Results

According to both the I-CVI and S-CVI/AVE scores (see Table 20), the A-WEAI met the standards of 'excellence' for content relevance, at both the item and index level. Results also indicated that content relevance according to this criterion did not differ by context; the A-WEAI and its items had high relevance in both the Ethiopian setting and general (or universal) setting.

<sup>51</sup> The absence of the production, income and leadership domains in Figure 9 reflects that men were fully empowered in those areas.

Table 20: I-CVI and S-CVI/AVE Scores<sup>52</sup>

| Domain                  | Domain indicator                          | Domain variables (items)                                                 | Ethiopia                 | In general setting |
|-------------------------|-------------------------------------------|--------------------------------------------------------------------------|--------------------------|--------------------|
|                         |                                           |                                                                          | <b>I-CVI<sup>a</sup></b> |                    |
| Production              | Input in agriculture production decisions | Has input in making decisions regarding agricultural activity            | 1.0                      | 1.0                |
|                         |                                           | Feels they could make own personal decisions, if wanted                  | 0.8                      | 0.9                |
| Resources               | Ownership of assets                       | Household owns asset                                                     | 0.9                      | 1.0                |
|                         |                                           | Individual owns asset, either solely or jointly                          | 1.0                      | 1.0                |
|                         | Access to and decisions on credit         | Household has taken loans in the past 12 months                          | 1.0                      | 1.0                |
|                         |                                           | Alone or jointly makes decision to borrow money                          | 1.0                      | 1.0                |
|                         |                                           | Alone or jointly makes decision on what to do with money borrowed        | 1.0                      | 1.0                |
| Income                  | Control over use of income                | Has at least some input in decisions on the use of income generated      | 1.0                      | 1.0                |
|                         |                                           | Feels the could make own decisions on use of income generated, if wanted | 1.0                      | 1.0                |
| Leadership              | Membership in groups                      | Presence of group in community                                           | 1.0                      | 1.0                |
|                         |                                           | Active membership in group                                               | 1.0                      | 1.0                |
| Time                    | Workload                                  | Workload does not exceed 10.5 hours within past 24 hours                 | 0.9                      | 0.9                |
|                         |                                           |                                                                          |                          |                    |
| <b>Scale as a whole</b> |                                           |                                                                          | <b>0.88</b>              | <b>0.98</b>        |

a = An Item-Content Validity Index score > 0.78 is considered “excellent” in content relevance when more than 6 experts participate in the survey [149, 152].

b = A S-CVI/AVE score of 0.90 or higher is considered “excellent” in content relevance [149, 168]

### Principal Component Analysis Results

Table 21 displays components for observations of women only (W) (n=240) and then for the aggregated data of women and men, (Agr) (n=457). For these two datasets, three components proved to be generally adequate in explaining variance within our study sample (Women: 63%, Aggregated: 62%). Note that all indicators in this analysis represent inadequacy in that domain. For example, “Input in productive decisions”, the domain indicator for the production domain, is a binary variable in which 1 = inadequacy in the production domain and 0= adequacy.

All eigenvectors loaded onto all five of the A-WEAI domains (above 0.3) across the three components, suggesting that all domain indicators were relevant in content. The first principal component (which accounts for as much of the variability in the data as possible) for both the women’s and aggregated dataset loaded the highest with the production indicator (input in productive decisions) and the income indicator (control over use of income). These indicators

<sup>52</sup> I-CVI = Item- Content Validity Index; S-CVI = Scale-Content Validity Index

share the characteristic of encompassing decision-making power within the household and therefore the component was labeled “decision-making power”. For the second component, the women’s and men’s aggregated data again loaded on identical indicators -- ownership of assets and workload time (with a negative correlation) -- and the component was labeled “assets and time”. The last component, which was labeled “access to, and interaction with others”, loaded the highest on group membership (leadership domain) and access to and decisions on credit (part of the resources domain) for both the women’s and aggregated datasets. This third component encompassed an individual’s ability to interact with society and community members. Lastly, the time domain had the highest unexplained variance, suggesting that time loaded on the fourth component and was potentially a separate and unique domain from the other three domains.

*Table 21: Principal Component Analysis Eigenvectors with Orthogonal Varimax rotation (absolute values less than 0.3 are omitted from the table)*

|            |                                   | Component                             |                                 |                                                        |       |      |      | Unexplained Variance |      |
|------------|-----------------------------------|---------------------------------------|---------------------------------|--------------------------------------------------------|-------|------|------|----------------------|------|
|            |                                   | 1                                     |                                 | 2                                                      |       | 3    |      |                      |      |
|            |                                   | Inadequacy in “Decision-making power” | Inadequacy in “Assets and Time” | Inadequacy in “Access to, and interaction with others” |       |      |      |                      |      |
| Domain     | Domain Indicator                  | W                                     | Agr                             | W                                                      | Agr   | W    | Agr  | W                    | Agr  |
| Production | Input in productive decisions     | 0.70                                  | 0.69                            | .                                                      | .     | .    | .    | 0.23                 | 0.23 |
| Resources  | Ownership of assets               | .                                     | .                               | 0.69                                                   | 0.64  | .    | .    | 0.46                 | 0.55 |
|            | Access to and decisions on credit | .                                     | .                               | .                                                      | .     | 0.60 | 0.59 | 0.47                 | 0.53 |
| Income     | Control over use of income        | 0.70                                  | 0.70                            | .                                                      | .     | .    | .    | 0.22                 | 0.21 |
| Leadership | Group membership                  | .                                     | .                               | .                                                      | .     | 0.79 | 0.80 | 0.31                 | 0.32 |
| Time       | Workload time                     | .                                     | .                               | -0.64                                                  | -0.70 |      |      | 0.54                 | 0.47 |

W= women only dataset, n= 240

Agr= aggregated dataset (women and men combined), n=457

### D.3.2. Representativeness

Within the CVI, experts were asked to indicate whether the A-WEAI items should have been deleted, ‘retained as is’ or ‘retained if modified’. The vast majority of experts advised against deleting items in the A-WEAI. Just one of the 12 experts interviewed suggested deleting the

following three variables: ‘Has input in at least some decisions regarding agricultural activities’, ‘Feels like they could make own personal decisions regarding the agricultural activity, if wanted’ and ‘Workload does not exceed 10.5 hours in the previous 24 hours’) (See Table 22). Experts were split almost evenly for most of the other items about whether the item should be retained as is or retained if modified.

Table 22: Expert panel opinion on deletion of A-WEAI items

| Domain     | Domain indicator                          | Domain variables (items)                                                 | Number of Experts* who believe domain variable should be: |                |                      |
|------------|-------------------------------------------|--------------------------------------------------------------------------|-----------------------------------------------------------|----------------|----------------------|
|            |                                           |                                                                          | Deleted                                                   | Retained as is | Retained if modified |
| Production | Input in agriculture production decisions | Has input in making decisions regarding agricultural activity            | 1                                                         | 3              | 8                    |
|            |                                           | Feels they could make own personal decisions, if wanted                  | 1                                                         | 5              | 6                    |
| Resources  | Ownership of assets                       | Household owns asset                                                     | 0                                                         | 6              | 6                    |
|            |                                           | Individual owns asset, either solely or jointly                          | 0                                                         | 7              | 5                    |
|            | Access to and decisions on credit         | Household has taken loans in the past 12 months                          | 0                                                         | 5              | 7                    |
|            |                                           | Alone or jointly makes decision to borrow money                          | 0                                                         | 6              | 6                    |
|            |                                           | Alone or jointly makes decision on what to do with money borrowed        | 0                                                         | 6              | 6                    |
| Income     | Control over use of income                | Has at least some input in decisions on the use of income generated      | 0                                                         | 7              | 5                    |
|            |                                           | Feels the could make own decisions on use of income generated, if wanted | 0                                                         | 7              | 5                    |
| Leadership | Membership in groups                      | Presence of group in community                                           | 0                                                         | 9              | 3                    |
|            |                                           | Active membership in group                                               | 0                                                         | 8              | 4                    |
| Time       | Workload                                  | Workload does not exceed 10.5 hours within past 24 hours                 | 1                                                         | 8              | 3                    |

\* n = 12 experts

Four of the twelve experts suggested adding domains. The list below is of domains that at least one expert recommended:

- Intrahousehold food allocation and eating behaviors
- Knowledge of agricultural process (such as where and how to get seeds, and irrigation issues)
- Personal skills and power (including self-confidence)
- Access to information, education and services
- Influence in community (beyond the nuclear family)
- Self-perception and experience of empowerment

### D.3.3. Technical Quality

This section presents the results of the deductive analysis of the cognitive debriefing interviews (CDIs), organized by A-WEAI domains and their variables. Recall that the two main questions that the analysis sought to answer, for each domain item, were 1) Can respondents understand these terms in the way they were originally intended? and 2) Can respondents paraphrase these terms in their own words?

For the domain of **production**, both male and female respondents articulated that they understood ‘participation in an agricultural activity’ to mean engagement in the physical activities of the agricultural activity. While both male and female respondents discussed how ‘participation’ meant having knowledge about the agricultural activity, such as when to plant seeds, men were more vocal about the value of knowledge regarding agricultural practices. When probed on what is meant by ‘making decisions’ on agricultural activities, several women and men interpreted the term to mean not only the final decision that is made but also the process of discussion that is involved.

For items related to the **resources** domain, the term ‘own’ appeared to have mixed interpretations by both genders. While some respondents were able to articulate that ‘ownership’ meant that an asset was under the control of the individual and was in their possession, others interpreted ‘ownership’ to be based on how the asset was acquired. Specifically, some women and men would answer that a woman ‘owned’ a certain piece of livestock (and its byproducts) not because she made decisions regarding what to do with it but because it came to the household via marriage dowry. When probed on the process of making decisions regarding whether to apply for credit, several men articulated that women could not make this decision alone or even jointly. The reason for this, however, was not related to empowerment levels as perceived by the spouse but rather because lenders “did not trust her” (CDI 4). This articulation speaks to the potential discordance between the intended meaning (‘who, alone or jointly, makes a decision to borrow’) and what is actually understood by the respondent (‘who actually goes to the lender and applies for the loan’).

Lastly, for the **income** domain, both women and men understood key terms but had a difficult time answering the related questions due to the response options. Per the published A-WEAI Instructional Guide, respondents were asked to answer the question “How much input did you have in the decisions on the use of income generated from [activity]”? by indicating their level of input on a Likert scale of 1 – 6<sup>53</sup>. Based on the research team’s observations of

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<sup>53</sup> Where 1= No input, 2= Input into very few decisions, 3= Input into some decisions, 4= Input into most decisions, 5 = Input into all decisions and 6 = No decision made.

respondent body language and interpretation of the conversation, both male and female respondents struggled with how to select the appropriate answer. They were unable to confidently differentiate between the different Likert points<sup>54</sup>.

Technical quality of the A-WEAI was also assessed via experts' opinion on item clarity. For all domain variables, at least 60% of experts believed that the variable was clear in regard to question structure (see Table 23). The production domain variables had the smallest percentage of expert agreement on clarity while the income, leadership and time domains all had the highest percentages.

Table 23: Expert panel opinion on item clarity

| Domain     | Domain indicator                          | Domain variables (items)                                                 | Percentage of Experts* (%) who believe domain variable is clear |
|------------|-------------------------------------------|--------------------------------------------------------------------------|-----------------------------------------------------------------|
| Production | Input in agriculture production decisions | Has input in making decisions regarding agricultural activity            | 66.7                                                            |
|            |                                           | Feels they could make own personal decisions, if wanted                  | 66.7                                                            |
| Resources  | Ownership of assets                       | Household owns asset                                                     | 75.0                                                            |
|            |                                           | Individual owns asset, either solely or jointly                          | 75.0                                                            |
|            | Access to and decisions on credit         | Household has taken loans in the past 12 months                          | 83.3                                                            |
|            |                                           | Alone or jointly makes decision to borrow money                          | 75.0                                                            |
|            |                                           | Alone or jointly makes decision on what to do with money borrowed        | 75.0                                                            |
| Income     | Control over use of income                | Has at least some input in decisions on the use of income generated      | 91.7                                                            |
|            |                                           | Feels the could make own decisions on use of income generated, if wanted | 83.3                                                            |
| Leadership | Membership in groups                      | Presence of group in community                                           | 91.7                                                            |
|            |                                           | Active membership in group                                               | 83.3                                                            |
| Time       | Workload                                  | Workload does not exceed 10.5 hours within past 24 hours                 | 83.3                                                            |

\* n = 12 experts

<sup>54</sup> Ultimately, in response to this finding, the research team chose to consolidate the response options to a three-point Likert scale (1= no input or input in a few decisions 2= input into some decisions 3= input into most or all decisions) during the actual administration of the A-WEAI survey during the following data collection phase.

#### D.4. Internal Reliability Results

The Cronbach's alpha values for the A-WEAI at the domain level (i.e. across all five domains) were very low for all three datasets (women, men, and women-men aggregated) (See Table 24). Women had the highest alpha (0.33); however, it still did not meet the minimal acceptable standard of internal reliability (0.65 or higher) [17].

Table 24: Cronbach's alpha -DOMAIN LEVEL

|                               | Women  | Men    | Women-men Aggregated |
|-------------------------------|--------|--------|----------------------|
| Average inter-item covariance | 0.0075 | 0.0012 | 0.0021               |
| No. of items in scale         | 6      | 6      | 6                    |
| Scale Reliability coefficient | 0.33   | 0.13   | 0.14                 |

However, when Cronbach's alpha was calculated at the item level (where each domain had a separate alpha, based on the variables that aggregate to five of the six indicators listed above<sup>55</sup>), the internal reliability score increased (See Table 25). For women, every domain except Resources met the 'minimally acceptable' score standard for internal reliability (alpha higher than 0.65). For men, however, no domain met the acceptable standard score. Lastly, for the women-men aggregated data, production and income scored as relatively acceptable (0.82 and 0.68 respectively), whereas resources and leadership barely exceeded an alpha value of 0.1.

Table 25: Cronbach's alpha – Item Level

|                   | Avg inter-item covariance |         |                   | No. of items in scale |      |     | Scale Reliability coefficient |      |      |
|-------------------|---------------------------|---------|-------------------|-----------------------|------|-----|-------------------------------|------|------|
|                   | Women                     | Men     | Agr <sup>56</sup> | Women                 | Men* | Agr | Women                         | Men  | Agr  |
| <b>Production</b> | 0.026                     | 0.0010  | 0.029             | 8                     | 5    | 8   | 0.65                          | 0.30 | 0.82 |
| <b>Income</b>     | 0.017                     | 0.00053 | 0.011             | 10                    | 8    | 10  | 0.69                          | 0.18 | 0.68 |
| <b>Resources</b>  | 0.0051                    | 0.0017  | 0.0021            | 2                     | 2    | 2   | 0.08                          | 0.03 | 0.03 |
| <b>Leadership</b> | 0.032                     | 0.0030  | 0.0029            | 8                     | 8    | 8   | 0.66                          | 0.14 | 0.12 |
| <b>Time**</b>     | X                         | X       | X                 | X                     | X    | X   | X                             | X    | X    |

\*Several variables in the men's dataset were dropped due to constant variance.

\*\*Time alpha was not calculated because it is constructed only from one variable

## E. DISCUSSION

Messick argues that the ultimate purpose of validity testing is to not to assess the index itself but rather identify the potential *effects* of an index score [138]. Content validity and internal

<sup>55</sup> The indicator for the Time domain (workload) was not included in these analyses because it is constructed from only one variable, hours spent working in the past 24 hrs.

<sup>56</sup> Agr = the dataset with women and men data aggregated into one dataset

reliability results from this study highlight two main concerns regarding the interpretation of A-WEAI scores in the Ethiopian context.

First, this study's content validity results suggest that the index should, whenever possible, be carefully pretested and amended with the use of both qualitative and quantitative methods. The quantitative measures of the I-CVI, S-CVI/AVE and PCA indicated that the A-WEAI had 'excellent' content relevance. However, while PCA found the common variance amongst different domain indicators, the underlying assumption of this statistical tool is that there is a true underlying latent variable, and the selected indicators all measure that variable. PCA does not indicate if the indicators are the 'wrong' components of an index<sup>57</sup>. The qualitative inquiries of representativeness and technical quality, however, indicated that the right indicators were included for each A-WEAI domain. Some expert panel participants, however, suggested that some domains were inappropriately missing. For example, answers from the open-ended questions of the expert panel survey identified two domains that could be categorized under the broad theme of "knowledge/access to knowledge". This is supported by other empowerment work of Alsop [73] and Ibrahim [63] who argue that without knowledge or access to information, people are not only not allowed to express their preferences, but also denied the ability to have an effective impact on particular decisions [63, 73]. CVI experts also identified "personal skills and power/self-perception and experience" as another potential domain to add to the index. Indeed the significance of the relationship between individual agency and empowerment has been identified in other empowerment literature, as previously discussed in the Background section [102]. On a conceptual level, the omission of these domains in the A-WEAI potentially leads to neglecting salient components of women's empowerment in agriculture in Ethiopia. On a practical level, the A-WEAI is advertised as a useful index at the programmatic level because of its ability identify domains that an individual is most disempowered in (and thereby potentially identify the most effective type of programming that will help empower that individual). Omitting relevant domains could lead to an interpretation of A-WEAI scores that potentially mislead program design and resource decisions, particularly for behavior change interventions where knowledge to access is key.

Additionally, qualitative cognitive debriefing interviews that assessed A-WEAI's technical quality revealed context specific norms and interpretations of questions that may influence respondent answer quality and accuracy. While more than half of all experts from the

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<sup>57</sup> For further discussion on potentially 'wrong' domains of the WEAI and emic definitions of empowerment see Min-Barron et al., 2018. 162. Min-Barron, M., et al., *Emic definitions of empowerment: A qualitative gendered comparison and content validity assessment of the Abbreviated – Women's Empowerment in Agriculture Index*, Friedman School of Nutrition Science and Policy, Editor. 2018.

CVI agreed that all the A-WEAI domain indicators were clear, CDIs showed that both women and men struggled with answering income related questions due to the nuanced and lengthy 6-point Likert scale. While Semie et al.'s [228] development of a scale measuring farmer's attitudes towards land ownership (in the Ethiopian woredas of this study's sample) concluded that a 5 point Likert scale was both reliable and technically valid, this study showed that the addition of even just one additional point on the scale introduced confusion and potentially inaccurate survey responses. The results of the CVI and cognitive debriefing interviews show how the quantitative and qualitative content validity results of this study should not be seen as contradictory but rather complementary. Yes, from an etic perspective (i.e. from the viewpoint of experts) the questions were clear, however from an emic perspective (i.e. from the viewpoint of the cognitive debriefing interviewees), not all questions were easily understood as intended. Both viewpoints are important results as the etic perspective indicates that, technically, the related questions were valid while the emic perspective indicates that in the later step of actual survey implementation, the questions were still valid but not necessarily easily understood. Together, both perspectives suggest that the question should be retained but perhaps appropriately pretested and reworded, thereby providing a comprehensive understanding of how the A-WEAI measures women's empowerment in agriculture and should be implemented, both conceptually and practically.

The second caution in interpretation of A-WEAI scores is in regard to the reliability of the index. For the women's dataset, every domain indicator appeared to measure the same correlating domain, with the exception of "resources". Analysis of the men's dataset, however, showed that no domain met the acceptable cutoff for internal reliability, implying that, for the men of this sample, the domain variables did not fully measure all the intended domains. Furthermore, in the calculation of Cronbach's alpha using the men's data, several domain variables were dropped due to lack of variability. While the high level of non-variability for men's responses to the several A-WEAI questions suggests that men are highly empowered, it also suggests that the index may not discriminate at very high levels of empowerment. Within the A-WEAI, inclusion of men's responses serves one main purpose— calculation of the Gender Parity Index. This inclusion acknowledges the established relational aspect of women's empowerment [220] and the intrahousehold dynamics that may influence women's levels of empowerment in agriculture. Our results suggest that the A-WEAI may be less discriminating in measuring men's empowerment (compared to women's empowerment), an important finding considering the index is used to track national levels of gender equality.

A limitation of this study is the relatively small and varied sample size (ranging from n=142 individuals to 299 households, depending on the statistical test performed). The WEAI and

A-WEAI developers pretested with slightly higher sample sizes (350-450 households) [78] and our smaller size could have affected results. Though it is difficult to find a consensus on this issue, according to Nunnally [17], if a scale is comprised of about 20 items, fewer subjects than 300 “might suffice” in order to establish content validity [17]. Additionally, due to logistical and resource constraints, data collection for this study spanned a period of four years. During this time, it is possible that changing institutional environments and activities promoting gender equality could have affected different phases of data collection in different ways, depending on the year. In an effort to mitigate this limitation, the research team tried to informally gather pertinent institutional and programmatic contextual information at each stage of field-based data collection. Additionally, the triangulation of results from the range of methods mitigated issues that may have arisen from collecting data over a longer time span rather than a single time point. Lastly, compared to other studies, both women and men were highly empowered within our study [33, 78, 93, 97], potentially providing less than ideal data to assess variability in responses.

## **F. CONCLUSION**

Based on these findings, specific recommendations and amendments to the A-WEAI in the Ethiopian context have emerged. Firstly, the domains of production, resources and income should be retained but kept with some adjustments made to reflect the emic interpretations evidenced in this study. Empowerment adequacy in the production domain should be defined as having full control over production decision-making, rather than to a medium extent (see Figure 8). Secondly, for all questions within the A-WEAI that have Likert scale response options, options should include no more than three levels. Lastly, to minimize respondent confusion, enumerators should be instructed to clarify and explain what is meant by ‘participation’ and ‘ownership’ within the production and resources domains.

In regard to the issue of in-country generalizability, while region specific operationalizations of the A-WEAI would provide the most accurate and valid measurements of empowerment, it is not realistic to construct an index for each of the nine regions of Ethiopia. We do recommend, however, that cognitive debriefing interviews be conducted within each region to ensure a clear and accurate understanding of survey questions. Related to this, other A-WEAI validation studies in other contexts should be sure to sample from all agro-ecological zones of a given country where the A-WEAI is expected to be administered. Additionally, the gathering of preliminary qualitative data in addition to validation related data collection is imperative to yield a deep understanding of gender norms (both past and present). These findings can provide not

only pertinent background information but also potential suggestions on the most appropriate ways to talk about empowerment (and related concepts) within a particular culture. While calculation of the CVI provided an insightful and important source of data in our validation study, we recommend that selected experts have specific and significant experience in the country of interest.

To conclude, the assessment of content validity of the A-WEAI indicated that for the criteria of content relevance and representativeness, the A-WEAI was judged to be adequate by both experts and survey respondents. Regarding technical clarity, results were inconclusive. Content validity established by one criterion does not necessarily deem that the index as a whole is valid. Internal reliability was highest for the women-only dataset and non-existent for the men's dataset.

Additionally, as Messick articulates, the interpretation of scores (and understanding the potential consequences of this interpretation) is at the core of why studies such as this one, are conducted. Results indicated that the deeper structure of the A-WEAI (i.e. the conceptual relevance and representation of women's empowerment in agriculture) was sound via quantitative data. However, issues that arose vis a vis the qualitative data regarding technical quality and the lack of variance in men's responses in the A-WEAI (and the implications of such) point to the need for further A-WEAI validation research regarding technical quality and internal reliability, particularly in different contexts where empowerment levels are high. In different contexts, the A-WEAI may perform well if men are not empowered. If programs wish to distinguish empowerment levels at the higher end of the index, however, additional universal items may be needed. Lastly, studies further exploring the inclusion of other domains, such as knowledge and access to information, may help improve the performance of the A-WEAI in accurately and reliably measuring women's (and men's) empowerment in agriculture.

## CHAPTER 6 SUPPLEMENTARY MATERIALS

### APPENDIX A: Comparison of the WEAI and the A-WEAI: Domains, indicators and weights

| Original WEAI (1.0, 1.1, 2.0) |                                               |        | A-WEAI     |                                   |        |
|-------------------------------|-----------------------------------------------|--------|------------|-----------------------------------|--------|
| Domains                       | Indicators                                    | Weight | Domains    | Indicators                        | Weight |
| Production                    | Input in productive decisions                 | 1/10   | Production | Input in productive decisions     | 1/5    |
|                               | <i>Autonomy in production*</i>                | 1/10   |            |                                   |        |
| Resources                     | Ownership of assets                           | 1/15   | Resources  | Ownership of assets               | 2/15   |
|                               | <i>Purchase, sale, or transfer of assets*</i> | 1/15   |            |                                   |        |
|                               | Access to and decisions on credit             | 1/15   |            | Access to and decisions on credit | 1/15   |
| Income                        | Control over use of income                    | 1/5    | Income     | Control over use of income        | 1/5    |
| Leadership                    | Group membership                              | 1/10   | Leadership | Group membership                  | 1/5    |
|                               | <i>Speaking in public*</i>                    | 1/10   |            |                                   |        |
| Time                          | Workload                                      | 1/10   | Time       | Workload**                        | 1/5    |
|                               | <i>Leisure*</i>                               | 1/10   |            |                                   |        |

\*These indicators were dropped in the A-WEAI.

\*\*This indicator is collected using the same question but no longer includes secondary activities. However, the cutoff and aggregation rules remain the same.

(Source: Malapit 2017)

**APPENDIX B: Table of adjustments made to the published standard A-WEAI Survey [93], after pre-testing.**

| Module/Question # | Question                                       | Change Needed                                                                                                             |
|-------------------|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| Module G2         | Food crop farming activity                     | Add the example of tomato, onion, cabbage                                                                                 |
| Module G2         | Cash crop farming                              | Add examples of khat, coffee, teff                                                                                        |
| Module G2         | Major household expenditures                   | Add examples of furniture, bajaj, clothes, electronics                                                                    |
| Module G2         | Minor household expenditure                    | Add example of food, matchsticks, cooking items, gas                                                                      |
| Module G2         | Minor household expenditure                    | the question has skipped?                                                                                                 |
| Module G3A        | Large livestock                                | Add example of horses, donkeys                                                                                            |
| Module G3A        | Chickens, Ducks, Turkeys, Pigeons              | Change to just chickens, delete others                                                                                    |
| Module G3A        | Farm equip: non-mechanized                     | Add note to interviewer to make sure that the respondent is NOT referring to the pick ax given by AgNut in previous round |
| Module G3A        | House or other structures                      | Add example of storage houses                                                                                             |
| Module G3A        | Large consumer durables                        | Add example of grinding mill, bed, bureau (for storing utensils, household goods), generator                              |
| Module G3A        | Small consumer durables                        | Delete reference to radio, add example of torch                                                                           |
| Module G3A        | Fish pond or fishing equipment                 | Delete and replace with 'Beekeeping'                                                                                      |
| Module G3A        | Means of transportation                        | Add example of animal (such as donkey) that is used solely as a source of transportation                                  |
| G3.02             | Do you own any of the item                     | Need to add in a restriction so that respondent can't pick first two options AND NO.                                      |
| G3.02             | Do you own any of the item?                    | Needs to be a rectangular box for all to show that interviewer can select multiple options                                |
| G3.07             | Who made the decision to borrow from [SOURCE]? | Add note to interviewer, after respondent answers, probe "Is there anybody else?"                                         |

|            |                                                                 |                                                                                                                                                                                                           |
|------------|-----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| G3.08      | Who makes the decision about what to do with the money/item...? | Add note to interviewer, after respondent answers, probe "Is there anybody else?"                                                                                                                         |
| Module G5  | Agricultural/livestock/fisheries producer's group               | Delete 'fisheries'                                                                                                                                                                                        |
| Module G5  | Religious group                                                 | Add note to interviewer: This group can also refer to just that there is a church or mosque, etc. in the community (and not a formal group of people who are religious)                                   |
| Module G5  | Other [women's/men's']                                          | Add note to interviewer: the interviewer should read the gender that matches the gender of the respondent. For example, if you are interviewing a woman, as "Is there a women's group in your community?" |
| Module G3B | group based microfinancing or lending                           | microfinancing or lending for groups                                                                                                                                                                      |
| Module G3B | informal lender                                                 | add lending with interest                                                                                                                                                                                 |
| Module G3B | friends or relatives                                            | add lending without interest                                                                                                                                                                              |

# APPENDIX C: A-WEAI Survey administered to study sample

## STUDY TITLE: Evaluating Multisectoral Strategies for Improved Nutrition and Food Security in Ethiopia

### MODULE G. WOMEN'S EMPOWERMENT IN AGRICULTURE INDEX – A-WEAI Version

#### MODULE G1: INTERVIEW INFORMATION

| Number | Question                       | Response                                                                                                                                                                    | Variable name |
|--------|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| 1.1.1. | Date of interview (dd/mm/yyyy) | <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> | HDATEINTA     |
| 1.1.2. | Survey Round (1-5)             | <input type="text"/> <input type="text"/>                                                                                                                                   | HDTIMEPTA     |
| 1.1.3. | Household ID                   | <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>     | HHIDA         |
| 1.1.4. | Woreda                         | <i>drop list</i>                                                                                                                                                            | HWOREDAA      |
| 1.1.5. | Kebele                         | <i>drop list:</i>                                                                                                                                                           | HKEBELEA      |
| 1.1.6. | Gote / Gere                    | <i>(text)</i>                                                                                                                                                               | HGOTEA        |
| 1.1.7. | Supervisor's ID                | <input type="text"/> <input type="text"/> <input type="text"/>                                                                                                              | HID1A         |
| 1.1.8. | Respondent's ID from Roster    | <input type="text"/> <input type="text"/>                                                                                                                                   | HAMIDROS      |
| 1.1.9. | SEX OF RESPONDENT:             | 1. MALE<br>2. FEMALE                                                                                                                                                        |               |

|         |                                                                                              |                                                                                                                                                                                                                                                                        |  |
|---------|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 1.1.10. | ABILITY TO BE INTERVIEWED ALONE:<br>(THIS QUESTION IS TO BE ANSWERED BY<br>THE INTERVIEWER). | <ol style="list-style-type: none"><li>1. ALONE</li><li>2. WITH ADULT FEMALES PRESENT</li><li>3. WITH ADULT MALES PRESENT</li><li>4. WITH ADULTS MIXED SEX PRESENT</li><li>5. WITH CHILDREN PRESENT</li><li>6. WITH ADULTS MIXED SEX AND<br/>CHILDREN PRESENT</li></ol> |  |
|---------|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|

| MODULE G2: ROLE IN HOUSEHOLD DECISION-MAKING AROUND PRODUCTION AND INCOME GENERATION                                                                               |                             |                                                                                                                                                                                      |                                                                                                                                                                                                        |                                                                                                                                                                             |                                                                                                                                          |                                                                                                                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| HOUSEHOLD IDENTIFICATION (IN DATA FILE, EACH SUB-MODULE (G2-G6) MUST BE LINKED WITH HH AND RESPONDENT ID                                                           |                             |                                                                                                                                                                                      |                                                                                                                                                                                                        |                                                                                                                                                                             |                                                                                                                                          |                                                                                                                             |
| RESPONDENT ID CODE                                                                                                                                                 |                             |                                                                                                                                                                                      |                                                                                                                                                                                                        |                                                                                                                                                                             |                                                                                                                                          |                                                                                                                             |
| “Now I’d like to ask you some questions about your participation in certain types of work activities and on making decisions on various aspects of household life” |                             | Did you yourself participate in [ACTIVITY] in the past 12 months (that is, during the last [one/two] cropping seasons), from [PRESENT MONTH] last year to [PRESENT MONTH] this year? | When decisions are made regarding [ACTIVITY], who is it that normally takes the decision?<br><br><b>CIRCLE <u>ALL</u> APPLICABLE</b><br><br><b>IF THE RESPONSE IS SELF ONLY SKIP TO QUESTION G2.05</b> | How much input did you have in making decisions about [ACTIVITY]?<br><b>USE DECISION CODES FOR G2.03/G2.05; IF NO DECISION MADE, ENTER 98 AND MOVE TO THE NEXT ACTIVITY</b> | To what extent do you feel you can make your own personal decisions regarding [ACTIVITY] if you want(ed) to?<br><b>CIRCLE <u>ONE</u></b> | How much input did you have in decisions on the use of income generated from [ACTIVITY]<br><b>USE CODES FOR G2.03/G2.05</b> |
| <b>ACTIVITY CODE</b>                                                                                                                                               | <b>ACTIVITY DESCRIPTION</b> | <b>G2.01</b>                                                                                                                                                                         | <b>G2.02</b>                                                                                                                                                                                           | <b>G2.03</b>                                                                                                                                                                | <b>G2.04</b>                                                                                                                             | <b>G2.05</b>                                                                                                                |

|          |                                                                                                                                    |                                      |                                                                                                                                                                  |  |                                                                                  |  |
|----------|------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------------------------------------------------|--|
| <b>A</b> | Food crop farming:<br>These are crops that<br>are grown primarily for<br>household food<br>consumption (tomato,<br>onion, cabbage) | YES 1<br>NO 2 →<br><i>ACTIVITY B</i> | SELF.....<br>.....1<br>SPOUSE.....<br>.....2<br>OTHER HH<br>MEMBER.....3<br>OTHER NON-HH<br>MEMBER.....4<br>NOT<br>APPLICABLE.....<br>.98 → <i>NEXT ACTIVITY</i> |  | NOT AT ALL 1<br>SMALL<br>EXTENT 2<br>MEDIUM<br>EXTENT 3<br>TO A HIGH<br>EXTENT 4 |  |
| <b>B</b> | Cash crop farming:<br>These are crops that<br>are grown primarily for<br>sale in the market                                        | YES 1<br>NO 2 →<br><i>ACTIVITY C</i> | SELF.....<br>.....1<br>SPOUSE.....<br>.....2<br>OTHER HH                                                                                                         |  | NOT AT ALL 1<br>SMALL<br>EXTENT 2<br>MEDIUM<br>EXTENT 3                          |  |
| <b>C</b> | Livestock raising                                                                                                                  | YES 1<br>NO 2 →<br><i>ACTIVITY D</i> | SELF.....<br>.....1<br>SPOUSE.....<br>.....2<br>OTHER HH<br>MEMBER.....3<br>OTHER NON-HH<br>MEMBER.....4<br>NOT<br>APPLICABLE.....<br>.98 → <i>NEXT ACTIVITY</i> |  | NOT AT ALL 1<br>SMALL<br>EXTENT 2<br>MEDIUM<br>EXTENT 3<br>TO A HIGH<br>EXTENT 4 |  |



|                      |                                                                                                                          |                                                                                                                                       |                                                                                                                                                                                    |                                                                                                                    |                                                                                                                                       |                                                                                                                     |
|----------------------|--------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
|                      |                                                                                                                          | Did you yourself participate in [ACTIVITY] in the past 12 months (that is, during the last [one/two] cropping seasons), from [PRESENT | When decisions are made regarding [ACTIVITY], who is it that normally takes the decision?<br><b>CIRCLE ALL APPLICABLE;<br/>IF THE RESPONSE IS SELF ONLY SKIP TO QUESTION G2.05</b> | How much input did you have in making decisions about [ACTIVITY]?<br><br><b>USE DECISION CODES FOR G2.03/G2.05</b> | To what extent do you feel you can make your own personal decisions regarding [ACTIVITY] if you want(ed) to?<br><br><b>CIRCLE ONE</b> | How much input did you have in decisions on the use of income generated from [ACTIVITY]<br><br><b>USE CODES FOR</b> |
| <b>ACTIVITY CODE</b> | <b>ACTIVITY DESCRIPTION</b>                                                                                              | <b>G2.01</b>                                                                                                                          | <b>G2.02</b>                                                                                                                                                                       | <b>G2.03</b>                                                                                                       | <b>G2.04</b>                                                                                                                          | <b>G2.05</b>                                                                                                        |
| <b>E</b>             | Wage and salary employment: This could be work that is paid for in cash or in-kind, including both agriculture and other | YES 1<br>NO 2<br>→<br><i>ACTIVITY F</i>                                                                                               | SELF.....1<br>.....1<br>SPOUSE.....2<br>.....2<br>OTHER HH MEMBER.....3                                                                                                            |                                                                                                                    | NOT AT ALL 1<br>SMALL EXTENT 2<br>MEDIUM EXTENT 3<br>TO A HIGH                                                                        |                                                                                                                     |
| <b>F</b>             | Beekeeping                                                                                                               | YES 1<br>NO 2<br>→<br><i>ACTIVITY G</i>                                                                                               | SELF.....1<br>.....1<br>SPOUSE.....2<br>.....2<br>OTHER HH MEMBER.....3<br>OTHER NON-HH MEMBER.....4<br>NOT APPLICABLE.....<br>98 → <i>NEXT ACTIVITY</i>                           |                                                                                                                    | NOT AT ALL 1<br>SMALL EXTENT 2<br>MEDIUM EXTENT 3<br>TO A HIGH EXTENT 4                                                               |                                                                                                                     |

|          |                                                                                            |  |                                                                                                                                                                 |  |                                                                                                       |  |
|----------|--------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------|--|
| <b>G</b> | Major household expenditures (such as a bicycles, land, bajaj)                             |  | SELF.....<br>.....1<br>SPOUSE.....<br>.....2<br>OTHER HH<br>MEMBER.....3<br>OTHER NON-HH<br>MEMBER.....4<br>NOT<br>APPLICABLE.....<br>98 → <i>NEXT ACTIVITY</i> |  | NOT AT ALL... 1<br>SMALL<br>EXTENT ..... 2<br>MEDIUM<br>EXTENT ..... 3<br>TO A HIGH<br>EXTENT ..... 4 |  |
| <b>H</b> | Minor household expenditures (such as food for daily consumption or other household needs) |  | SELF.....<br>.....1<br>SPOUSE.....<br>.....2<br>OTHER HH<br>MEMBER.....3<br>OTHER NON-HH<br>MEMBER.....4<br>NOT<br>APPLICABLE.....<br>98 → <i>MODULE G3(A)</i>  |  | NOT AT ALL... 1<br>SMALL<br>EXTENT ..... 2<br>MEDIUM<br>EXTENT ..... 3<br>TO A HIGH<br>EXTENT ..... 4 |  |

**G2.03/G2.05 DECISION CODES:**

|                                         |    |
|-----------------------------------------|----|
| NO INPUT OR INPUT IN FEW DECISIONS..... | 01 |
| INPUT INTO SOME DECISIONS.....          | 02 |
| INPUT INTO MOST OR ALL DECISIONS.....   | 03 |
| NO DECISION MADE .....                  | 98 |

MODULE G3(A): ACCESS TO PRODUCTIVE CAPITAL

|                                                                                                                                      |                                                                         |                                                          |                                                                 |
|--------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|----------------------------------------------------------|-----------------------------------------------------------------|
| “Now I’d like to ask you about your household’s access to and ownership of a number of items that could be used to generate income.” |                                                                         | Does anyone in your household currently have any [ITEM]? | Do you own any of the item?<br><br><b>CIRCLE ALL APPLICABLE</b> |
| <b>PRODUCTIVE CAPITAL</b>                                                                                                            |                                                                         | <b>G3.01</b>                                             | <b>G3.02</b>                                                    |
| <b>A</b>                                                                                                                             | Agricultural land (pieces/plots)                                        | YES.....1<br>NO.....2 → <i>ITEM B</i>                    | YES, SOLELY 1<br>YES, JOINTLY 2<br>NO 3                         |
| <b>B</b>                                                                                                                             | Large livestock (oxen, cattle, horses, donkeys)                         | YES.....1<br>NO.....2 → <i>ITEM C</i>                    | YES, SOLELY 1<br>YES, JOINTLY 2<br>NO 3                         |
| <b>C</b>                                                                                                                             | Small livestock (goats, pigs, sheep)                                    | YES.....1<br>NO.....2 → <i>ITEM D</i>                    | YES, SOLELY 1<br>YES, JOINTLY 2<br>NO 3                         |
| <b>D</b>                                                                                                                             | Chickens                                                                | YES.....1<br>NO.....2 → <i>ITEM E</i>                    | YES, SOLELY 1<br>YES, JOINTLY 2<br>NO 3                         |
| <b>E</b>                                                                                                                             | Beekeeping equipment                                                    | YES.....1<br>NO.....2 → <i>ITEM F</i>                    | YES, SOLELY 1<br>YES, JOINTLY 2<br>NO 3                         |
| <b>F</b>                                                                                                                             | Farm equipment (non-mechanized: hand tools, animal-drawn plough)        | YES.....1<br>NO.....2 → <i>ITEM G</i>                    | YES, SOLELY 1<br>YES, JOINTLY 2<br>NO 3                         |
| <b>G</b>                                                                                                                             | Farm equipment (mechanized: tractor-plough, power tiller, treadle pump) | YES.....1<br>NO.....2 → <i>ITEM H</i>                    | YES, SOLELY 1<br>YES, JOINTLY 2<br>NO 3                         |

|                                                                                                                                      |                                                                                                                                 |                                                          |                                                                 |
|--------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|-----------------------------------------------------------------|
| “Now I’d like to ask you about your household’s access to and ownership of a number of items that could be used to generate income.” |                                                                                                                                 | Does anyone in your household currently have any [ITEM]? | Do you own any of the item?<br><br><b>CIRCLE ALL APPLICABLE</b> |
| <b>PRODUCTIVE CAPITAL</b>                                                                                                            |                                                                                                                                 | <b>G3.01</b>                                             | <b>G3.02</b>                                                    |
| <b>H</b>                                                                                                                             | Nonfarm business equipment (solar panels used for recharging, sewing machine, brewing equipment, fryers)                        | YES.....1<br>NO.....2 → <i>ITEM I</i>                    | YES, SOLELY 1<br>YES, JOINTLY 2<br>NO 3                         |
| <b>I</b>                                                                                                                             | House or other structures (storage houses)                                                                                      | YES.....1<br>NO.....2 → <i>ITEM J</i>                    | YES, SOLELY 1<br>YES, JOINTLY 2<br>NO 3                         |
| <b>J</b>                                                                                                                             | Large consumer durables (refrigerator, TV, sofa, grinding mill, bed, generator, bureau (for storing utensils, household goods)) | YES.....1<br>NO.....2 → <i>ITEM K</i>                    | YES, SOLELY 1<br>YES, JOINTLY 2<br>NO 3                         |
| <b>K</b>                                                                                                                             | Small consumer durables (cookware, torch)                                                                                       | YES.....1<br>NO.....2 → <i>ITEM L</i>                    | YES, SOLELY 1<br>YES, JOINTLY 2<br>NO 3                         |
| <b>L</b>                                                                                                                             | Cell phone                                                                                                                      | YES.....1<br>NO.....2 → <i>ITEM M</i>                    | YES, SOLELY 1<br>YES, JOINTLY 2<br>NO 3                         |
| <b>M</b>                                                                                                                             | Other land not used for agricultural purposes (pieces/plots, residential or commercial land)                                    | YES.....1<br>NO.....2 → <i>ITEM N</i>                    | YES, SOLELY 1<br>YES, JOINTLY 2<br>NO 3                         |
| <b>N</b>                                                                                                                             | Means of transportation (bicycle, motorcycle, car, animal such as donkey)                                                       | YES.....1<br>NO.....2 → <i>MODULE G3(B)</i>              | YES, SOLELY 1<br>YES, JOINTLY 2<br>NO 3                         |

|                                                                                                                                      |                                        |                                                          |                                                                 |
|--------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|----------------------------------------------------------|-----------------------------------------------------------------|
| “Now I’d like to ask you about your household’s access to and ownership of a number of items that could be used to generate income.” |                                        | Does anyone in your household currently have any [ITEM]? | Do you own any of the item?<br><br><b>CIRCLE ALL APPLICABLE</b> |
| <b>PRODUCTIVE CAPITAL</b>                                                                                                            |                                        | <b>G3.01</b>                                             | <b>G3.02</b>                                                    |
|                                                                                                                                      | ONLY if use solely for transportation) |                                                          |                                                                 |

## MODULE G3(B): ACCESS TO CREDIT

|                                                                                                                     |                                     |                                                                                                                     |                                                                                                                                 |                                                                                                                                            |                                                                                                                                                                                  |
|---------------------------------------------------------------------------------------------------------------------|-------------------------------------|---------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| “Next I’d like to ask about your household’s experience with borrowing money or other items in the past 12 months.” |                                     | Would you or anyone in your household be able to take a loan or borrow cash/in-kind from [SOURCE] if you wanted to? | Has anyone in your household taken any loans or borrowed cash/in-kind from [SOURCE] in the past 12 months?<br><b>CIRCLE ONE</b> | Who made the decision to borrow from [SOURCE] most of the time?<br><b>CIRCLE ALL APPLICABLE</b><br><br><b>PROBE: Is there anyone else?</b> | Who makes the decision about what to do with the money/ item borrowed from [SOURCE] most of the time?<br><b>CIRCLE ALL APPLICABLE</b><br><br><b>PROBE: Is there anyone else?</b> |
| <b>LENDING SOURCE NAMES</b>                                                                                         |                                     | <b>G3.05</b>                                                                                                        | <b>G3.06</b>                                                                                                                    | <b>G3.07</b>                                                                                                                               | <b>G3.08</b>                                                                                                                                                                     |
| <b>A</b>                                                                                                            | Non-governmental organization (NGO) | YES.....1<br>NO.....2 → <i>NEXT SOURCE</i><br>MAYBE.....3                                                           | YES, CASH 1<br>YES, IN-KIND 2<br>YES, CASH AND IN-KIND 3<br>NO 4 <i>NEXT SOURCE</i><br>DON’T KNOW 97                            | SELF 1<br>SPOUSE 2<br>OTHER HH MEMBER 3<br>OTHER NON-HH MEMBER 4<br>NOT APPLICABLE 98                                                      | SELF 1<br>SPOUSE 2<br>OTHER HH MEMBER 3<br>OTHER NON-HH MEMBER 4<br>NOT APPLICABLE.....<br>...98                                                                                 |

|          |                                               |                                                           |                                                                                                      |                                                                                       |                                                                                                  |
|----------|-----------------------------------------------|-----------------------------------------------------------|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| <b>B</b> | Formal lender<br>(bank/financial institution) | YES.....1<br>NO.....2 → <i>NEXT SOURCE</i><br>MAYBE.....3 | YES, CASH 1<br>YES, IN-KIND 2<br>YES, CASH AND IN-KIND 3<br>NO 4 <i>NEXT SOURCE</i><br>DON'T KNOW 97 | SELF 1<br>SPOUSE 2<br>OTHER HH MEMBER 3<br>OTHER NON-HH MEMBER 4<br>NOT APPLICABLE 98 | SELF 1<br>SPOUSE 2<br>OTHER HH MEMBER 3<br>OTHER NON-HH MEMBER 4<br>NOT APPLICABLE.....<br>...98 |
| <b>C</b> | Informal lender                               | YES.....1<br>NO.....2 → <i>NEXT SOURCE</i><br>MAYBE.....3 | YES, CASH 1<br>YES, IN-KIND 2<br>YES, CASH AND IN-KIND 3<br>NO 4 <i>NEXT SOURCE</i><br>DON'T KNOW 97 | SELF 1<br>SPOUSE 2<br>OTHER HH MEMBER 3<br>OTHER NON-HH MEMBER 4<br>NOT APPLICABLE 98 | SELF 1<br>SPOUSE 2<br>OTHER HH MEMBER 3<br>OTHER NON-HH MEMBER 4<br>NOT APPLICABLE.....<br>...98 |
| <b>D</b> | Friends or relatives                          | YES.....1<br>NO.....2 → <i>NEXT SOURCE</i><br>MAYBE.....3 | YES, CASH 1<br>YES, IN-KIND 2<br>YES, CASH AND IN-KIND 3<br>NO 4 <i>NEXT SOURCE</i><br>DON'T KNOW 97 | SELF 1<br>SPOUSE 2<br>OTHER HH MEMBER 3<br>OTHER NON-HH MEMBER 4<br>NOT APPLICABLE 98 | SELF 1<br>SPOUSE 2<br>OTHER HH MEMBER 3<br>OTHER NON-HH MEMBER 4<br>NOT APPLICABLE.....<br>...98 |
| <b>E</b> | Group based micro-finance or lending          | YES.....1<br>NO.....2 → <i>NEXT SOURCE</i><br>MAYBE.....3 | YES, CASH 1<br>YES, IN-KIND 2<br>YES, CASH AND IN-KIND 3<br>NO 4 <i>NEXT SOURCE</i><br>DON'T KNOW 97 | SELF 1<br>SPOUSE 2<br>OTHER HH MEMBER 3<br>OTHER NON-HH MEMBER 4<br>NOT APPLICABLE 98 | SELF 1<br>SPOUSE 2<br>OTHER HH MEMBER 3<br>OTHER NON-HH MEMBER 4<br>NOT APPLICABLE.....<br>...98 |

|          |                                                         |                                                           |                                                                                                    |                                                                                       |                                                                                           |
|----------|---------------------------------------------------------|-----------------------------------------------------------|----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| <b>F</b> | Informal credit/savings groups such as EQUB, IDIR, etc. | YES.....1<br>NO.....2 → <i>NEXT SOURCE</i><br>MAYBE.....3 | YES, CASH 1<br>YES, IN-KIND 2<br>YES, CASH AND IN-KIND 3<br>NO 4 <i>MODULE G4</i><br>DON'T KNOW 97 | SELF 1<br>SPOUSE 2<br>OTHER HH MEMBER 3<br>OTHER NON-HH MEMBER 4<br>NOT APPLICABLE 98 | SELF 1<br>SPOUSE 2<br>OTHER HH MEMBER 3<br>OTHER NON-HH MEMBER 4<br>NOT APPLICABLE.....98 |
|----------|---------------------------------------------------------|-----------------------------------------------------------|----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|

## MODULE G5: GROUP MEMBERSHIP

|                                                                                                                        |                                                              |                                                        |                                           |
|------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|--------------------------------------------------------|-------------------------------------------|
| “Now I’m going to ask you about groups in the community. These can be either formal or informal and customary groups.” |                                                              | Is there a [GROUP] in your community?                  | Are you an active member of this [GROUP]? |
|                                                                                                                        | <b>GROUP CATEGORIES</b>                                      | <b>G5.03</b>                                           | <b>G5.04</b>                              |
| <b>A</b>                                                                                                               | Agricultural / livestock group (including marketing groups)  | YES ...1<br>NO 2 ↗ <i>GROUP B</i><br>DON'T KNOW.....97 | YES 1<br>NO 2                             |
| <b>B</b>                                                                                                               | Health/well-being group                                      | YES ...1<br>NO 2 ↗ <i>GROUP C</i><br>DON'T KNOW.....97 | YES 1<br>NO 2                             |
| <b>C</b>                                                                                                               | Forest users’ group                                          | YES ...1<br>NO 2 ↗ <i>GROUP D</i><br>DON'T KNOW.....97 | YES 1<br>NO 2                             |
| <b>D</b>                                                                                                               | Credit or microfinance group                                 | YES ...1<br>NO 2 ↗ <i>GROUP E</i><br>DON'T KNOW.....97 | YES 1<br>NO 2                             |
| <b>E</b>                                                                                                               | Mutual help or insurance group (including EKUB, IDIR, etc.,) | YES ...1<br>NO 2 ↗ <i>GROUP F</i>                      | YES 1<br>NO 2                             |

|          |                                                                                                                                        |                                                             |               |
|----------|----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|---------------|
|          |                                                                                                                                        | DON'T KNOW.....97                                           |               |
| <b>F</b> | Trade and business association group                                                                                                   | YES ...1<br>NO 2      ↗ <i>GROUP G</i><br>DON'T KNOW.....97 | YES 1<br>NO 2 |
| <b>G</b> | Civic groups (kebele communities, improving community) or charitable group (helping others)                                            | YES ...1<br>NO 2      ↗ <i>GROUP H</i><br>DON'T KNOW.....97 | YES 1<br>NO 2 |
| <b>H</b> | Religious group (can also refer to church or mosque in community)                                                                      | YES ...1<br>NO 2      ↗ <i>GROUP J</i><br>DON'T KNOW.....97 | YES 1<br>NO 2 |
| <b>I</b> | Other [women's/men's] group (only if it does not fit into one of the other categories) (read gender that matches gender of respondent) | YES ...1<br>NO 2      ↗ <i>GROUP K</i><br>DON'T KNOW.....97 | YES 1<br>NO 2 |
| <b>J</b> | Other (SPECIFY)_____                                                                                                                   | YES ...1<br>NO 2<br>DON'T KNOW.....97                       | YES 1<br>NO 2 |

#### SECTION F (Dimension 5): Time allocation

Enumerator: The purpose of this module is to get an idea about women's and men's time spent in both work and leisure activities and their satisfaction with their time use.

**F01:** Please record a log of the activities for the individual in the last complete 24 hours (starting yesterday morning at 4 am, finishing 3 am of the current day). The time intervals are marked in 15 min intervals and one to two activities can be marked for each time period by drawing a line through that activity. If two activities are marked, they should be distinguished with a P for the primary activity and S for the secondary activity written next to the lines. Please administer using the protocol in the enumeration manual.

#### F01. Continued

## SECTION F (Dimension 5): Time allocation, CONTINUED

| No.        | Question                                                                                                                      | Response | Response options/Instructions                                                   |
|------------|-------------------------------------------------------------------------------------------------------------------------------|----------|---------------------------------------------------------------------------------|
| <b>F02</b> | Was yesterday a holiday or nonworking day?                                                                                    |          | Yes 1<br>No 2                                                                   |
| <b>F03</b> | Regarding the amount of sleep you got last night, was that:<br>[READ RESPONSES]:                                              |          | Less than average 1<br>Average 2<br>More than average 3                         |
| <b>F04</b> | During the last four weeks, how many days of your primary daily activities did you miss because of poor health?               |          | Enter number of days [0-28]                                                     |
| <b>F05</b> | Do you suffer from a chronic disability? (Ex/ diabetes, asthma, hypertension, handicapped, deafness, etc.)                    |          | Yes 1<br>No 2                                                                   |
| <b>F06</b> | In the last 24 hours did you work (at home or outside the home) more than usual, about the same as usual or less than usual?" |          | More than usual.....1<br>About the same as usual.....2<br>Less than usual.....3 |

## APPENDIX D: Cognitive Debriefing Interview Guide

Formative Qualitative Research for the Internal Validation of the  
Women's Empowerment in Index (WEAI) in Ethiopia  
PRINCIPAL INVESTIGATOR: MARION MIN-BARRON, MS/MPH

### COGNITIVE DEBRIEFING GUIDE

*This cognitive debriefing guide is designed to assess how respondents interpret the original WEAI survey and how relevant they felt the question were to their lives/beliefs/culture.*

#### INSTRUCTIONS TO RESPONDENT:

In order to understand how well the original WEAI is interpreted and if any improvements could be made for the specific context of Ethiopia, I am going to ask you the survey question as well as some more questions about the meaning of certain words or phrases.

| No.                                                                                 | QUESTION                                                                                                                                                                          | NOTES/ANSWER OPTIONS                                                                                                                                                                           |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>MODULE B: Role in HH decision-making around production and income generation</b> |                                                                                                                                                                                   |                                                                                                                                                                                                |
| WB01                                                                                | Did you participate in food crop farming (crops that are grown primarily for household food consumption) in the past 12 months (that is during the last 1 or 2 cropping seasons)? | ANSWER: If YES, continue to WQ2. If NO, continue to Q1.                                                                                                                                        |
| WB02                                                                                | How much involvement did you have in making decisions about food crop farming? (ANSWER in Code 1)                                                                                 | No input ..... 1<br>Input into very few decisions ..... 2<br>Input into some decisions ... 3<br>Input into most decisions .... 4<br>Input into all decisions..... 5<br>No decision made..... 6 |
| WB03                                                                                | How much involvement did you have in decisions on the use of income generated from food crop farming?                                                                             |                                                                                                                                                                                                |
|                                                                                     | What do you understand by 'participate'?                                                                                                                                          |                                                                                                                                                                                                |

|                                               |                                                                                                                                    |                                                                                                                                |
|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
|                                               | When does the level of ‘participate’ differ?                                                                                       |                                                                                                                                |
|                                               | Is it consistent during all times of the year? If no, how does it differ between different seasons?                                |                                                                                                                                |
|                                               | What types of factors could contribute/hinder the level of participation?                                                          |                                                                                                                                |
|                                               | What do you understand by ‘making decisions’?                                                                                      |                                                                                                                                |
|                                               | How comfortable do you feel in expressing a difference in opinion?                                                                 |                                                                                                                                |
|                                               | What are the outcomes after expressing a difference in opinions?                                                                   |                                                                                                                                |
|                                               |                                                                                                                                    |                                                                                                                                |
| <b>MODULE C: Access to productive capital</b> |                                                                                                                                    |                                                                                                                                |
| WC01a                                         | Does anyone in your household currently have any small livestock (goats, pigs, sheep)?                                             |                                                                                                                                |
|                                               | What do you understand by “own”?                                                                                                   |                                                                                                                                |
| WC01b                                         | How many small livestock does your household currently have?                                                                       |                                                                                                                                |
| WC02                                          | Who would you say owns most of the small livestock?                                                                                | Self ..... 1<br>Partner/Spouse ..... 2<br>Self and partner/spouse jointly 3                                                    |
| WC04                                          | Who would you say can decide whether to sell small livestock most of the time?                                                     | Other household member .....4<br>Self and other household member(s) ...5<br>Partner/Spouse and other household member(s).....6 |
| WC07                                          | Who would you say would keep the majority of small livestock in the case a marriage is dissolved because of divorce or separation? |                                                                                                                                |

|      |                                                                                                                                           |                                                                                                                                                                                                                                                                                                         |
|------|-------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      | Is this particular to your family or would you say this is common in the community?                                                       | Someone (or group of people) outside the household.....7                                                                                                                                                                                                                                                |
| WC08 | Who would you say would keep the majority of small livestock in the case a marriage is dissolved because of death of your partner/spouse? | Self and other outside people.....8<br>Partner/Spouse and other outside people.....9                                                                                                                                                                                                                    |
| WC09 | Who contributes most to decisions regarding a new purchase of small livestock?                                                            | Self, partner/spouse and other outside people.....10                                                                                                                                                                                                                                                    |
| WC10 | Has anyone in your household taken any loans or borrowed cash/in-kind from friends or relatives in the past 12 months?                    | Yes, cash..... 1<br>Yes, in-kind.....2<br>Yes, cash and in-kind 3<br>No.....4 >> C13B<br>Don't know.....5 >> C13B                                                                                                                                                                                       |
| WC11 | Who made the decision to borrow from friends/relatives?                                                                                   | Self.....1<br>Partner/Spouse ..... 2<br>Self and partner/spouse jointly 3<br>Other household member.... 4                                                                                                                                                                                               |
| WC12 | Who makes the decision about what to do with the money borrowed from family/relatives                                                     | Self and other household member(s)..5<br>Partner/Spouse and other household member(s).....6<br>Someone (or group of people) outside the household.....7<br>Self and other outside people.....8<br>Partner/Spouse and other outside people.....9<br>Self, partner/spouse and other outside people.....10 |

|                                    |                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                            |
|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WC13                               | If more credit had been available from family/relatives, would you have used it?                                                       |                                                                                                                                                                                                                                                                                                                                            |
| WC13B                              | Did you want to borrow or get a loan from family/relatives in the last 12 months but did not?                                          |                                                                                                                                                                                                                                                                                                                                            |
| WC14                               | Have you ever met with an agricultural extension worker or livestock/fisheries extension worker in the past 12 months?                 |                                                                                                                                                                                                                                                                                                                                            |
|                                    | What do you understand by 'met'? What are the potential durations, settings and types of interactions of the meeting?                  |                                                                                                                                                                                                                                                                                                                                            |
| WC15                               | How many times did you meet with the agricultural extension worker or livestock/fisheries worker in the past 12 months?                |                                                                                                                                                                                                                                                                                                                                            |
| WC16                               | The last time you met with an extension worker, were they male or female?                                                              |                                                                                                                                                                                                                                                                                                                                            |
|                                    |                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                            |
|                                    |                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                            |
| <b>MODULE G: Decision - making</b> |                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                            |
| WG01                               | When decisions are made regarding what types of crops to grow for agricultural production, who is it that normally makes the decision? | Main male or husband ..... 1<br>Main female or wife ..... 2<br>Husband and wife jointly ..... 3<br>Someone else in the household ..... 4<br>Jointly with someone else inside the household ..... 5<br>Jointly with someone else outside the household ..... 6<br>Someone outside the household/other ..... 7<br>Decision not made ..... 98 |

|       |                                                                                                                                                                                                                                                          |                                                                                           |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| WG02  | To what extent do you feel you can make your own personal decisions regarding these aspects of household life if you wanted to?                                                                                                                          | NOT AT ALL .....1<br>SMALL EXTENT.....2<br>MEDIUM EXTENT.....3<br>TO A HIGH EXTENT.....4  |
|       |                                                                                                                                                                                                                                                          |                                                                                           |
|       | <i>READ: This set of questions is very important. I am going to give you some reasons why you act as you do. You might have several reasons for doing what you do and there is no right or wrong answer. Please tell me how true it would be to say:</i> |                                                                                           |
| WG03A | My actions in the types of crops to grow for agricultural production are determined by the situation. I don't really have an option.                                                                                                                     | Never true ..... 1<br>Not very true ..... 2<br>Somewhat true..... 3<br>Always true..... 4 |
| WG03  | My actions in whether or not to use family planning to space or limit births are partly because I will get in trouble with someone if I act differently.                                                                                                 | Decision not made      98                                                                 |
|       | Who could you potentially get in trouble with if you acted differently?                                                                                                                                                                                  |                                                                                           |
|       | What is your understanding of "get in trouble"?<br>What are some examples of how this disapproval would be expressed?                                                                                                                                    |                                                                                           |
| WG04  | Regarding taking crops to the market (or not), I do what I do so others don't think poorly of me.                                                                                                                                                        | Never true ..... 1<br>Not very true ..... 2<br>Somewhat true..... 3<br>Always true..... 4 |
| WG05  | Regarding taking crops to the market (or not), I do what I do because I personally think it is the right thing to do.                                                                                                                                    | Decision not made      98                                                                 |

|  |                                                                   |  |
|--|-------------------------------------------------------------------|--|
|  | What is your understanding of “the right thing to do”?            |  |
|  | What factors help you know whether it is “the right thing to do”? |  |
|  |                                                                   |  |

# APPENDIX E: A-WEAI Summary Statistics, Scores and 5DE Decomposition

**Table 5: A-WEAI Domain Variable Summary Statistics**

| Domain     | Domain Indicator                 | Domain Variables                                                                                                                          | U or C* | Female         |     | Male           |     | Household <sup>a</sup> |     |
|------------|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|---------|----------------|-----|----------------|-----|------------------------|-----|
|            |                                  |                                                                                                                                           |         | Mean (SD) or % | n   | Mean (SD) or % | n   | Mean (SD) or %         | n   |
| Production | Input in productive decisions    | Participated in at least 2 agricultural activities <sup>b</sup>                                                                           | U       | 91.6%          | 274 | 95.0%          | 284 |                        |     |
|            |                                  | Has input in at least some decisions related to at least two [activities] <sup>b</sup>                                                    | C       | 67.6%          | 202 | 95.0%          | 284 |                        |     |
|            |                                  | Feels like he/she could make decisions regarding at least two [activities] if wanted to, to at least a medium extent <sup>b</sup>         | C       | 60.5%          | 286 | 88.1%          | 293 |                        |     |
| Resources  | Ownership of assets              | Household currently owns at least one [asset] <sup>c</sup> that is not a minor asset                                                      | U       |                |     |                |     | 99.7%                  | 299 |
|            |                                  | No. of owned [assets] <sup>c</sup> by household that were not minor assets <sup>d</sup>                                                   | U       | 5.8 (2.0)      | 299 | 7.0 (2.1)      | 299 |                        |     |
|            |                                  | Owns at least one [asset] <sup>c</sup> either solely or jointly                                                                           | C       | 99.3%          | 298 | 100%           | 298 |                        |     |
|            | Access to and decision on credit | Household did not have any access to any [source] <sup>e</sup> of credit                                                                  | U       |                |     |                |     | 17.1%                  | 299 |
|            |                                  | Household has taken loans from at least one [source] <sup>d</sup> in the past 12 months                                                   | U       |                |     |                |     | 60.5%                  | 248 |
|            |                                  | Alone or jointly made at least one decision related to borrowing from at least one [source] <sup>e</sup>                                  | C       | 90.0%          | 150 | 100.0%         | 142 |                        |     |
|            |                                  | Alone or jointly made at last one decision on what to do what the money borrowed from at least one [source] <sup>e</sup> most of the time | C       | 91.3%          | 150 | 99.3%          | 142 |                        |     |
| Income     | Control over income              | Participates in at least one [activity] <sup>b</sup>                                                                                      | U       | 97.7%          | 299 | 99.7%          | 299 |                        |     |
|            |                                  | Had at least some input in at least one decision regarding income generated from [activity] <sup>b</sup>                                  | C       | 93.1%          | 291 | 99.7%          | 297 |                        |     |

|            |                  |                                                                                                                                     |     |           |     |           |     |       |     |
|------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------|-----|-----------|-----|-----------|-----|-------|-----|
|            |                  | Felt like he/she could have made decisions (if wanted) regarding at least one [activity] <sup>b</sup> , to at least a medium extent | C   | 98.0%     | 299 | 99.7%     | 299 |       |     |
| Leadership | Group membership | Household had access to at least one type of [group] <sup>f</sup> in the community <sup>f</sup>                                     | U   |           |     |           |     | 99.7% | 298 |
|            |                  | Active member in at least one [group] <sup>f</sup>                                                                                  | C   | 95.3%     | 298 | 98.0%     | 299 |       |     |
| Time       | Workload         | No. of hours spent working in the previous 24 hrs. <sup>g</sup>                                                                     | N/A | 8.1 (3.7) | 288 | 4.9 (6.0) | 276 |       |     |

\* U = Unconditional domain variable, i.e. asked of every respondent vs. C = Conditional domain variable which was asked only if the response to the 1<sup>st</sup> domain variable listed for that domain was 'Yes'

a: all household statistics were derived from female's response regarding household characteristics

b: agricultural activities: food crop farming, cash crop farming, livestock raising, beekeeping

c: assets: agricultural land, large livestock, small livestock, Beekeeping equipment, Farm equipment (non-mechanized), farm equipment (mechanized), nonfarm business equipment, poultry, large durables, cell phone, non-ag land (any), means of transportation

d: Such as cookware or torches

e: credit sources: NGO, formal lender (bank/financial institution), informal lender, friends or relatives, group-based microfinance or lending, informal credit (equib or idir)

f: community group types: agricultural/livestock group, health/well-being group, forest users' group, credit or microfinance group, mutual help or insurance group, trade and business association group, civic or charitable group, religious group, other women/men's group (only if it doesn't fit into one of the other categories)

g: work activities: wage and salary employment, own business work, farming, construction, shopping/getting service, beekeeping, weaving/sewing, textile care, cooking, domestic work, caring for children/adults/elderly, commuting and traveling

**Table 6: A-WEAI Scores**

| Indicator                              | Women       | Men         |
|----------------------------------------|-------------|-------------|
| <b>5DE score</b>                       | <b>0.93</b> | <b>0.99</b> |
| Disempowerment index                   | 0.069       | 0.012       |
| N (number of observations)             | 240         | 217         |
| % of data used                         | 80.26       | 72.56       |
| Disempowered Headcount (%)             | 21.25       | 4.61        |
| Average inadequacy score (%)           | 32.29       | 26.67       |
| <b>GPI score</b>                       | <b>0.97</b> |             |
| No. of women in dual headed households | 203         |             |
| % of data used                         | 67.89       |             |
| % of women with no gender parity       | 21.18       |             |
| Average empowerment gap (%)            | 14.34       |             |
| <b>A-WEAI score</b>                    | <b>0.97</b> |             |

**Table 7: 5DE Decomposition by domain and indicator**

|            |                                  | WOMEN              |                                        |                                                          | MEN                |                                        |                                        |
|------------|----------------------------------|--------------------|----------------------------------------|----------------------------------------------------------|--------------------|----------------------------------------|----------------------------------------|
|            |                                  | Censored headcount | % contribution to disempowerment score | % contribution to disempowerment score (at domain level) | Censored headcount | % contribution to disempowerment score | % contribution to disempowerment score |
| Domain     | Domain Indicator                 |                    |                                        |                                                          |                    |                                        |                                        |
| Production | Input in productive decisions    | 0.08               | 24.59                                  | 24.59                                                    | 0                  | 0                                      | 0                                      |
| Resources  | Ownership of assets              | 0.01               | 2.46                                   | 20.08                                                    | 0                  | 0                                      | 25                                     |
|            | Access to and decision on credit | 0.18               | 17.62                                  |                                                          | 0.05               | 25                                     |                                        |
| Income     | Control over income              | 0.04               | 12.30                                  | 12.30                                                    | 0                  | 0                                      | 0                                      |
| Leadership | Group membership                 | 0.04               | 12.30                                  | 12.30                                                    | 0                  | 0                                      | 0                                      |
| Time       | Workload                         | 0.10               | 30.73                                  | 30.73                                                    | 0.05               | 75                                     | 75                                     |

## APPENDIX E: Summary of A-WEAI variable drop down types/list and domain adequacies

| Domain     | Indicator                            | Drop down type [] | Drop down list                                                                                                                                                                                                                                | Adequacy definition                                                                                                                                                                                                                                                                                                                                                  |
|------------|--------------------------------------|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Production | Input in productive decisions        | activity          | food crop farming, cash crop farming, livestock raising, beekeeping                                                                                                                                                                           | <p>If there are at least 2 types of decisions in which he or she has some input in decisions, makes the decision or feels he/she could make it to a medium extent if he/she wanted to.</p> <p>If does not participate in activity, considered missing.</p>                                                                                                           |
| Resources  | Ownership of assets                  | item              | agricultural land, large livestock, small livestock, Beekeeping equipment, Farm equip (non-mechanized) , farm equip (mechanized), nonfarm business equipment, poultry, large durables, cell phone, non-ag land (any), means of transportation | Adequate if he/she reports having sole or joint ownership of any of the items, conditional on the hh's owning of those assets, conditional that the ownership cannot be limited to one minor asset only (poultry, nonmechanized equipment or small consumer durables. Those who live in hh that do not own any type of asset are considered inadequate on ownership. |
|            | Access to and decisions about credit | source            | NGO, formal lender (bank/financial institution), informal lender, friends or relatives, group-based microfinance or lending, informal credit (equib or idir)                                                                                  | Adequate if he/she makes at least one decision related to credit from at least one source of credit. HHs that do not use any source of credit are considered inadequate.                                                                                                                                                                                             |
| Income     | Control over income                  | Activity          | <p>for g201.g205: food crop farming, cash crop farming, livestock raising, beekeeping</p> <p>g201 and g204: non-farm activities, wage or salary employment, major hh expenditures</p>                                                         | Adequate in at least one of the sub indicators as long as it is not the sub-indicator for making decisions regarding household minor expenditures                                                                                                                                                                                                                    |

|            |                  |                  |                                                                                                                                                                                                                                                                                                                               |                                                                                                                                           |
|------------|------------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| Leadership | Group membership | group            | agricultural/livestock group, health/well-being group, forest users' group, credit or microfinance group, mutual help or insurance group (equib or idir), trade and business association group, civic or charitable group, religious group, other women/men's group (only if it doesn't fit into one of the other categories) | Adequate if an active member of at least one group. If there are no groups in the community, then he/she is inadequate for this indicator |
| Time       | Workload         | Primary activity | wage and salary employment, own business work, farming, construction, shopping/getting service, beekeeping, weaving/sewing, textile care, cooking, domestic work, caring for children/adults/elderly, commuting and traveling                                                                                                 | Adequate if the sum of his/her primary work activities in the past 24 hours do not exceed 10.5 hours                                      |

## CHAPTER 7

### CONCLUSION

Women's contributions have been undervalued and overlooked for much of history. Increasing evidence has shown that empowerment of women can lead to improvements in household food security, child nutrition, education and women's health [25, 97, 193, 229]. Concurrently, the discourse surrounding agricultural development has highlighted women as essential to increasing agricultural production and reducing rural poverty through their role as farmers, laborers and entrepreneurs [7, 230]. Such evidence has led to a general movement in which gender research and analysis has become an integral part of agriculture-nutrition program design and policy formation [231]. However, despite evidence suggesting that women play an important role in improving nutritional outcomes through agriculture, there is a persistent knowledge gap regarding *how* gender influences the relationship between agriculture and nutrition and, therefore, how best to improve nutrition through agriculture via a gender-focused lens. This dissertation attempted to address this knowledge gap within the context of the ENGINE program in rural Ethiopia through three distinct studies.

#### **Summary of findings**

The **Message study** deconstructed the ways in which women and men responded to programmatic behavior change processes affiliated with nutrition-sensitive and nutrition-specific interventions. Through a newly designed framework, the Message Train, the process of behavior change was broken down into six distinct subprocesses. In depth examination of the first three stations of the Message Train (message contact, information sharing and decision-making) found that gender differences in women and men's time allocation practices appeared to influence the likelihood that women and men would be exposed to messages and, if exposed, share them with their spouse. Despite the fact that ENGINE specifically targeted women in several of the project's agricultural program components, men were more likely to have contact with agriculture related messages delivered by community development agents and other government agricultural extension personnel. This was because men were able to step away from their work in the field to attend farmer trainings, where many of the messages were conveyed, whereas women were more constrained in mobility due to household and childcare responsibilities. Furthermore, men within

the Message study were more likely to share nutrition-related agriculture messages with their male neighbors than with spouses, creating an even larger gender gap regarding message access, as the peer-to-peer spread of information circumvented their wives. The tensions women faced in allocating time to agricultural activities versus household/caregiving activities were not unique to this study. In their review of nutritional effects of programs in agriculture, social safety nets, early child development, and schooling, Ruel and Alderman identified women's time allocation as one of six pathways in which agriculture interventions affected nutrition [189]. Due to time spent in income generating activities related to agriculture, women struggled to balance time allocated to agriculture and time allocated to household care and maintenance, child caregiving and leisure. In a cross-country study in Bangladesh, Cambodia, Ghana, Mozambique, and Nepal, Komatsu [38] found that, within poor households, increases in women's agricultural time allocation led to reductions in women's productive work time which led to detrimental nutritional effects, especially for children.

Message type (nutrition specific vs. sensitive) did not seem to be a factor in decision-making for women and men. Nutrition message promotion through the agricultural sector proved to reach men more readily than women, compared to WASH and other nutrition-sensitive type platforms. Because men were well versed and empowered in their level of knowledge regarding agricultural practices, they were more likely to share and adopt nutrition behavior changes that were disseminated through agriculture training sessions. The decision-making process for both women and men was related to the socio-economic status of the household and the input/resource prerequisites for behavior adoption.

The Message study also identified the potentially promising impact of facilitating and promoting communication between women and men within the same household. Focus group discussions suggested that, according to both men and women, level and frequency of communication between spouses was often a key factor in their decision to change their behavior in response to nutrition-sensitive messages. Despite other research that has suggested that members of the family, such as fathers and grandmothers, play an integral role in a mother's decision to exclusively breastfeed [232, 233], the Message study found that, according to women, their adoption of the nutrition-specific message of exclusive breastfeeding did not require message sharing or discussion with spouses. This finding lends support to the conclusion that not only do men and women experience the process of nutrition behavior change differently, particularly during the point of contact and message sharing phase, but also that the specific message itself and the mode of dissemination matters to behavior adoption. Yourkavitch et al.

[234] came to a similar conclusion. After reviewing 28 projects that varied in strategies to engage men in exclusive breastfeeding (EBF) practices, Yourkavitch et al. concluded that the broad application of male engagement to improve EBF practices was not effective and recommended that local gender norms be strongly considered when designing EBF programs [234]. The Message study highlights the danger in making gender-blind assumptions regarding the process of behavior change. Results also suggest that although nutrition programs and their messages are increasingly differentiated as nutrition specific or sensitive, behavior change communication strategies would benefit from focusing on the message itself (rather than the type of program or message).

The **Empowerment study** focused on the identification and comparison of women's and men's emic definitions of empowerment in agriculture and also assessed the emic content validity of the A-WEAI. This qualitative study found that, on several levels, men and women differed in how they defined empowerment in agriculture. At the individual level, empowerment for women meant going against societal norms (such as plowing in the field or speaking up in public meetings) whereas for men, empowerment meant receiving societal recognition because of their alignment with gender norms (such as having physical strength). Culture was a common dimension, mentioned by both genders, and was considered to be a driver of empowerment (for men) *and* disempowerment (for women).

Though both women and men felt that decision-making power was integral to being empowered, the level at which this manifested itself differed. Women tended to articulate empowerment as a process or state on a personal level, describing qualities such as belief in one's own capabilities. Men were more likely to discuss empowerment in terms of relationships with others, often identifying their leadership and facilitation between public and private spheres as part of what it meant to be empowered. This difference was further articulated in the respective relationships with culture. For women empowerment came from breaking social norms whereas for men, empowerment came from maintaining societal norms.

The Empowerment study also compared male and female emic definitions of empowerment to the domains and items that comprise the A-WEAI. Out of all the A-WEAI domains, the emic definitions of empowerment (for both women and men) most closely aligned with the A-WEAI domain of income (which captures level of input in decisions regarding income from selling harvests). The A-WEAI definition of empowerment adequacy for the income domain, however, did not align with study results for both women and men. For example,

according to the A-WEAI, empowerment adequacy is attained by having decision-making input in *any* type of income generating activity (agricultural, non-farm, wage or salary employment). This did not hold true for men in the Empowerment study; only agricultural income activities were discussed. The A-WEAI production domain proved to be a central tenet of men's definition of empowerment in agriculture; men identified themselves as farmers and took pride in their ability to make decisions regarding agricultural practices. The questions measuring the A-WEAI income domain captured certain aspects of how men defined empowerment; several men articulated a sense of empowerment when they made household level decisions regarding expenditure of income. Though the A-WEAI also asks about decision-making power related to non-agriculture-based income, this fact was not reflected in how male respondents in the study defined empowerment. Importantly, women in the study did not find empowerment in *agriculture* to hold meaning for them, despite the fact that this construct forms the basis of the A-WEAI measure. Women identified empowerment in terms of norms and behaviors in broader (or non-agriculturally focused) ways. An empowered woman was one who was brave, multi-tasked and could articulate her desires regarding decision-making in the household. Women did not consider themselves farmers or highlight their engagement in agriculture, as the A-WEAI assumed. This finding is supported by the work of Hennink et al. [201] who interviewed 49 different organizations that focused on women's empowerment. Through their qualitative inquiry, authors concluded that empowerment in the fields of health, economics, spirituality and resource ownership were all interdependent. Attempting to separately define and measure empowerment in any of the five fields led to an incomplete understanding of any individual source of empowerment [201]. This finding raised the question of what potential consequences might arise if an indicator's definition of a construct does not overlap with the respondent's understanding of the very same construct. The misalignment of emic and etic definitions may lead to an inaccurate measurement and provide index scores that mislead policy and programmatic decisions. For example, A-WEAI's inclusion and focus on agriculture in defining empowerment contradicted women's definition of empowerment which was almost never agriculture-specific. Such discordance could lead to women scoring 'lower' on the index since the agriculture related questions could be perceived to be non-applicable to the female respondent. Ethiopian men's emic definitions of empowerment aligned more with the A-WEAI etic ones, compared to women's. This could mean that women would score lower on the index since the index included domains of empowerment (and excluded others) that were not recognized by the female respondents. These results also emphasized the need for definitional clarity in empowerment

research (i.e., how empowerment is defined, how the definition was derived) and reflective thinking in how emic and etic perspectives can converge into a metric that is useful and valid. Indeed, other research has begun to explore the value of this convergence. Tsikata and Darkwah [235] combined objective definitions of empowerment (i.e. the definition used by the researcher) with subjective definitions (i.e. definitions given by the research subjects) and assessed whether Ghanaian women were empowered and what specific contexts enabled this empowerment [235].

The **A-WEAI study** also assessed the index's content validity (but from an etic perspective) as well as its internal reliability. Through a mixed methods approach, this study articulated how content validity should be examined at both a conceptual level (i.e. regarding content relevance and representativeness) and practical level, such as in the proper translation of items. The domains of production and resources appeared to be the most relevant to the etic construct of women's empowerment in agriculture. However, issues such as respondents not understanding terms like 'ownership' in the way that index developers intended and response option confusion affected the performance of the A-WEAI as a valid measurement tool in rural Ethiopia. Within the context of Ethiopian smallholder men and women, experts generally agreed that the A-WEAI did not completely represent all the critical domains of empowerment, neglecting to include domains such as knowledge and access to information. Similarly in Bangladesh, Panday and Baroi [236] found that access to information through information technology was a key component to individuals being able to make their own life choices [236]. Results also suggested that the A-WEAI may be less reliable in discriminating empowerment levels at higher ends of the index score (indicating higher levels of empowerment) and that additional items, such as self-confidence and community influence, may be needed to accurately measure empowerment in the Ethiopian context.

The Empowerment and A-WEAI study found that men and women differ in their definitions of empowerment. These studies, along with the Message study, also identified ways in which communication between genders can potentially represent an effective programmatic window of opportunity. Involving both genders (through spousal dialogue) in the behavior change process can potentially lead to a 'reinforced' pathway on the Message Train, enabling behaviors to be accessed, shared and valued by both the head male and female members of a household. Furthermore, the identification of domains not included in the A-WEAI (but emically considered a part of women's empowerment) points to potential programmatic and policy components that may help increase women's empowerment.

Linked to this is the slow but real impact of gender equality and women's empowerment programming, which according to these studies, is suggested to have both positive and negative effects within the household. While some men were proudly able take on 'women's activities' after exposure to gender equality messages, other men felt fear and tension within the household after such exposure. The level of a community's 'progressiveness' and its effect on women's status and the relationships between men and women has been well researched since the 1990s. Jejeebhoy and Cook [237] found that wives' control over resources was associated with a significantly lower risk of domestic violence in India but the level of risk varied quite dramatically, depending on the geographic location. Higher autonomy in women was much more protective against the risk of domestic violence in the southern state of Tamil Nadu, compared to the northern more culturally conservative state of Uttar Pradesh [237]. More recently Koenig et al. [238] found that in Bangladesh the effect of women's empowerment on domestic violence incidence varied significantly according to sociocultural conditions. Authors concluded that in less conservative areas, community-level measures of women's status were associated with significantly lower risks of violence, "presumably by reinforcing nascent normative changes in gender relations" [238]. This dissertation reaffirms the work of Koenig et al. as it is plausible that within our study samples, gender equality and women's empowerment programming are changing and shaping the way that empowerment is understood by its beneficiaries. Indeed, emic definitions of empowerment may change over time and potentially align closer to etic definitions of empowerment, or perhaps diverge further, depending on personal life experiences and changing gender norms.

### **Strengths and limitations**

A strength of this dissertation is the integration of qualitative and quantitative methods. Alone, both of these types of methods have their weaknesses. Quantitative approaches may overlook contextual and cultural factors, while qualitative research is often criticized for its inability to be generalized or reliable. However, as summarized by Johnson and Turner [239], the fundamental principle of mixed methods is to "collect multiple data using different strategies, approaches, and methods in such a way that the resulting mixture or combination is likely to result in complementary strengths and nonoverlapping weaknesses" [240, p. 18]. Some argue that the resulting research is superior to a monomethod because its findings can be corroborated across different approaches, expand understanding and/or elucidate the divergent aspects of a phenomenon [240]. Creswell [241], a leading expert in mixed methods research, identifies six

main types of mixed methods designs. The A-WEAI study was a combination of sequential transformative design (where the qualitative and quantitative methods were collected at different times with results integrated during analysis) and concurrent triangulation design (where qualitative and quantitative methods were used at the same time). The triangulation of methods provided an in-depth understanding of the ways that the A-WEAI was/was not valid. Specifically, the quantitative methods indicated that all the domains were valid in regard to content. But these methods did not indicate what was potentially missing from the A-WEAI. Through the cognitive debriefing interviews and open-ended expert panel survey questions, domains such as access to information were identified as potential missing, yet salient, components of empowerment. By using both qualitative and quantitative methods, this dissertation offset the individual method weaknesses, allowing for an in-depth and more comprehensive inquiry [242]. The use of both qualitative and quantitative methods allowed this dissertation to have results that not only complemented each other but also, for several findings, appeared to diverge. Within the A-WEAI study, we found that experts in gender and agriculture perceived the index questions to be quite clear whereas respondents of the cognitive debriefing interviews found several questions to be confusing and misinterpreted. It is important to note that throughout this dissertation, the qualitative and quantitative analysis components were given equal priority. These different results were not a shortcoming of the research but rather a contribution to understanding the value of different perspectives in critically informing the development of indices. Tension from qualitative and quantitative methods also emerged with the Empowerment and A-WEAI studies as they presented different results within the context of women's responses. From the Empowerment study, we found that women did not consider agriculture and/or production to be a key component of empowerment. According PCA in the A-WEAI study, however, women appeared to find the production domain quite relevant to the construct of empowerment. Several potential explanations exist for this difference in results. Firstly, the sampled areas for each of these studies did not entirely match. The Empowerment study was conducted in the Amhara and SNNPR regions while the A-WEAI survey was conducted in the Oromiya and SNNPR regions. Although the study designs originally assumed that these areas would be similar in their demographic, health and nutritional profiles, it is possible that cultural and gender norms differed between the Amhara and Oromiya regions and thus led to different understandings of empowerment. These cultural differences in the different regions could have been included in some but not all analyses of the dissertation. But perhaps more likely is a second hypothesis that considers the way the questions were formulated and asked in the two studies. The A-WEAI

survey was etically derived and did not give respondents the opportunity to express their emic understanding of empowerment. Thus, when women answered the A-WEAI survey, they were confined to the topics covered in the A-WEAI (with no option to respond with ‘not applicable’) and in some ways ‘forced’ to adopt the etic definition of empowerment and agree/disagree with said definition. Additionally, the A-WEAI study also found that, based on the interviewing of 8 couples, technical quality of the index questions was not always high (i.e. respondents did not always understand the questions as they were intended). It is plausible that the production domain questions were found to have high technical quality according to our (small sample) but not so with the larger sample of 299 women.

As gender concerns continue to become more ‘mainstream’ in agriculture and nutrition, there is an underlying tension in meeting the technical needs (how to measure empowerment, what are the indicators that demonstrate gender equality) while not losing sight of the greater epistemological questions related to whether empowerment is a construct that can actually be defined for metric purposes and generalized. Inclusion of both qualitative and quantitative methods in this dissertation helped ease this tension. Additionally, the integration of both emic and etic perspectives allowed for this dissertation to capture both expert and program beneficiary perspectives.

A limitation for all three studies was the lack of detailed contextual information in sampled areas. Data on programs other than ENGINE, particularly those working in gender equality and women’s empowerment, would have provided useful context. As articulated in the Literature Review Chapter, these types of data could have provided further insight into the results. Though the studies tried to mitigate this limitation through informal conversations with ENGINE program participants and implementers, the collection of this type of contextual information was not feasible. Another major limitation of this dissertation was the challenge of researching complex, nuanced and sensitive topics such as empowerment and gender. Encouraging men and women to talk and about gender, equality, gender norms, empowerment and their feeling towards all of these constructs was difficult. Translation issues compounded this limitation. In an effort to minimize the effects of this limitation, every study within this dissertation involved significant consultation with local experts, the local research team and pretesting before data collection began. Additionally, it is possible that, within the Empowerment study, there may have been some social desirability bias in the way men expressed enthusiastic support for participation in typically ‘women’s’ tasks, such as cooking, particularly among men exposed to significant SBCC messaging. Finally, some may argue that a true index validation

study would not only examine internal validity (as done in this dissertation) but also external validity which is an assessment of how well the index performs against other ‘gold standard’ or well-established scales purporting to measure the same latent variable/construct. Although establishing external validity is integral to the usefulness and future application of the index, it was intentionally not included in the scope of this dissertation. Though several proxies have been commonly used to measure empowerment, such as socioeconomic status and education level, there is no widely accepted gold standard. This lack of an accepted gold standard makes it difficult to establish external validity as there is no metric to compare the A-WEAI against. Furthermore, though there are hypotheses on how women’s empowerment might relate to other proxy variables, we are not yet able to definitively state the expected strength and direction of association between the A-WEAI and other proxy variables. Without a clear understanding of the nature of the associations we should expect, research that establishes an association between, for example, socioeconomic status and the A-WEAI, actually tells us very little about the external validity of the A-WEAI.

### **Suggestions for future research**

The Message study revealed the spectrum of men’s reactions to gender equality programming. Some men felt fear in whereas other men felt pride in begin able to translate the promoted messages into action. Building on this dissertation’s findings, future research should explore the unintended consequences of gender specific programming, particularly in the agricultural sector. Specifically, studying the effects of gender equality promotion on intrahousehold spousal dynamics (decision-making processes and communication) would be quite relevant. Furthermore, research that tests programmatic assumptions of gender norms, such as what empowerment means to beneficiaries, the benefits of women’s empowerment (to both the woman and the household), and the role that men might play in this type of change would help mitigate any potential unintended effects and also improve desired program impacts. Related to this suggestion, further research that looks at the effects of gender specific programming on *men* can be potentially quite useful in understanding how men can play an integral and beneficial role in improving household nutritional status, food security and general well-being. Additionally, applying and testing the Message Train in other programmatic and geographic settings would not only help assess the wider utility of this new framework but also identify other context-specific gendered assumptions about behavior change processes.

While the Message study highlighted time allocation to household activities as a big contributing barrier to women's engagement with the agricultural sector, the Empowerment and A-WEAI studies indicated, from both from qualitative and quantitative inquiries, that changes in time allocation practices would not necessarily be perceived to affect empowerment status. Future research that refines the understanding of how women perceive time allocation and whether these perceptions influence their understanding of empowerment would be useful for both agricultural program designers and users of the A-WEAI.

Lastly, indices such as the A-WEAI would benefit from further rigorous and transparent validation studies in different contexts, especially in contexts in which the A-WEAI is already implemented. This dissertation found that the A-WEAI domains of income, production and resources to be valid in the Ethiopian setting (to varying degrees). These domains may or may not be relevant to other settings. While there may be universal elements within the construct of empowerment, these elements should be operationalized to be context-specific to also reflect the context-specific nature of empowerment. This operationalization would require adaptation at both the conceptual level and technical level (how questions are posed and what language is used to describe the elements) as well as the consideration for the addition of other domains. In the case of Ethiopia, potential added domains include access to knowledge, individual levels of self-efficacy and bravery and personal skills and power. The A-WEAI developers continue to amend the index and are currently working on the *Pro*-WEAI, which has been advertised as a tool for agricultural developmental projects to assess women's empowerment in a project setting, diagnose areas of women's disempowerment, design strategies to address deficiencies, and monitor project outcomes. This iteration of the WEAI is well intentioned as it meets the needs of different types of agricultural programs, but caution should be placed in using yet another version of an index without comprehensive validation in multiple contexts.

In moving forward with the operationalization of the A-WEAI within the Ethiopian context, this dissertation recommends that the domains of production, resources and income be retained but some adjustments made to reflect the emic interpretations evidenced in this study. These three domains all had high content relevance according to expert judgement and principal component analysis. Empowerment adequacy in the production domain, however, should be defined as having full control over production decision-making, rather than to a medium extent (see Figure 8). Similarly, for the income domain, empowerment adequacy should be defined as having more than 'some input' to reflect our emic related findings that women defined empowerment as having full control of income. For the leadership domain, the domain indicator

should change from ‘group membership’ to ‘community leadership’, to reflect findings from the Empowerment study which suggested that empowerment came from community acknowledgement and translating governmental/programmatic messages into action. We also recommend reinstating questions on public speaking within this domain (found in the original WEAI 1.0 but subsequently dropped) since empowerment through public speaking came up numerous times within our Empowerment study. During the cognitive debriefing interviews in the A-WEAI study, we found that both male and female respondents struggled with how to select the appropriate answer when given a 6-point scale (as originally written in the A-WEAI). Pretesting within our sample found that respondents were able to comfortably select a response from a three-point scale. Thus, for all questions within the A-WEAI that have Likert scale response options, options should include no more than three levels. Lastly, to minimize respondent confusion, enumerators should be instructed to clarify and explain what is meant by ‘participation’ and ‘ownership’ within the production and resources domains. Cognitive debriefing interviews in the A-WEAI study highlighted how both women and men had different understandings of the concepts, compared to the index developer’s intended meaning. In regard to the issue of in-country generalizability, while region specific operationalizations of the A-WEAI would provide the most potentially accurate and valid measurements of empowerment, it is not realistic to construct an index for each of the nine regions of Ethiopia. We do recommend, however, that cognitive debriefing interviews be conducted within each region to ensure a clear and accurate understanding of survey questions.

Related to this, other A-WEAI validation studies in other contexts should be sure to sample from all agro-ecological zones of a given country where the A-WEAI is expected to be administered. Additionally, the gathering of preliminary qualitative data for index adaptation, in addition to validation, is imperative to yield a deep understanding of gender norms (both past and present). These findings can provide not only pertinent background information but also potential suggestions on the most appropriate ways to talk about empowerment (and related concepts) within a particular culture. We found that the Empowerment study method (i.e. asking FGD participants to describe an individual who is respected, a role model and/or had power within the household or community) was successful and recommend similar approaches for cultures that do not have a direct translation of the word. While focus group discussions should be stratified by gender and age, stratification by primary agricultural practice (such as cash crop farming vs. livestock raising) is not recommended – in retrospect, any variation according to agricultural practice could have been captured by sampling from different regions. Though households within

a given community self-identified as having different *primary* agricultural practices, those within the same region all had a similar profile of practices. Conducting 2-3 focus groups per subgroup proved to provide a sufficient amount of data saturation. Lastly, while calculation of the CVI provided an insightful and important source of data in our validation study, we recommend that selected experts have specific and significant experience in the country of interest.

### **Policy Implications**

Empowerment remains at the core of the current paradigm governing agricultural research and outreach practices in developing countries [198]. This also holds true at the policy level as evidenced by Sustainable Development Goal 5 (achieve gender equality and empower all women and girls) and other international reports and priorities. The findings from this dissertation hold three main policy implications.

First, policy aimed at changing gender inequities must incorporate men, and not just target women. Although research has been supporting this recommendation for quite some time [35, 243, 244], it still merits underscoring since most gender programming doesn't explicitly engage or account for men. Results from this dissertation consistently demonstrated the gendered differences in behavior change, definitions of empowerment and metric performance in our study sites in rural Ethiopia. Understanding who suffers from disempowerment and where and why is an integral first step in developing effective programs that intend to improve gender imbalances. Solely targeting women ignores the inextricably linked processes of behavior change and decision making and potentially misses an opportunity to improve intrahousehold dynamics and the behavior of concern.

Secondly, this dissertation revealed that many women in Ethiopia do not identify themselves as farmers, nor do many define their own understanding of empowerment in relation to agriculture. As women's empowerment becomes increasingly mainstreamed in nutrition and agriculture policy, there needs to be additional discussion about whether the focus on women's empowerment meets the needs and desires of women themselves. Indeed, women saw themselves as the gatekeepers to household nutritional status and well-being. But caution should be taken in potentially overburdening women in their responsibility within the household and agricultural domains. Identifying women as agents of change within the agriculture-nutrition nexus may have great potential in improving household nutritional status but policy-makers would do well to consider what women want and the implications of such a focus on women's own health.

As policy makers and global level advocates strive to make cross country comparisons about the levels of women's empowerment, this dissertation provides evidence that 1) widely used indices should be required to undergo rigorous and transparent validation studies in multiple contexts and 2) the interpretation of index scores, such as the A-WEAI, should place significant weight on the validation efforts and methods of that particular index. Efforts to measure complex yet undeniably important constructs such as women's empowerment are needed, especially as programs strive to ameliorate malnutrition through the agriculture sector. However, as this dissertation exemplified, any effort to understand or measure gender related constructs must consider context and assumptions. Some policy formation, in addition to global monitoring and targeting, may require cross country comparison but the process to establish these comparisons should be transparent, deliberate and appropriately validated. Any other route would be a disservice to those we hope to help.

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