

Measuring Women's Empowerment: A Critical Review of Current Practices and Recommendations for Researchers

Robin A. Richardson¹ 

Accepted: 4 April 2017 / Published online: 7 April 2017
© Springer Science+Business Media Dordrecht 2017

Abstract Women's empowerment is an intrinsic human rights goal that has implications for the health and well-being of women and their children. Poor measurement hampers current research efforts, and improving empowerment measurement is a frequently identified research priority. However, a discussion of specific steps researchers can take to improve upon common measurement practices is lacking. The purpose of this paper is to provide quantitative researchers recommendations to measure women's empowerment in a theory-based, precise, and comprehensive way. This paper reviewed key theoretical concepts of women's empowerment and critically reviewed common measurement approaches. Three broad recommendations for measuring empowerment emerged from this critical review, and specific suggestions to meet these recommendations are discussed. First, researchers should draw upon theory to construct measurement models (e.g., using theory to construct dimensions of empowerment and selection of indicators). Second, researchers should use analytic methods that minimize implicit judgments and bias (e.g., not classifying women as empowered using specific criteria). Third, researchers should collect comprehensive empowerment information (e.g., supplementing quantitative measures with qualitative interviews to learn how and why changes took place). Measuring empowerment poses a number of challenges, and this review provides researchers suggestions to improve upon common measurement practices. Improved measurement will strengthen research efforts on the causes and consequences of poor empowerment, which has the potential to improve the well-being of women and their children.

Keywords Women's empowerment · Empowerment · Women's status · Autonomy · Measurement · Review

✉ Robin A. Richardson
robin.richardson2@mail.mcgill.ca

¹ Department of Epidemiology, Biostatistics, and Occupational Health, McGill University, 1020 Pine Ave. West, Montreal, QC H3A 1A2, Canada

1 Introduction

Women's empowerment, the process of women enhancing their ability to make strategic life choices (Kabeer 1999), is an intrinsic human rights goal. Low empowerment also has important implications for the well-being of women and their children: it is linked with a number of adverse economic and health consequences for women (Mabsout 2011; Hindin 2000; Yount et al. 2014; Basu and Koolwal 2005; Haile et al. 2013; Bloom et al. 2001; Corroon et al. 2014; Fapohunda and Orobato 2013; Koenig et al. 2003; Hindin and Adair 2002; Pratley 2016; James-Hawkins et al. 2016; Upadhyay et al. 2014; Kabeer 2012) and their children (Malhotra et al. 2014; Egata et al. 2014; Lépine and Strobl 2013; Shroff et al. 2011; Brunson et al. 2009; D'Souza and Bryant 1999; Chakraborty and Anderson 2011; Thorpe et al. 2016).

Women's empowerment is a popular topic among researchers and development organizations, and in 2015 the United Nations identified achieving gender equality and empowering all women and girls as the 5th of 17 Sustainable Development Goals (United Nations General Assembly 2015). However, measuring women's empowerment poses significant challenges to researchers (Kishor 2005; Mason 1986; Kabeer 1999). Poor measurement hampers efforts to find the causes and consequences of low empowerment (Malhotra and Schuler 2005) and to assess the impact of social policies aimed at increasing empowerment (Alsop and Heinsohn 2005). Improving current measurement practices is essential to studying this important concept and assessing progress towards achieving Sustainable Development Goal 5.

Three main sources of poor empowerment measurement are commonly discussed in the literature. First, many empirical studies do not fully integrate theory into their conceptualizations of empowerment (Alsop and Heinsohn 2005) and selection of indicators (Kabeer 1999). Second, many studies use analytic methods that can lead to imprecise or biased measurement models (Agarwala and Lynch 2006; Sandberg and Rafail 2013). Third, some studies use information that is too narrowly focused to fully capture empowerment (Kabeer 1999). In addition, researchers define, operationalize, and measure empowerment in different ways, which makes comparison of results among studies difficult (Carlson et al. 2015; Pratley 2016).

Although improving empowerment measurement is a commonly identified research priority (Ibrahim and Alkire 2007; Kabeer 1999; Carlson et al. 2015), a discussion of specific steps researchers can take to improve upon current measurement practices is lacking. This paper aims to fill this research gap by providing researchers suggestions to measure empowerment in a theory-based, precise, and comprehensive way. The paper is organized as follows: the first section reviews key theoretical concepts of empowerment, many of which have important implications for measuring empowerment. A number of papers discuss these concepts and their implications for measurement in great detail, and this paper briefly highlights key concepts. The second section critically reviews common measurement approaches and provides researchers specific suggestions to improve upon many common measurement practices. This is the main contribution of this paper; although improving measurement is an identified priority, a comprehensive discussion of *how* to improve measurement is lacking.

2 Key Empowerment Concepts

A clear conceptualization of empowerment is essential before attempting to measure it. A large and robust body of theoretical work over the past 30 years developed definitions of empowerment and conceptual models of the empowerment process. This work can provide the foundation for sound empowerment measurement.

2.1 Definition

There are a number of definitions of women's empowerment (Alsop and Heinsohn 2005; Kabeer 1999; Mosedale 2005; Batliwala 1994). Perhaps the most influential definition is provided by Kabeer(1999) who defines it as the process by which women increase their ability to make life choices. Although definitions of empowerment abound, most scholars agree on a few core concepts. First, women's empowerment is separate from the empowerment of other disadvantaged groups due to issues specific to women, such as household and familial dynamics (Malhotra and Schuler 2005) and the power relations between men and women (Mosedale 2005). Second, agency—the ability to make choices and act upon those choices—is a central component of empowerment (Malhotra and Schuler 2005; Kabeer 1999). Third, empowerment is a process occurring over time (Kabeer 1999). Some aspects of empowerment happen quickly, while others may take decades (Malhotra and Schuler 2005). For instance, changing ideas about women's role in society is a transformational process that may develop over decades, whereas increasing educational attainment for women can happen more quickly.

2.2 Conceptual Model

A few authors have proposed conceptual models of the empowerment process (Alsop and Heinsohn 2005; Kabeer 1999; Legovini 2005). This basic model, adopted from Kabeer's(1999) description of the process, is shown in Fig. 1. Conceptual models distinguish three steps in the empowerment process: *resources*, also referred to as pre-conditions (Kabeer

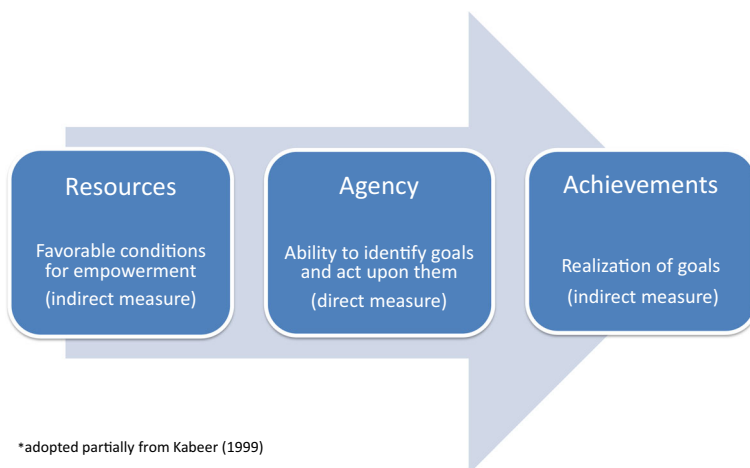


Fig. 1 Conceptual model of empowerment process. Adopted partially from Kabeer (1999)

1999) or opportunity structures (Alsop and Heinsohn 2005), *agency*, also referred to as autonomy (Allendorf 2012), and *achievements*, also referred to as outcomes (Alsop and Heinsohn 2005; Kabeer 1999). *Resources* encompass material resources (e.g., money, education) (Kabeer 1999), human and social resources (e.g., social capital) (Kabeer 1999), and institutional environments (A. Malhotra and Schuler 2005). Resources facilitate the empowerment process by providing conditions in which women's agency may be increased. *Agency* is the ability to identify one's goals and act upon them (Kabeer 1999). Agency includes internal qualities such as critical thinking skills and making independent decisions (Kim et al. 2007; Mosedale 2005), and the ability to carry out those decisions (Kabeer 1999). Decisions might be carried out outright or by navigating relational and societal dynamics through processes such as negotiation, deception, and manipulation (Kabeer 1999). *Achievements* are the realizations of one's goals. Achievements might include educational attainment, increased labour market participation, or good health. Agency provides direct evidence of empowerment, whereas resources and achievements are indirect (i.e., proxy) measures (Kishor 2000; Malhotra and Schuler 2005; Samman and Santos 2009).

2.3 Key Measurement Concepts

A seminal paper by Kabeer (1999) discussed the conceptualization of empowerment and implications for its measurement, and additional theoretical and empirical work bolstered and expanded upon these ideas. This work is summarized below.

2.3.1 Agency is Multi-Dimensional

Women's agency is a multi-dimensional concept (Malhotra and Schuler 2005; Ibrahim and Alkire 2007; Agarwala and Lynch 2006; Mason and Smith 2003). Women may have high agency in certain dimensions yet not in others (Malhotra and Mather 1997; Gupta and Yesudian 2006; Mason and Smith 2000). For example, in some Indian contexts women have high levels of household decision-making yet do not have much freedom to travel alone (Gupta and Yesudian 2006).

Many dimensions of agency are identified in the literature. Studies conducted by different authors and in different settings have delineated dimensions slightly differently. The most commonly identified dimensions are household decision-making (e.g., decisions about children's schooling, decisions about small household purchases) (Ahmed et al. 2009; Al Riyami et al. 2004; Alkire et al. 2013b; Gupta and Yesudian 2006; Chakrabarti and Biswas 2012; Rahman et al. 2011; Mistry et al. 2009; Bloom et al. 2001; Hashemi et al. 1996; Fuller 2012; Morgan and Niraula 1995) and freedom of movement (e.g., ability to travel to various destinations) (Ahmed et al. 2009; Al Riyami et al. 2004; Chakrabarti and Biswas 2012; Dharmalingam and Philip Morgan 1996; Gupta and Yesudian 2006; Hadley et al. 2010; Jejeebhoy and Sathar 2001; Morgan and Niraula 1995; Schuler et al. 1997, 2010; Bloom et al. 2001; Lee-Rife 2010; Mistry et al. 2009; Hashemi et al. 1996; Kabeer et al. 2011; Mason and Smith 2000). However, many other dimensions of agency are identified, such as involvement in political activities (Deininger and Liu 2013; Schuler et al. 1997, 2010; Hashemi et al. 1996), political and legal awareness (Hashemi et al. 1996), gender preferences (Gupta and Yesudian 2006), attitudes about women's economic role (Fuller 2012), self-efficacy (Fuller 2012), control over income (Bloom et al. 2001; Lee-Rife 2010; Mistry et al. 2009), economic security (Hashemi et al. 1996), involvement in the community (Fuller 2012; Kabeer et al. 2011), involvement in fertility decisions (Mason and Smith 2000)

attitudes about intimate partner violence (Sandberg and Rafail 2013; Gupta and Yesudian 2006), and experiencing intimate partner violence (Lee-Rife 2010; Mason and Smith 2000).

2.3.2 *Not All Life Choices Are Equal*

Some life choices have larger implications for women's agency than others (Kabeer 1999). Theoretical work proposes a decision-making hierarchy, which can be parsed out into policy decisions and implementation decisions (Kabeer 1999; Pahl 1989). Examples of policy decisions include how many children to have, when to have children, where to live, and who to marry; these decisions can shape a woman's life trajectory (Kabeer 1999). Implementation decisions are smaller-scale decisions that may enhance quality of life but do not shape a person's life trajectory (Kabeer 1999). In some contexts men make large-scale policy decisions and delegate implementation decisions to women. For example, an Egyptian survey found that many women were involved in decisions regarding use of family planning methods, but fewer women were involved in the policy decision of having another child (El-Zanaty et al. 1999).

2.3.3 *Empowerment is Contextual*

Empowerment is contextual (Kabeer 1999; Malhotra and Schuler 2005; Mason and Smith 2003; Mason 1986). How women define empowerment may differ by context. Western ideals of men and women having equal status in society and women being autonomous from men may not resonate with women in some settings. Rather, women may want respect and equality but not autonomy from men (Kabeer 2001). A study of Bangladeshi women, for instance, found women desired more equality within their families instead of greater independence outside of the family (Kabeer 2011). These nuances may impact how empowerment is defined in certain contexts.

Indicators that denote empowerment may also be context-specific (Ghuman et al. 2006). Freedom to visit the market alone is a common indicator of agency in many contexts (Ahmed et al. 2009; Al Riyami et al. 2004; Chakrabarti and Biswas 2012; Dharmalingam and Philip Morgan 1996; Gupta and Yesudian 2006; Hadley et al. 2010; Jejeebhoy and Sathar 2001; Morgan and Niraula 1995; Schuler et al. 1997, 2010), yet in some settings in Bangladesh visiting the market alone is seen as an indicator of low social class (e.g., a sign that there are no males in the home to visit the market) and is not a sign of agency (Kabeer 2001). Indicators also change over time. For example, a study of Bangladeshi women compared indicators of agency developed in the early 1990s and assessed their relevance in interviews conducted in 2007 (Schuler et al. 2010). Making small purchases without the permission of their husbands was an indicator of agency in the mid-1990s, but in 2007 this indicator was no longer relevant because almost all women had the freedom to make these purchases (Schuler et al. 2010).

3 Recommendations for Quantitative Researchers

Translating concepts of empowerment into study measures that effectively capture it poses a number of challenges. Three main sources of poor empowerment measurement are commonly identified in the literature. First, many empirical studies do not fully integrate the rich body of theoretical work conceptualizing and defining women's empowerment into their

measurement models. For instance, many studies do not use theory in their conceptualization of empowerment (Alsop and Heinsohn 2005) and selection of indicators (Kabeer 1999). This problem appears to be widespread: a 2014 review of women's economic empowerment intervention studies found that most did not use an explicit theoretical framework (Taylor and Perezniето 2014). Second, many studies use analytic methods that can lead to imprecise or biased measurement models (Agarwala and Lynch 2006; Sandberg and Rafail 2013), some of which may inadvertently introduce a researcher's own values (Kabeer 1999). Third, empowerment is nuanced and contextual, and some studies use information that is too narrowly focused to fully capture empowerment (Kabeer 1999).

This section provides specific suggestions to quantitatively measure empowerment in a theory-based, accurate, and comprehensive way. These suggestions were distilled from a comprehensive search and review of women's empowerment measurement approaches and critiques of measurement approaches. The search included women's empowerment reviews, relevant journals, and "snowball" searches of included articles. This section is organized around measurement recommendations, and examples from the literature illustrate specific measurement approaches. These recommendations are summarized in Table 1.

The aim of this paper is not to review all empirical studies on empowerment. The empowerment literature is vast, spanning disciplines such as demography, sociology, economics, and epidemiology. A simple PubMed search of women's empowerment and related concepts such as autonomy, agency, and choice revealed over 30,000 studies. The aim of this paper is also not to tally measurement approaches used in the literature; other recent reviews have summarized measurement approaches used in a sub-set of empowerment studies, such as those related to economic empowerment interventions (Taylor and Perezniето 2014), child nutrition (Carlson et al. 2015), and maternal and child health (Pratley 2016). Therefore, such a review would be redundant. Rather, this review discusses common measurement approaches and draws upon the vast empirical literature to extract specific examples, with the aim of providing recommendations for improving upon current approaches.

Table 1 Recommendations for quantitative researchers studying empowerment

Use theory to inform study measures

- Explicitly describe conceptual model
- Use indicators relevant to a specific context
- Use direct indicators of empowerment (i.e., agency) when possible
- Construct dimensions of agency based upon theory

Use analytic methods that minimize implicit judgments

- Avoid combining different levels of decision-making into the same category
- Use methods that do not equally weight each indicator of empowerment
- Use global empowerment measures cautiously
- Avoid classifying women as empowered using cut-points

Collect comprehensive information

- Talk with study participants, community leaders, and local experts
 - Supplement quantitative information with qualitative information
 - Measure many aspects of empowerment, including closely related concepts
 - Collect information from men
-

3.1 Use Theory to Inform Study Measures

3.1.1 Explicitly Describe Conceptual Model

Many studies do not explicitly describe their conceptual framework (Taylor and Perezniето 2014), and providing such a framework can clarify a researcher's conceptualization of empowerment. This framework should state the aspects of empowerment researchers are attempting to measure (i.e., resources, agency, achievements), and if investigating an exposure or intervention that may impact empowerment, the mechanisms by which women may become empowered. For example, a study of Bangladeshi women investigated the association between empowerment resources (e.g., media exposure, educational attainment) and women's agency (Mahmud et al. 2012). The study provided a detailed conceptual framework of how these resources may increase agency, thus clarifying the authors' conceptualization of empowerment.

The distinction between different aspects of empowerment and the mechanisms in which empowerment may operate are nuanced, and explicitly stating this information can help clarify these relationships. The role that intimate partner violence (IPV) might play in the empowerment process provides one example of the need for clear conceptualization. Evidence on the link between aspects of empowerment and IPV is mixed (Jejeebhoy and Sathar 2001; Green et al. 2015; Hindin and Adair 2002; Allendorf 2012; Koenig et al. 2003). Studies have conflicting conceptualizations of how IPV fits into the empowerment process. Some studies conceptualize IPV as a resource that impacts agency (Allendorf 2012), as a component of agency (Jejeebhoy and Sathar 2001), or as a consequence of women's agency (Green et al. 2015; Hindin and Adair 2002; Koenig et al. 2003). A number of potential mechanisms linking agency to IPV have been proposed, some of which lead to either higher or lower risk of IPV (Green et al. 2015; Hindin and Adair 2002). Additionally, these relationships appear to be influenced by context (Jejeebhoy and Sathar 2001; Koenig et al. 2003). Studies that clearly state their conceptualization of IPV and proposed mechanisms (some of which may be contextual) can help clarify IPV's role in the empowerment process.

3.1.2 Use Indicators Relevant to a Specific Context

The core ideas of empowerment are universal, although indicators of empowerment may differ across contexts (Malhotra and Schuler 2005). Behaviours and attitudes that in one context indicate empowerment may not in another. For example, having freedom to visit a doctor without a male household member's permission may be a sign of empowerment in rural Bangladesh where purdah restricts women's movements but not in urban Peru where women routinely travel alone (Malhotra and Schuler 2005). Whenever possible, researchers should use context-specific indicators.

There is a strong temptation to identify indicators of empowerment that are relevant to all contexts, and some studies propose universal indices (Ibrahim and Alkire 2007; Alkire et al. 2013b). However, to be applicable to all contexts, indicators tend to be broad and likely miss some nuances of empowerment in certain contexts (Schuler et al. 2010). For example, Alkire et al. (2013b) developed the women's empowerment in agriculture index, which measures women's empowerment in five domains, including leadership. The leadership domain measures whether a woman is involved in at least one economic or social group and whether she is comfortable speaking up in public. However, opportunities

to participate in groups are context-specific: some women may live in locations where there are no groups to attend, whereas other women may live in communities with many groups. All women from settings without groups will be classified as not empowered for the group membership indicator, although in reality some women may have a high degree of empowerment. Thus, group membership is one example of a context-specific indicator that may provide less than optimal empowerment measurement across contexts.

A few different approaches can balance the contextual nature of empowerment with the need to compare empowerment across contexts. One study compared women's empowerment in five Asian countries using the same empowerment indicators but varying them slightly to reflect different contexts (Mason and Smith 2003; Mason 2003). For example, one question asked women who decides on making major purchases, and the example of a major purchase varied by country (Mason and Smith 2003). Another approach identifies common dimensions of empowerment and allows specific indicators to vary depending on their relevance in different settings. Although rarely done in practice, the Women's Empowerment in Agriculture Index provides an example of this approach (Alkire et al. 2013a). The index compared women's empowerment in Uganda, Bangladesh, and Guatemala, and questionnaire modules were added or subtracted depending on their relevance. In Bangladesh, for instance, an additional module pertaining to decision-making in aquaculture was added because aquaculture is common in Bangladesh but not in Uganda and Guatemala (Alkire et al. 2013a).

3.1.3 Use Direct Indicators of Empowerment (i.e., Agency) When Possible

Whenever possible, researchers should use direct measures of empowerment (i.e., agency). Use of indirect indicators (i.e., resources, achievements), especially with cross-sectional information, can be problematic. Many indirect indicators, including education, land ownership, employment, age of first marriage, and participation in microcredit, are used as evidence of women's agency (Samman and Santos 2009; Jejeebhoy 2000), yet there is a growing consensus that these indicators provide inadequate evidence (Malhotra and Mather 1997; Jejeebhoy 2000). First, although resources can facilitate women gaining more agency, it does not ensure it (Kabeer 1999). Second, the directionality of many of these relationships is not clear; these factors may be resources for empowerment, achievements of the empowerment process, or both.

Age at first marriage is one indirect measure of women's empowerment that illustrates the difficulties with using indirect measures to infer changes in agency. Cross-sectional evidence indicates that married women who married at an older age have high agency (Jensen and Thornton 2003; Yount et al. 2016; Heaton et al. 2005). However, cross-sectional information makes it impossible to discern if women who marry at an older age already possess high agency or if marrying at a later age facilitates development of high agency. Both conceptualizations have been put forth, either as an empowerment resource (Jensen and Thornton 2003; Yount et al. 2016; Heaton et al. 2005) or achievement (Desai and Andrist 2010). Thus, using age at marriage as a proxy for empowerment with cross-sectional data provides ambiguous evidence of if women *have* high agency or if they *might develop* high agency.

In addition, using indirect indicators can lead to different conclusions than measuring agency directly. This issue is exemplified in a study investigating the effect of microcredit on women's empowerment (Garikipati 2013). Microcredit increased women's employment, and thus focusing on this outcome indicated a positive effect. However, an examination of the loan process portrayed a negative effect: the majority of women's loans were

used for goods or services related to family farms and businesses, yet only 10% of women had access to profits from these assets. Several women initiated paid work to repay these loans (Garikipati 2013). Measuring agency directly—such as with indicators related to control over income and family decision-making—might reveal no change in women's agency due to micro-credit.

Some research uses community, regional, or societal level empowerment indicators. These studies generally measure empowerment indirectly with empowerment resources or achievements. In fact, some aggregate indicators are not measureable at the individual level, and therefore it may not be possible to collect direct empowerment indicators. One example of an aggregate measure is the United Nations Development Programme's Gender Inequality Index, which uses country-level information on female political representation and the proportion of women with at least some secondary education to construct a measure of empowerment (United Nations Development Programme 2015). The indicators used in this index may be either resources or achievements of empowerment, thus providing a snapshot of the status of women, but do not measure empowerment directly.

3.1.4 Construct Dimensions of Agency Based Upon Theory

There is a large body of theoretical and empirical work on women's empowerment, and this information should be integrated into measurement models. When enough information is available, indicators of agency should be grouped into dimensions based on prior conceptual or empirical work. For example, one study measured women's agency in India by constructing three dimensions of agency based upon prior empirical evidence from India and related settings, and the validity of these dimensions were then empirically tested (Sandberg and Rafail 2013).

Exploratory factor analysis (EFA) is another approach to identify dimensions of empowerment, but this method should be avoided if enough information on potential dimensions is available. EFA is a data-driven measurement method that uses the correlation among indicators to identify dimensions (Brown 2006), which may result in groups of indicators that are counter-intuitive and have no conceptual basis. For example, an Indian study measured women's freedom of movement and ability to make decisions regarding household spending (Allendorf 2012). An analysis employing EFA indicated that agency should be measured with only one dimension, and these two dimensions were combined into one. However, most conceptual and empirical research indicates these are two distinct dimensions (Ahmed et al. 2009; Al Riyami et al. 2004; Alkire et al. 2013b; Mason and Smith 2000; Gupta and Yesudian 2006; Chakrabarti and Biswas 2012; Kabeer et al. 2011; Mistry et al. 2009; Bloom et al. 2001; Hashemi et al. 1996; Dharmalingam and Philip Morgan 1996; Hadley et al. 2010; Jejeebhoy and Sathar 2001; Morgan and Niraula 1995; Schuler et al. 1997, 2010; Lee-Rife 2010), and thus this measurement model does not align with the majority of the evidence.

3.2 Use Analytic Methods that Minimize Implicit Judgments and Bias

3.2.1 Avoid Combining Different Levels of Decision-Making into the Same Category

Surveys commonly collect multiple response levels about decision-making, and some studies combine these responses into the same category. For example, one study lumped a women decides alone, jointly with her husband, or jointly with other household members

into one category, and constructed a second category if the decision was made by her husband alone or only by others in the household (Mistry et al. 2009).

Lumping together categories has the potential to introduce a researcher's own biases about decision-making into the study, and thus should be avoided when possible. There are conflicting ideas about how joint decision-making should be conceptualized. Some studies see it as disguised male decision-making, whereas other studies see it as evidence of cooperation (Kabeer 2001). For example, in a study of control over loans, joint control was conceptualized as male dominance in decision-making (Montgomery et al. 1996), whereas another study concluded that joint decision-making may provide evidence of equitable decision-making (Mullany et al. 2005). These decisions can effect study results. One expert noted that studies evaluating the effect of credit on empowerment tended to find positive or negative results based on how joint decision making was categorized (Kabeer 2001). In addition, categories of decision-making may have different meanings in different contexts (Mullany et al. 2005), and a lack of contextual knowledge may lead to collapsing categories incorrectly. Without clear evidence indicating how to collapse categories, researchers should avoid this practice.

3.2.2 *Use Methods that Do Not Equally Weight Each Indicator of Empowerment*

The most common way to measure empowerment is with summary scores constructed by adding together responses to each indicator (Hadley et al. 2010; Mason and Smith 2003; Jejeebhoy and Sathar 2001; Al Riyami et al. 2004; Jejeebhoy 2000; Kritz et al. 2000; Bloom et al. 2001; Mistry et al. 2009). These scores are calculated by assigning each response a value (e.g., no = 0, yes = 1) and then adding together these values to calculate a summary score.

Although very popular, this method should be avoided when possible. Summary scores rely on the untested assumption that each indicator contributes equally, and if this assumption is not true the measurement model will be biased. One study, for example, used eight indicators to measure household decision-making, including questions about who had control over what to cook and who had control over having a baby (Al Riyami et al. 2004). A summary score assumes these two indicators carry equal weight in measuring a woman's control over her life, which is highly unlikely. Empirical research comparing summary scores with more accurate measurement models that do not equally weight indicators (e.g., confirmatory factor analysis) find that summary scores can produce less accurate and potentially biased scores (Agarwala and Lynch 2006; Sandberg and Rafail 2013). In addition, the relative importance of indicators used to construct empowerment scores might differ across contexts (Agarwala and Lynch 2006). Using confirmatory factor analysis, one study compared the same measurement model in Pakistan and India (Agarwala and Lynch 2006). The study found that even among these two similar contexts, the importance of indicators (i.e., factor loadings) differed between these two countries (Agarwala and Lynch 2006).

Other analytic approaches do not assume each indicator is weighted equally, and therefore are preferable. One approach is to estimate the relationship between each indicator and exposure or outcome separately. However, if using many indicators, interpretation of results can be difficult with this approach due to a large number of estimates. A more complex approach is confirmatory factor analysis (CFA). CFA uses theory to group indicators into dimensions, and then empirically tests that the hypothesized measurement model corresponds to the study data. CFA calculates summary scores for each dimension of empowerment using the correlation among indicators, thus avoiding the problem of

giving equal weight to each indicator. Despite the advantages of using CFA, CFA is rarely used in empirical studies. Exploratory factor analysis (EFA) is another approach that does not give equal weight to each indicator; however, as previously discussed, EFA should be avoided when possible because it may lead to groupings of indicators with no conceptual basis.

3.2.3 Use Global Empowerment Measures Cautiously

Global empowerment measures provide a single summary statistic of women's empowerment. These should be used cautiously because they may obscure particular dimensions of a woman's life in which she is disempowered or empowered. For example, women might have a high amount of freedom to travel where they desire, yet low control over household income: a global measure obscures these differences. Therefore, it is advisable to use global empowerment measures in conjunction with dimension-specific information.

Global measures should be constructed carefully because some dimensions may be more important to women's overall empowerment than others. For example, involvement in family decision-making might be more (or less) relevant to women's overall empowerment than views on gender norms. Global scores are sometimes constructed by giving equal weight to each dimension, which may result in biased measurement models. For example, one study standardized four dimension-specific scores so that each ranged from 0 to 1, and then added together these four scores to compute a global empowerment score (Jejeebhoy and Sathar 2001). Some indices construct global measures using weights provided by the authors (Alkire et al. 2013b), although without clear rationale and evidence for these weights, this method may also lead to a biased global score.

A better approach to construct global scores is to weight dimensions according to their potential importance according to study participants or to use specific analytic methods. One study conducted qualitative interviews with rural Bangladeshi women to determine how important each dimension of agency was in relation to other dimensions, and these rankings were applied to survey data to create an overall, weighted empowerment score (Parveen 2005). Weights can also be determined with analytic methods such as confirmatory factor analysis. However, due to the contextual nature of empowerment, weights derived from one population likely do not apply to another.

3.2.4 Avoid Classifying Women as Empowered Using Cut-Points

Some studies calculate summary scores and then classify women as empowered based upon certain cut-points or criteria. Determining what constitutes an adequate level of empowerment may involve subjective, unverified judgments. For example, the Women's Empowerment in Agriculture Index classifies women as empowered using cut-points at both the indicator and global empowerment levels (Alkire et al. 2013b). Participant feedback or expert opinions might mitigate unverified judgments of certain cut-points; however, this feedback is likely highly contextual and may only be relevant to the experiences of individuals in certain geographic locations or demographic groups.

3.3 Collect Comprehensive Information

The nuances of the empowerment process may not be effectively captured with focused quantitative data. For example, one Kenyan study found that women state men have most of the formal decision-making power in the household, although in practice decision-making played out differently (Silberschmidt 1992). Men decided where crops were planted, and if a woman disagreed with her husband, she would not contradict him but would plant crops in a different location. If confronted by her husband, she would offer an excuse such as the seeds did not germinate in the location selected by her husband (Silberschmidt 1992). Although such nuances are difficult to capture in quantitative studies, researchers can undertake a number of steps to ensure that their study portrays the process of empowerment as accurately as possible.

3.3.1 *Talk with Study Participants, Community Leaders, and Local Experts*

Talking with local informants can greatly improve study measures. These discussions can help design survey tools and identify indicators of empowerment that can subsequently be used in large-scale surveys. This approach was used in an impact evaluation of a women's development program in Ethiopia, which interviewed community leaders, men, and women from the community to inform development of a survey (Legovini 2005). If resources allow, an even better approach is to identify indicators of empowerment through extensive observation and ethnographic interviews with women, which has been done in a few select studies (Hashemi et al. 1996).

3.3.2 *Supplement Quantitative Information with Qualitative Information*

Interviews can shed light on how and why changes took place and may identify unintended consequences of an intervention. This approach was used to evaluate savings and credit groups for Malian women (Bureau of Applied Research in Anthropology (BARA) and Innovations for Poverty Action (IPA) 2013). The quantitative evaluation found that women choose to invest their surplus money in livestock. In this context livestock is a high risk investment due to the risk of disease and famine, and it appeared counter-intuitive that women would chose this option instead of putting money in a more secure place such as a savings account (Bureau of Applied Research in Anthropology (BARA) and Innovations for Poverty Action (IPA) 2013). Interviews with women revealed that investment in livestock made it easier for women to turn down demands for money from their husband and friends; they could state they had no cash, thus making it easier to accrue wealth (Bureau of Applied Research in Anthropology (BARA) and Innovations for Poverty Action (IPA) 2013).

Qualitative interviews may also clarify what study variables are actually measuring. One study investigated patterns of decision-making among husbands and wives by surveying husbands and wives separately and asking them who had the "final say" in a number of decisions (Mullany et al. 2005). In-depth interviews revealed that even in situations where husbands had the final say, women were somewhat involved in the decision-making process through communication and consultation with their husbands (Mullany et al. 2005). The authors conclude that conducting qualitative interviews is important to understand these decision-making definitions in specific settings (Mullany et al. 2005).

3.3.3 Measure Many Aspects of Empowerment, Including Closely Related Concepts

Interventions may empower or disempower women in unexpected ways. For example, some credit programs for women might not only increase economic security (e.g., income) but might also lead to greater decision making authority in the home or increased mobility (Hashemi et al. 1996). Each of these dimensions of agency may impact women's lives differently. For example, increased control over income is linked with increased spending on health and nutrition-related expenses (Thomas 1997), whereas increased mobility is linked with more antenatal care (Bloom et al. 2001). Measuring many dimensions of agency may reveal the factors that impact each dimension of agency, as well as show how each dimension may affect other areas of women's lives.

Interventions might also have unintended consequences. For instance, in some contexts economic empowerment interventions have increased women's risk of intimate partner violence (Vyas and Watts 2009). Overly narrow measures of empowerment may miss these important dynamics, and studies should strive to measure other aspects of women's lives that may be affected by empowerment.

3.3.4 Collect Information from Men

Men's power over women, and the attitudes of men wielding this power, could have a profound impact on women's empowerment. This power dynamic may be especially salient at the household level. A study in Bangladesh found that women's participation in the labour force was strongly associated with the educational level of husbands (which some theorize is a proxy for more progressive attitudes), in fact more so than a women's own educational level (Khandker 1988). Men's attitudes and behaviours are important barriers and facilitators of the empowerment process, yet men are rarely interviewed (Perezniato and Taylor 2014).

Men can also provide direct information on women's empowerment indicators. One Bangladeshi study asked husbands if their wives made purchases without their permission and if they could travel to locations unaccompanied, and these responses were integrated into measures of women's empowerment (Pitt et al. 2006). Surveying men may also uncover nuanced differences in the perception of household power dynamics. Studies that ask husbands and wives the same questions about decision making authority in the household find that some answers conflict considerably (Ghuman et al. 2006; Story and Burgard 2012).

4 Discussion

This paper critically reviews common approaches to measuring women's empowerment and provides researchers suggestions to comprehensively and accurately measure it. Many common measurement approaches have high risk of biased measurement due to not fully integrating theory into their measurement models, using methods that could introduce implicit biases, and collecting information that is too narrowly focused. Although these shortcomings are identified in the literature, a specific discussion of how researchers can measure empowerment accurately was lacking. This paper fills that research gap.

The suggestions distilled from this review may be especially relevant to researchers investigating the causes and consequences of empowerment or to those conducting impact

evaluations of social policies with implications for the empowerment of women. Monitoring Sustainable Development Goal 5 (SDG-5), to achieve gender equality and empower all women and girls, deserves specific mention. This goal is a major achievement in recognizing the intrinsic value of women's equality and empowerment as stand-alone development goals (Chopra and Müller 2016). SDG-5 has the ambitious targets of (1) ending all forms of discrimination against all women and girls everywhere, (2) eliminating all forms of violence against all women and girls, (3) eliminating all harmful practices, such as child, early or forced marriage and female genital mutilation, (4) recognizing and valuing unpaid care and domestic work, (5) ensuring women's full and effective participation and equal opportunities for leadership, and (6) ensuring universal access to sexual and reproductive health and reproductive rights. These targets can be conceptualized as predominantly structural resources of the empowerment process (e.g., ending all forms of discrimination, eliminating child marriage) that promote gender equality and may facilitate the process of empowerment. However, being exposed to favorable conditions is no guarantee that women will become empowered (Kabeer 1999). Thus, collecting additional information pertaining to women's agency, using the suggestions highlighted in this review, can clarify the effectiveness of the SDG-5 targets to empower women.

Few studies fully implement the suggestions highlighted in this review. Recent efforts to measure women's agency in Egypt (Crandall et al. 2016; Salem et al. 2017; Yount et al. 2016) provide an illuminating case study of some of the best practices for measuring empowerment. Yount et al. (2016) drew upon prior conceptual, ethnographic, and empirical work to develop a definition of women's agency and identify dimensions of agency relevant in an Egyptian context. The validity of this theory-based model of women's agency was empirically tested with exploratory and confirmatory factor analysis. This measurement model was subsequently used by Crandall et al. (2016), who investigated the association between a woman's age at first marriage and her post-marital agency. The authors explicitly described the theorized relationship between an Egyptian woman's age at marriage and her post-marital agency, and they employed analytic methods that minimized implicit judgments; specifically, the authors estimated the association between age at first marriage and agency using a multiple-indicators multiple-causes model, which is a type of model that estimates agency as a latent variable. This model allows different indicators to be more or less relevant to a woman's overall agency (i.e., the model estimates factor loadings for each indicator). Thus, this measurement model does not assume each indicator contributes equally to agency, nor are researchers' own subjective judgments about the relative importance of each indicator integrated into the measurement model. This example makes clear that accurate empowerment measurement requires diligence, careful integration of prior research, and a sustained commitment to developing context-specific measurement models.

This review has limitations. First, this review describes basic concepts of empowerment and is not an exhaustive discussion of empowerment conceptualizations. There is a large and robust literature on conceptualizing empowerment, and various authors from different disciplines have developed different ideas on what empowerment is. This review provides an overview of basic ideas of empowerment generally agreed upon in the literature, although empowerment conceptualizations are not monolithic. Second, this review focused on discussing common measurement approaches. Although a comprehensive search for studies was undertaken, it is possible that some less common measurement approaches were excluded from the discussion. Third, this review discusses improving the validity of measurement approaches, yet developing reliable indicators is equally important. There is a dearth of research on the reliability of empowerment indicators, which is an important

area of future research. Reliability and validity are the cornerstones of sound measurement, and verifying both will enable researchers to truly measure what they intend to measure.

5 Conclusion

Women's empowerment is a complex concept, and accurately measuring it poses a number of challenges to researchers. Currently, few empirical studies fully integrate theory into their measurement models, and many studies employ analytic methods and measurement choices with high risk of bias. These choices hamper efforts to understand this important concept and may lead to erroneous conclusions. This paper offers researchers suggestions to improve upon current measurement approaches. Improved measurement could greatly advance research efforts into the causes and consequences of poor empowerment and will strengthen evidence on social policies to increase empowerment. Women's empowerment is a critical human rights issue with implications for the well-being of women, their families, and society, and it should be measured with the utmost care.

Acknowledgements The author thanks Dr. Norbert Schmitz for clarifying measurement-related concepts and Drs. Abby Lippman and Arijit Nandi for feedback on earlier drafts of this manuscript. Funding was provided by the Spencer Foundation (Grant No. 242794), Canadian Institutes of Health Research (Grant No. T03-120314), and Regroupement Stratégique Santé Mondiale du Réseau de Recherche en Santé des Populations du Québec.

References

- Agarwala, R., & Lynch, S. M. (2006). Refining the measurement of women's autonomy: An international application of a multi-dimensional construct. *Social Forces*, 84(4), 2077–2098.
- Ahmed, A. U., Quisumbing, A. R., Nasreen, M., Hoddinott, J. F., & Bryan, E. (2009). *Comparing food and cash transfers to the ultra poor in Bangladesh*. Washington, DC: International Food Policy Research Institute.
- Al Riyami, A., Afifi, M., & Mabry, R. M. (2004). Women's autonomy, education and employment in Oman and their influence on contraceptive use. *Reproductive Health Matters*, 12(23), 144–154.
- Alkire, S., Meinzen-Dick, R., Peterman, A., Quisumbing, A., Seymour, G., & Vaz, A. (2013a). *The women's empowerment in agriculture index*. Oxford: Oxford Poverty and Human Development Initiative, University of Oxford.
- Alkire, S., Meinzen-Dick, R., Peterman, A., Quisumbing, A., Seymour, G., & Vaz, A. (2013b). The women's empowerment in agriculture index. *World Development*, 52, 71–91.
- Allendorf, K. (2012). Women's agency and the quality of family relationships in India. *Population Research and Policy Review*, 31(2), 187–206.
- Alsop, R., & Heinsohn, N. (2005). *Measuring empowerment in practice: structuring analysis and framing indicators* (Policy research working paper No. 3510). Washington: The World Bank.
- Basu, A. M., & Koolwal, G. B. (2005). Two concepts of female empowerment: some leads from DHS data on women's status and reproductive health. In S. Kishor (Ed.), *A focus on gender: collected papers on gender using DHS data* (pp. 15–33). Calverton: ORC Macro.
- Batiwala, S. (1994). The meaning of women's empowerment: new concepts from action. In G. Sen, A. Germain, & L. C. Chen (Eds.), *Population policies reconsidered: health, empowerment, and rights* (pp. 127–138). Boston: Harvard Center for Population and Development Studies.
- Bloom, S. S., Wypij, D., & Das Gupta, M. (2001). Dimensions of women's autonomy and the influence on maternal health care utilization in a north Indian city. *Demography*, 38(1), 67–78.
- Brown, T. A. (2006). *Confirmatory factor analysis for applied research*. New York: Guilford Publications.
- Brunson, E. K., Shell-Duncan, B., & Steele, M. (2009). Women's autonomy and its relationship to children's nutrition among the Rendille of northern Kenya. *American Journal of Human Biology*, 21(1), 55–64.

- Bureau of Applied Research in Anthropology (BARA) & Innovations for Poverty Action (IPA). (2013). *Final impact evaluation of the Saving for Change program in Mali, 2009–2012*. Tuscon: University of Arizona.
- Carlson, G. J., Kordas, K., & Murray-Kolb, L. E. (2015). Associations between women's autonomy and child nutritional status: A review of the literature. *Maternal and Child Nutrition*, 11(4), 452–482.
- Chakrabarti, S., & Biswas, C. S. (2012). An exploratory analysis of women's empowerment in India: A structural equation modelling approach. *Journal of Development Studies*, 48(1), 164–180.
- Chakraborty, P., & Anderson, A. K. (2011). Maternal autonomy and low birth weight in India. *Journal of Women's Health*, 20(9), 1373–1382.
- Chopra, D., & Müller, C. (2016). Introduction: Connecting perspectives on women's empowerment. *IDS Bulletin*, 47(A1), 1–10.
- Corroon, M., Speizer, I. S., Fotso, J. C., Akiode, A., Saad, A., Calhoun, L., et al. (2014). The role of gender empowerment on reproductive health outcomes in urban Nigeria. *Maternal and Child Health Journal*, 18(1), 307–315.
- Crandall, A., VanderEnde, K., Cheong, Y. F., Dodell, S., & Yount, K. M. (2016). Women's age at first marriage and postmarital agency in Egypt. *Social Science Research*, 57, 148–160.
- Deininger, K., & Liu, Y. (2013). Economic and social impacts of an innovative self-help group model in India. *World Development*, 43, 149–163.
- Desai, S., & Andrist, L. (2010). Gender scripts and age at marriage in India. *Demography*, 47(3), 667–687.
- Dharmalingam, A., & Philip Morgan, S. (1996). Women's work, autonomy, and birth control: Evidence from two south Indian villages. *Population Studies*, 50(2), 187–201.
- D'Souza, R. M., & Bryant, J. H. (1999). Determinants of childhood mortality in slums of Karachi, Pakistan. *Journal of Health and Population in Developing Countries*, 2(1), 33–44.
- Egata, G., Berhane, Y., & Worku, A. (2014). Predictors of acute undernutrition among children aged 6 to 36 months in east rural Ethiopia: A community based nested case–control study. *BMC Pediatrics*, 14(1), 91.
- El-Zanaty, F., Way, A., Kishor, S., & Casterline, J. (1999). *Egypt indepth study on the reasons for nonuse of family planning: Results of a panel survey in Upper Egypt*. Calverton: National Population Council and Macro International Inc.
- Fapohunda, B. M., & Orobaton, N. G. (2013). When women deliver with no one present in Nigeria: Who, what, where and so what? *PLoS ONE*, 8(7), e69569.
- Fuller, R. (2012). *Guatemala highlands value chain development alliance: project effectiveness review*. Oxford: Oxfam Great Britain.
- Garikipati, S. (2013). Microcredit and women's empowerment: have we been looking at the wrong indicators? *Oxford Development Studies*, 41(Suppl. 1), S53–S75.
- Ghuman, S. J., Lee, H. J., & Smith, H. L. (2006). Measurement of women's autonomy according to women and their husbands: Results from five Asian countries. *Social Science Research*, 35(1), 1–28.
- Green, E. P., Blattman, C., Jamison, J., & Annan, J. (2015). Women's entrepreneurship and intimate partner violence: A cluster randomized trial of microenterprise assistance and partner participation in post-conflict Uganda. *Social Science and Medicine*, 133, 177–188.
- Gupta, K., & Yesudian, P. P. (2006). Evidence of women's empowerment in India: A study of socio-spatial disparities. *GeoJournal*, 65(4), 365–380.
- Hadley, C., Brewis, A., & Pike, I. (2010). Does less autonomy erode women's health? Yes. No. Maybe. *American Journal of Human Biology*, 22(1), 103–110.
- Haile, Z. T., Chertok, I. R. A., & Teweldeberhan, A. K. (2013). Determinants of utilization of sufficient tetanus toxoid immunization during pregnancy: evidence from the Kenya Demographic and Health Survey, 2008–2009. *Journal of Community Health*, 38(3), 492–499.
- Hashemi, S. M., Schuler, S. R., & Riley, A. P. (1996). Rural credit programs and women's empowerment in Bangladesh. *World Development*, 24(4), 635–653.
- Heaton, T. B., Huntsman, T. J., & Flake, D. F. (2005). The effects of status on women's autonomy in Bolivia, Peru, and Nicaragua. *Population Research and Policy Review*, 24(3), 283–300.
- Hindin, M. J. (2000). Women's power and anthropometric status in Zimbabwe. *Social Science and Medicine*, 51(10), 1517–1528.
- Hindin, M. J., & Adair, L. S. (2002). Who's at risk? Factors associated with intimate partner violence in the Philippines. *Social Science and Medicine*, 55(8), 1385–1399.
- Ibrahim, S., & Alkire, S. (2007). Agency and empowerment: A proposal for internationally comparable indicators. *Oxford Development Studies*, 35(4), 379–403.
- James-Hawkins, L., Peters, C., VanderEnde, K., Bardin, L., & Yount, K. M. (2016). Women's agency and its relationship to current contraceptive use in lower-and middle-income countries: A systematic review of the literature. *Global Public Health*, 1–16. doi:10.1080/17441692.2016.1239270.

- Jejeebhoy, S. J. (2000). Women's autonomy in rural India: Its dimensions, determinants, and the influence of context. In H. Presser & G. Sen (Eds.), *Female empowerment and demographic processes* (pp. 204–238). Oxford: Clarendon Press.
- Jejeebhoy, S. J., & Sathar, Z. A. (2001). Women's autonomy in India and Pakistan: The influence of religion and region. *Population and Development Review*, 27(4), 687–712.
- Jensen, R., & Thornton, R. (2003). Early female marriage in the developing world. *Gender & Development*, 11(2), 9–19.
- Kabeer, N. (1999). Resources, agency, achievements: reflections on the measurement of women's empowerment. *Development and Change*, 30(3), 435–464.
- Kabeer, N. (2001). Conflicts over credit: Re-evaluating the empowerment potential of loans to women in rural Bangladesh. *World Development*, 29(1), 63–84.
- Kabeer, N. (2011). Between affiliation and autonomy: navigating pathways of women's empowerment and gender justice in rural Bangladesh. *Development and Change*, 42(2), 499–528.
- Kabeer, N. (2012). *Women's economic empowerment and inclusive growth: Labour markets and enterprise development* (Discussion Paper 29/12). London: Centre for Development Policy and Research, School of Oriental and African Studies.
- Kabeer, N., Mahmud, S., & Tasneem, S. (2011). *Does paid work provide a pathway to women's empowerment? Empirical findings from Bangladesh* (Working paper No. 375). Brighton, United Kingdom: Institute of Development Studies.
- Khandker, S. R. (1988). Determinants of women's time allocation in rural Bangladesh. *Economic Development and Cultural Change*, 37(1), 111–126.
- Kim, J. C., Watts, C. H., Hargreaves, J. R., Ndhlovu, L. X., Phetla, G., Morison, L. A., et al. (2007). Understanding the impact of a microfinance-based intervention on women's empowerment and the reduction of intimate partner violence in South Africa. *American Journal of Public Health*, 97(10), 1794–1802.
- Kishor, S. (2000). Empowerment of women in Egypt and links to the survival and health of their infants. In H. Presser & G. Sen (Eds.), *Women's empowerment and demographic processes: Moving beyond Cairo*. New York: Oxford University Press.
- Kishor, S. (2005). Introduction. In S. Kishor (Ed.), *A focus on gender: Collected papers on gender using DHS data*. Calverton, MD: ORC Macro.
- Koenig, M. A., Ahmed, S., Hossain, M. B., & Mozumder, A. B. M. K. A. (2003). Women's status and domestic violence in rural Bangladesh: individual- and community-level effects. *Demography*, 40(2), 269–288.
- Kritz, M. M., Makinwa-Adebusoye, P., & Gurak, D. T. (2000). The role of gender context in shaping reproductive behaviour in Nigeria. In H. Presser & G. Sen (Eds.), *Women's empowerment and demographic processes: Moving beyond Cairo*. Oxford: Oxford University Press.
- Lee-Rife, S. M. (2010). Women's empowerment and reproductive experiences over the lifecourse. *Social Science and Medicine*, 71(3), 634–642.
- Legovini, A. (2005). *Measuring women's empowerment and the impact of Ethiopia's women's development initiatives project* (Working paper No. 88496). Washington: World Bank Group.
- Lépine, A., & Strobl, E. (2013). The effect of women's bargaining power on child nutrition in rural Senegal. *World Development*, 45, 17–30.
- Mabsout, R. (2011). Capability and health functioning in Ethiopian households. *Social Indicators Research*, 101(3), 359–389.
- Mahmud, S., Shah, N. M., & Becker, S. (2012). Measurement of women's empowerment in rural Bangladesh. *World Development*, 40(3), 610–619.
- Malhotra, C., Malhotra, R., Ostbye, T., & Subramanian, S. V. (2014). Maternal autonomy and child health care utilization in India: Results from the National Family Health Survey. *Asia-Pacific Journal of Public Health*, 26(4), 401–413.
- Malhotra, A., & Mather, M. (1997). Do schooling and work empower women in developing countries? Gender and domestic decisions in Sri Lanka. *Sociological Forum*, 12(4), 599–630.
- Malhotra, A., & Schuler, S. R. (2005). Women's empowerment as a variable in international development. In D. Narayan (Ed.), *Measuring empowerment: Cross-disciplinary perspectives* (pp. 71–88). Washington: The World Bank.
- Mason, K. O. (1986). The status of women: Conceptual and methodological issues in demographic studies. *Sociological Forum*, 1(2), 284–300.
- Mason, K. O. (2003). *Measuring empowerment: A social demographer's view*. Paper presented at the workshop on “measuring empowerment: Cross-disciplinary perspectives”, The World Bank, Washington.

- Mason, K. O., & Smith, H. L. (2000). Husbands' versus wives' fertility goals and use of contraception: the influence of gender context in five Asian countries. *Demography*, 37(3), 299–311.
- Mason, K. O., & Smith, H. L. (2003). *Women's empowerment and social context: Results from five Asian countries*. Washington: Gender and Development Group, World Bank.
- Mistry, R., Galal, O., & Lu, M. (2009). Women's autonomy and pregnancy care in rural India: a contextual analysis. *Social Science and Medicine*, 69(6), 926–933.
- Montgomery, R., Bhattacharya, D., & Hulms, D. (1996). Credit for the poor in Bangladesh. In D. Hulme & P. Mosley (Eds.), *Finance against poverty* (Vol. 2, pp. 86–158). London: Routledge.
- Morgan, S. P., & Niraula, B. B. (1995). Gender inequality and fertility in two Nepali villages. *Population and Development Review*, 21(3), 541–561.
- Mosedale, S. (2005). Assessing women's empowerment: towards a conceptual framework. *Journal of International Development*, 17(2), 243–257.
- Mullany, B. C., Hindin, M. J., & Becker, S. (2005). Can women's autonomy impede male involvement in pregnancy health in Katmandu, Nepal? *Social Science and Medicine*, 61(9), 1993–2006.
- Pahl, J. (1989). *Money and marriage*. London: Macmillan.
- Parveen, S. (2005). Empowerment of rural women in Bangladesh: A household level analysis. In W. Doppler & S. Bauer (Eds.), *Farming and rural systems economics* (Vol. 72). Weikersheim: Margraf.
- Perezniato, P., & Taylor, G. (2014). A review of approaches and methods to measure economic empowerment of women and girls. *Gender and Development*, 22(2), 233–251.
- Pitt, M. M., Khandker, S. R., & Cartwright, J. (2006). Empowering women with micro finance: evidence from Bangladesh. *Economic Development and Cultural Change*, 54(4), 791–831.
- Pratley, P. (2016). Associations between quantitative measures of women's empowerment and access to care and health status for mothers and their children: a systematic review of evidence from the developing world. *Social Science and Medicine*, 169, 119–131.
- Rahman, M., Hoque, M. A., & Makinoda, S. (2011). Intimate partner violence against women: is women empowerment a reducing factor? A study from a national Bangladeshi sample. *Journal of Family Violence*, 26(5), 411–420.
- Salem, R., Cheong, Y. F., & Yount, K. M. (2017). Is women's work a pathway to their agency in rural Minya, Egypt? *Social Indicators Research*, 1–25. doi:10.1007/s11205-017-1573-9.
- Samman, E., & Santos, M. E. (2009). *Agency and empowerment: a review of concepts, indicators and empirical evidence*. Oxford: Oxford Poverty and Human Development Initiative, University of Oxford.
- Sandberg, J., & Rafail, P. (2013). Measurement models of women's autonomy using the 1998/1999 India DHS. *Journal of Population Research*, 30(4), 367–381.
- Schuler, S. R., Hashemi, S. M., & Riley, A. P. (1997). The influence of women's changing roles and status in Bangladesh's fertility transition: evidence from a study of credit programs and contraceptive use. *World Development*, 25(4), 563–575.
- Schuler, S. R., Islam, F., & Rottach, E. (2010). Women's empowerment revisited: a case study from Bangladesh. *Development in Practice*, 20(7), 840–854.
- Shroff, M. R., Griffiths, P. L., Suchindran, C., Nagalla, B., Vazir, S., & Bentley, M. E. (2011). Does maternal autonomy influence feeding practices and infant growth in rural India? *Social Science and Medicine*, 73(3), 447–455.
- Silberschmidt, M. (1992). Have men become the weaker sex? Changing life situations in Kisii District, Kenya. *The Journal of Modern African Studies*, 30(2), 237–253.
- Story, W. T., & Burgard, S. A. (2012). Couples' reports of household decision-making and the utilization of maternal health services in Bangladesh. *Social Science and Medicine*, 75(12), 2403–2411.
- Taylor, G., & Perezniato, P. (2014). *Review of evaluation approaches and methods used by interventions on women and girls' economic empowerment*. London: Overseas Development Institute.
- Thomas, D. (1997). Incomes, expenditures, and health outcomes: Evidence on intrahousehold resource allocation. In L. Haddad, J. Hoddinott, & H. Alderman (Eds.), *Intrahousehold resource allocation in developing countries* (pp. 142–164). Baltimore: The John Hopkins University Press.
- Thorpe, S., VanderEnde, K., Peters, C., Bardin, L., & Yount, K. M. (2016). The influence of women's empowerment on child immunization coverage in low, lower-middle, and upper-middle income countries: A systematic review of the literature. *Maternal and Child Health Journal*, 20(1), 172–186.
- United Nations Development Programme. (2015). *Human development report 2015*. New York: United Nations Development Programme.
- United Nations General Assembly. (2015). *Transforming our world: The 2030 agenda for sustainable development*. New York: United Nations.
- Upadhyay, U. D., Gipson, J. D., Withers, M., Lewis, S., Ciaraldi, E. J., Fraser, A., et al. (2014). Women's empowerment and fertility: A review of the literature. *Social Science and Medicine*, 115, 111–120.

- Vyas, S., & Watts, C. (2009). How does economic empowerment affect women's risk of intimate partner violence in low and middle income countries? A systematic review of published evidence. *Journal of International Development*, 21(5), 577–602.
- Yount, K. M., Dijkerman, S., Zureick-Brown, S., & VanderEnde, K. E. (2014). Women's empowerment and generalized anxiety in Minya, Egypt. *Social Science and Medicine*, 106, 185–193.
- Yount, K. M., VanderEnde, K. E., Dodell, S., & Cheong, Y. F. (2016). Measurement of women's agency in Egypt: A national validation study. *Social Indicators Research*, 128(3), 1171–1192.