The Poverty Stoplight:
A New Metric for Microfinance

AN ABSTRACT

Submitted on the thirty-first day of March 2016 to the
Payson Graduate Program in Global Development in
Partial Fulfillment of the requirements of the
Law School of
Tulane University
for the Degree
of
Doctor of Philosophy

By

Martin Burt

APPROVED:

Colin Crawford, JD (Chair)

William E. Bertrand, Ph.D.

Arachu Castro, Ph.D.

Ludovico Feoli, Ph.D.

ABSTRACT

The Poverty Stoplight is a tool that has been implemented in Paraguay since 2010 to measure poverty. It is a self-diagnostic visual survey to assist poor families to assess their level of poverty across the 50 indicators and to develop personalized poverty elimination plans. The tool uses stoplight colors (red, yellow, and green), illustrations, maps, electronic tablets, and simple software to create dashboards and indexes. Although it can be used in a wide variety of settings, it was created in order to fill a gap that exists among poverty measurement tools that are used by the microfinance industry. Most of these tools are focused on monetary poverty, and only one uses a constructivist approach to understand poverty. Despite trends in academic literature to consider poverty a multidimensional phenomenon and to measure poverty through hybrid positivist and constructivist methods, the Poverty Stoplight is the only tool used by the microfinance industry that attempts to accomplish this. The aim of this dissertation is to contribute to the academic literature by analyzing the practical benefits and difficulties that measuring multidimensional poverty through a combination of epistemological paradigms entails. To do so, in this dissertation I evaluate the robustness of a specific implementation of these two trends: the metric aspect of the Poverty Stoplight. In order to do this, I seek to answer four research questions: is the Poverty Stoplight (1) reliable, (2) valid, (3) practical and (4) does it have discriminatory power—from a positivist and constructivist point of view. My analysis is based on data I collected through four methods: (1) application of the visual survey tool, (2) focus groups, (3) semi-structured interviews, and a (4) participatory wealth ranking. While results suggest that there is test-retest reliability, consequential validity, content validity and criterion-related validity, problems related to generalizability compromise internal consistency reliability and construct validity. Taken as a whole, the Poverty Stoplight has limited robustness. I end this dissertation with recommendations to make it a more robust tool, such as separating the Poverty Stoplight metric from the coaching methodology or reformulating indicators and dimensions in order for these to better represent poverty.

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1 Chapter 1: Introduction

1.1 Purpose of this Dissertation

The Poverty Stoplight is a tool that has been implemented in Paraguay since 2010 to measure poverty, mostly of microfinance clients.[1] It is a self-diagnostic visual survey that produces information intended to assist poor families to assess their level of poverty across 50 indicators. This assessment is then used to develop a personalized poverty elimination plan that informs the families how they are poor and what they can do in order to escape poverty. The tool is meant to be didactic, and it uses stoplight colors (red, yellow, and green), illustrations, maps, electronic tablets, and simple software to create dashboards that enable the poor to see and understand the ways in which they are poor. At the same time, this information is also meant to enable microfinance institutions (MFIs) to better assist the poor.

Although it can be used by a large variety of settings, it was originally conceived as a tool to assist the work of MFIs.[2] Therefore, it has certain characteristics that are meant to specifically assist MFIs carry out their poverty alleviation missions. The most important characteristic in this regard is that the Poverty Stoplight is both a poverty

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[1] In the spirit of full disclosure, I am the founder and executive director of Fundación Paraguaya and I have been involved in the development of the Poverty Stoplight since its inception. I address the ethical implications of my position in Section 3.4. I personally did the data analysis for this dissertation, but I was assisted by Fundación Paraguaya staff for data collection (survey applications, focus groups, individual interviews) and coding of transcriptions. My research team consisted of two assistants and 23 field workers, all trained by Collaborative Institutional Training Initiative (CITI).

[2] Fundación Paraguaya, "Poverty Stoplight Application Manual: A Simple Description of How to Apply the Poverty Stoplight and the Actions to Tackle Each Indicator," n.d.

measurement tool (a metric) and a methodology used to help people overcome poverty (a coaching methodology). In this sense, the Poverty Stoplight is meant to understand a microfinance client's poverty, but through its participatory characteristics it is also meant to be a tool that allows MFIs to lift clients out of poverty by empowering them to improve their own situations. This dual purpose has implications for the design of the tool, as will be discussed in Chapter 2 when I describe the design of the Poverty Stoplight.

The Poverty Stoplight was created in response to two trends in academic literature surrounding poverty. A first trend is the expansion of the concept of poverty from, being understood as a unidimensional phenomenon centered on the observation of income or consumption expenditure (as a proxy for the understanding of household well-being), [3] to a larger, multidimensional, understanding of poverty that includes the level of freedom an individual has within a given society.[4] A second general trend in the academic literature is a movement towards creating hybrid or "Q-Squared" poverty measurement tools that mix positivist and constructivist approaches to understanding poverty.[5] According to Paul Schaffer, these two epistemological traditions have repercussions in the methods researchers choose to understand poverty.[6]

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[3] Jonathan Henry Haughton and Shahidur R Khandker, *Handbook on Poverty and Inequality* (Washington, DC: World Bank, 2009).
[4] Amartya Sen, *Development as Freedom*, Reprint edition (New York: Anchor, 2000).
[5] Paul Shaffer refers to positivism as empiricism and constructivism as hermeneutics. However, in other works, he has also used these terms interchangeably. To maintain consistency throughout this Dissertation I use positivism and constructivism throughout. More information on this usage can be found in: Ravi Kanbur, "Q-Squared? A Commentary of Qualitative and Quantitative Poverty Appraisal," *Qualitative and Quantitative Poverty Appraisal: Complementarities, Tensions and the Way Forward*, n.d., http://publications.dyson.cornell.edu/research/researchpdf/wp/2001/Cornell_Dyson_wp0105.pdf.
[6] Paul Shaffer, *Q-Squared: Combining Qualitative and Quantitative Approaches in Poverty Analysis*, 2013.

Of all the poverty measurement tools being used by the microfinance industry,[7] the Poverty Stoplight is the only tool that attempts to combine hybrid positivist and constructivist approaches in measuring multidimensional poverty. The Poverty Stoplight is a multidimensional poverty measurement tool because it uses 50 indicators to understand a family's poverty. These indicators include classical poverty measurement criteria, like monetary poverty, but it also includes psychosocial indicators, indicators about assets a family possesses, and indicators about access to public services. The Poverty Stoplight also mixes constructivist and positivist paradigms in measuring poverty because it provides information for MFIs, but it is also participatory by creating information that is readily useful for the poor themselves.

The aim of this dissertation is to contribute to the academic literature by analyzing the practical benefits and difficulties that measuring multidimensional poverty through a combination of epistemological paradigms entails. To achieve this, I analyze the robustness of the Poverty Stoplight by examining the reliability, validity, discriminatory power and practicality of the metric. Before laying out the details of how the Poverty Stoplight was designed, the rest of this chapter reviews the literature about the definition of poverty, the growing trend to combine positivist and constructivist paradigms in the understanding of poverty, and it provides an overview of the current poverty measurement tools being used by the microfinance.

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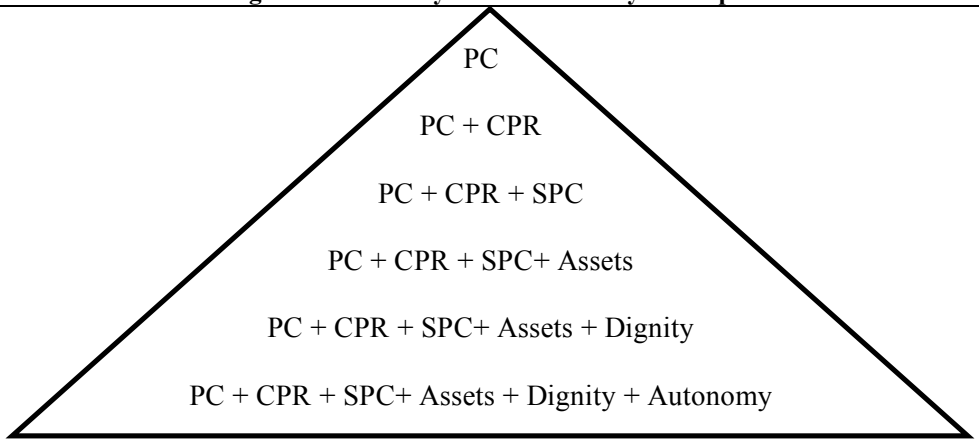
[7] "MicroCredit Summit Poverty Measurement Tools," March 11, 2015, http://www.microcreditsummit.org/poverty-measurement-tools.html.

1.2 **Defining the Concept of Poverty**

In order to understand how poverty can be measured, it is necessary to explore what is understood by the concept of poverty. Figure 1.1 depicts the progressive widening of the definition of poverty over the past 40 years. Rosemary McGee and Karen Brock from the Institute of Development Studies in the UK define this as a "pyramid of poverty concepts." [8]

Figure 1.1 Pyramid of Poverty Concepts



Note: PC = private consumption; CPR = common property resources; SPC = state-provided commodities.

[8] Rosemary McGee and Karen Brock, "From Poverty Assessment to Policy Change: Processes, Actors and Data.," *Institute of Development Studies, Brighton, Sussex BN1 9RE England*, no. Working Paper 133 (July 2001).

What constituted poverty and wellbeing in the 1960s, when the US War on Poverty[9] and the Poverty Line were launched,[10] was comprised mostly of private consumption, which is represented in the apex of the pyramid. Today there is growing consensus that unidimensional poverty, as measured by GNP/GDP per capita or the poverty line, is an insufficient way to look at poverty.[11] Analysts agree that definitions and measurements of poverty, if they are to be useful to policy makers, need to incorporate the concept of human rights[12] and be multidimensional.[13] This is represented at the base of the pyramid and includes not only private consumption but also common property resources, state provided commodities, assets, dignity, and autonomy.

One very influential book that reflects an expanded, multidimensional understanding of what it is to be "developed" – and thus, in part, what it means to define someone as poor or not poor -- is Amartya Sen's *Development as Freedom*. In this book, Sen argues that:

> there is a strong case for judging individual advantage in terms of the capability that a person has, that is, the substantive freedoms he or she enjoys to lead the kind of life he or she has reason to value. In this perspective, poverty must be seen as the deprivation of basic capabilities rather than merely as lowness of incomes, which is the standard criterion of identification of poverty.[14]

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[9] Martha J. Bailey and Sheldon Danziger, *Legacies of the War on Poverty* (New York: Russell Sage Foundation, 2013).
[10] Office of Retirement and Disability Policy U. S. Social Security Administration, "Remembering Mollie Orshansky—The Developer of the Poverty Thresholds," accessed April 30, 2014, http://www.ssa.gov/policy/docs/ssb/v68n3/v68n3p79.html.
[11] Joseph E. Stiglitz et al., *Mismeasuring Our Lives: Why GDP Doesn't Add Up* (New York: New Press, The, 2010).
[12] *Social Protection and Inclusion: Experiences and Policy Issues* (International Labour Organization, 2006).
[13] McGee and Brock, "From Poverty Assessment to Policy Change: Processes, Actors and Data."
[14] Sen, *Development as Freedom*., p. 87

Sen argues that income is instrumentally useful because through an expansion of income a person may also expand his or her capabilities. However, income is not intrinsically useful because a person could have high income but lack other freedoms and therefore still be poor. That is to say, the increase of income is necessary, but not sufficient for the elimination of poverty.[15] For example, Sen argues that, although unemployment insurance in Europe can compensate the lack of income that unemployment produces, being unemployed in Europe causes other deprivations for individuals. Sen explains, "[unemployment] is also a source of far-reaching debilitating effects on individual freedom, initiative and skills. Among its manifold effects, unemployment contributes to the 'social exclusion' of some groups, and it leads to losses of self-reliance, self-confidence and psychological and physical health."[16] A logical conclusion of this statement is then that to understand poverty, while understanding income is necessary, it is also fundamental to understand the level of agency and freedoms that a person enjoys within a society. Having said that, a resulting question is: which are, exhaustively, the deprivations in freedoms and capabilities that a person must have to be considered poor?

Sen further wrote that the expansions of freedoms are not only the *ends* of development, they are also the *means* through which development is achieved. Sen calls freedoms that are used as means to an end "instrumental freedoms," and they are: 1) *political freedoms* (civil rights, incidence in the public sector, freedom of speech); 2) *economic facilities* (availability or ownership of resources, conditions of exchange, and market operation); 3) *social opportunities* (access to education, health, and other

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[15] Ibid.
[16] Ibid.

opportunities which expand the capacity of wellbeing); 4) *transparency guarantees* (transparency in the private and the public sector); and 5) *protective security* (social networks that prevent affected populations to be reduced to misery, hunger, and death).[17] According to Sen, "these instrumental freedoms directly enhance the capabilities of people but they also supplement one another, and can furthermore reinforce one another."[18] The idea of instrumental freedoms proposed by Sen shows that deprivations of different freedoms can interact and and interlinked to each other. As Sen states, these interlinkages "can go in different directions" by creating virtuous or vicious cycles that promote or hinder people's capabilities.[19]

A similar conclusion, focused more specifically on the classification of poverty, was reached by the World Bank. To better understand how poor people defined their own poverty, in 1999 the World Bank carried out an extensive qualitative study where it analyzed selected reports that resulted in the analysis of 78 participatory evaluations of poverty that were carried out in 47 countries. The result, a document titled *Can Anyone Hear Us? Voices From 47 Countries,*[20] concluded that poverty has multidimensional characteristics, which are interdependent. According to the authors, poverty is a problem of gender, it is dynamic and complex, it is rooted in institutions, and it has a strong geographic component.[21] Despite the complexity and changing quality of poverty, the

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[17] Amartya Sen, *Development as Freedom*, Reprint edition (New York: Anchor, 2000)., p. 38-40.
[18] Ibid. p. 40.
[19] Ibid., 53.
[20] Deepa Narayan et al., *Can Anyone Hear Us?: Voices of the Poor* (New York: World Bank Publications, 2000).
[21] Ibid.

study revealed four dimensions that showed up constantly in the definition of poverty of poor people were:

> First, poor people lack access to basic infrastructure, rural roads, transportation, and water. Second, poverty has important psychological dimensions such as powerlessness, voicelessness, dependency, shame and humiliation…Third, while there is a widespread thirst for literacy, schooling receives little mention or mixed reviews. Poor people realize education offers an escape from poverty—*if* the economic environment in the society at large and the quality of education improves, however poor health, and illness is dreaded everywhere as a source of destitution. Finally, poor people rarely speak of income but focus instead on managing assets—physical, human, social, and environmental—as a way to cope with their vulnerability, which in many cases takes on gendered dimensions.[22]

This research gives important empirical support to the arguments that Sen proposed originally, since it revealed that poverty includes mental, social, and economic aspects. Also, this work is important because it showed that lacking different freedoms can make people poor in different ways or for different reasons.

These studies suggest that multidimensional poverty includes not only multiple causes but also multiple levels and sources of poverty. They imply, for example, that the cause of a person's poverty may not exclusively result from individual behavior, societal norms, or government policies, but on any combination of these three levels of actors—meaning that the causes of and solutions to poverty can be individual, social, and/or institutional. To understand how these different levels work, Ken Wilber's integral theory is useful.[23] Wilber explains that to understand a complex phenomenon such as poverty,

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[22] Ibid.
[23] Ken Wilber, *A Theory of Everything: An Integral Vision for Business, Politics, Science, and Spirituality* (Boston: Shambhala, 2001).

one should simultaneously analyze deprivations from four perspectives: intention, behavior, culture, and systems.[24]

To give an example, on the individual level, a monetarily poor woman could be poor because she does not wish to work outside the house because she prioritizes other tasks (intention). Or, even if she intended to work, she may still be poor because her work does not generate sufficient income (behavior). At the societal level, a woman could be monetarily-poor because her society considers that women should not work (culture). Finally, at an institutional level, a woman could be poor because the laws of a country do not allow her to own private property (system). To understand poverty, then, besides knowing in which aspects a person is poor, it is also necessary to discern out of which level this poverty stems from.

1.3 **Poverty Epistemology: Positivism, Realism, and Constructivism**

The expansion of the definition of poverty has led to a series of attempts to better understand poverty. A wide variety of methods have been used when undertaking this task. According to Shaffer:

> Consider, for example, *The Bottom Billion* and *Poor Economics* two of the most influential books on poverty to appear in recent years… In the first case, there is a very heavy weighting on the results of econometric models… In the second case, findings from randomized controlled trials provide the core empirical support for claims made about poverty. Such methodological choices are not 'good' or 'bad' in themselves, but they do have implications for how we understand and explain poverty, and what we propose to do about it. [25] [26]

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[24] Ibid.

[26] Shaffer, *Q-Squared*. p. 3

In this sense, an added layer of complexity to understanding poverty is not only that poverty is multidimensional and multilevel, but also that there are several approaches on how to measure poverty. Thus, choices made about these approaches can lead to different sets of people being identified as poor.[27] In order to visualize the hidden values of different poverty measures, in this section I briefly present positivist, realist and constructivist paradigms, and I analyze how these paradigms explain different approaches adopted by researchers when measuring poverty.

Baumgarten, citing Kuhn, defined a paradigm as the entire "constellation of values, techniques, beliefs, and worldviews shared by members of a community."[28] In social research there are three general paradigms: positivism, realism, and constructivism. These paradigms have different ontologies, which result in differing epistemologies and methodologies. Baumgarten defines ontology as the set of assumptions that a paradigm makes about the form and nature of reality. He then defines epistemology as the set of assumptions about the relationship between the person who knows, the subject, and the things that are known, the objects. Finally, he defines methodology as the set of actions that an individual has to carry out in order to effectively learn about reality. These three elements of all paradigms are interlinked because ontological assumptions result in different epistemological and methodological choices, as can be seen in Figure 1.2 below.[29]

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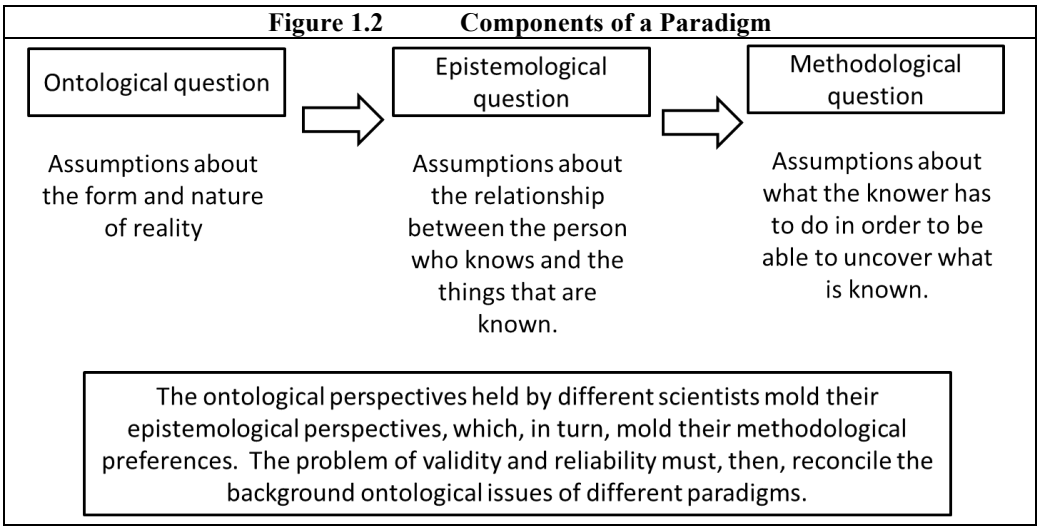
[27] Ibid. p. 6
[28] Matthias Baumgarten, *Paradigm Wars - Validity and Reliability in Qualitative Research* (S.l.: GRIN Verlag, 2013).
[29] Ibid.



Positivist ontology assumes that reality is actor-independent. According to Kirk and Miller, "in its strongest form, positivism…[assumes] not only that there is an external world, but that the external world itself determines absolutely the one and only correct view that can be taken of it, independent of the process or circumstances of viewing."[30] Similarly, according to Shaffer, positivism is based on the primacy of what he calls "brute data [sic]," or "data whose validity cannot be questioned by offering another interpretation or reading."[31] The positivist paradigm is the classical paradigm of the physical sciences and the philosophical backbone of most traditionally empirical and quantitative methods.[32]

Realist ontology also accepts the idea that there is an actor-independent objective reality, but it assumes an additional layer of non-observable generative mechanisms that

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[30] Jerome Kirk and Marc L Miller, *Reliability and Validity in Qualitative Research* (SAGE Publications, n.d.).
[31] Shaffer, *Q-Squared*.
[32] H. Russell Bernard, *Research Methods in Anthropology: Qualitative and Quantitative Approaches*, Fourth Edition edition (Lanham, MD: AltaMira Press, 2006).

take place. This means that between the subject and the object there is a layer of interpretation, social constructions and conceptual meanings that bridge the gap. Consequently, realist epistemology views research as a process of working towards objectivity even if this objectivity can only be known through approximation. Methodologically, in order to achieve knowledge about reality, realism advocates "critical multiplism," which is the idea of approximating reality through multiple ways of inquiry.[33]

Finally, constructivist ontology assumes that reality is relative, not independent from the observer, the subject. These ontological assumptions result in an epistemology that focuses on the subjective understanding of social phenomena and actions because reality, for them, does not exist, but is created by subjective actors. This interpretation of reality, and its subsequent epistemology, results in a methodological preference for methods "emphasizing the subjective influence of researcher interaction on the research itself as an inevitable and integral part of the process."[34] Similarly, according to Shaffer, in constructivism[35] "social phenomena depend for their existence and/or significance, on the meanings ascribed to them by social actors."[36]

Methodological choices made by different researchers are directly related to their ontological assumptions about the nature and form of reality. In his book *Q-Squared, Combining Qualitative & Quantitative Approaches in Poverty Analysis,*[37] Paul Shaffer

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[33] Baumgarten, *Paradigm Wars - Validity and Reliability in Qualitative Research*.
[34] Ibid.
[35] Shaffer uses the term "hermeneutic", but it represents roughly the same concept as constructivism, and I did not include that term to maintain clarity.
[36] Shaffer, *Q-Squared*.
[37] Ibid.

asserts that the fundamental assumptions that researchers hold deeply affect how they approach the measurement of poverty. According to Shaffer, researchers who hold a positivist paradigm tend to use a "consumption approach" to measure poverty. On the other hand, researchers who hold a constructivist paradigm tend to use a "dialogical approach" to understanding poverty.

Poverty is defined by positivists as the non-fulfillment of basic preferences, represented by low levels of consumption expenditure or other welfare indicators. Basic preferences are defined in terms of minimal levels of caloric intake, supplemented by an allowance for basic non-food consumption. Shaffer summarizes how positivism is the backbone of the consumption approach in the following way:

> [B]rute data are integral to the consumption poverty approach in three ways. First, levels of wellbeing, or preference fulfillment, are known through observation of consumer behavior (revealed preference theory). Second, interpersonal comparisons of wellbeing can allegedly be made in intersubjectively observable fashion (money metric utility). Third, the estimation of the poverty line can be conducted on the basis of intersubjectively observable data (nutrition science). [38]

In this sense, the consumption approach is solely--or at least as much as possible--based on forms data that are intersubjectively observable in order for the researcher to be as objective as possible.

Constructivists focus on "interpreting existing interpretations" of poverty.[39] They rely on techniques such as semi-structured interviews, ethnographic observation, focus groups discussions and participatory rural appraisals to better understand the poor and

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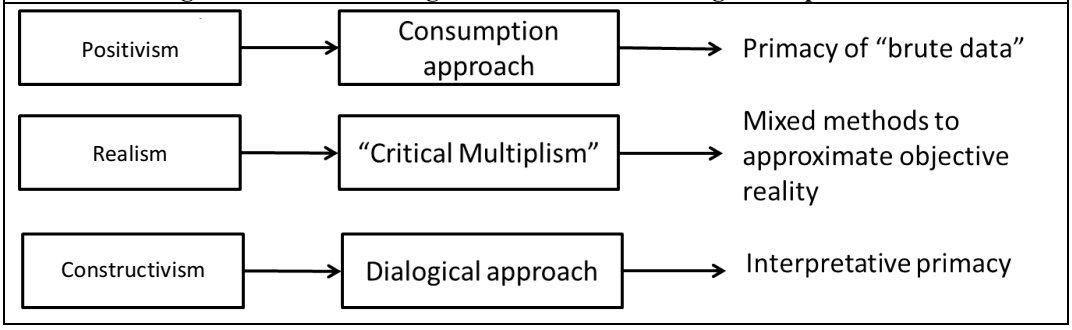
[38] C. H. Lawshe, "A Quantitative Approach to Content Validity," *Personnel Psychology* 28, no. 4 (December 1, 1975): 563–75.
[39] Shaffer, *Q-Squared*.

their locally relevant meaning of poverty. This approach deals with defining and understanding the interrelationships between different dimensions of poverty.

Many efforts have been made to combine consumption and dialogical approaches into hybrid measurement tools and to reconcile aspects of the positivist and constructivist paradigms into a single tool. There is a movement towards the "critical multiplism" approaches characteristic of Baumgarten's realist paradigm,[40] or towards what Shaffer calls "Q-Squared" approaches,[41] which seek to combine the best of both positivist and constructivist methods in the measurement of poverty. Figure 1.3 below depicts different paradigms and their methodological implications. [42] [43]

Figure 1.3 Paradigms and their Methodological Implications



Faced with a multidimensional conception of poverty, and a wide range of methodological choices on how to approach understanding this multidimensional concept, many institutions have grappled with how to react. New tools, such as United

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[40] Baumgarten, *Paradigm Wars - Validity and Reliability in Qualitative Research*.
[41] Shaffer, *Q-Squared*.
[42] Baumgarten, *Paradigm Wars - Validity and Reliability in Qualitative Research*.
[43] Shaffer, *Q-Squared*.

Nations Development Program's (UNDP) Human Development Index (HDI),[44] the Oxford Poverty and Human Development Initiative's (OPHI) Multidimensional Poverty Index (MPI),[45] the International Fund for Agricultural Development's (IFAD) Multidimensional Poverty Assessment Tool,[46] and the recently created Social Progress Index (SPI)[47] poverty have been created in an attempt to address this new vision of multidimensional of poverty.

However, this dissertation is concerned principally with poverty measurement tools used by the microfinance industry because the Poverty Stoplight was conceived to assist MFIs to combat poverty. What follows is an overview of the logic behind the microfinance industry and current poverty measurement tools.

1.4 **The need of MFIs to measure Poverty**

The current microfinance methodology was launched almost simultaneously in the late 1970s both by Grameen Bank in Bangladesh and by Acción International in Latin America. The rationale was that microenterprises—urban street vendors, carpenters, seamstresses, and rural subsistence farmers operating in the informal sector of the economy—were an opportunity for economic growth and poverty reduction rather than a drag on the economy. If provided with minimal financial and technical assistance, such as loans and managerial training, these very small businesses were potentially capable of

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[44] United Nations, "Human Development Report 2010," 2010, http://hdr.undp.org/en/content/human-development-report-2010.
[45] "Spotlight | Oxford Poverty & Human Development Initiative (OPHI)," accessed March 16, 2014, http://www.ophi.org.uk/.
[46] Cohen, A., "The Multidimensional Poverty Assessment Tool: Design, Development and Application of a New Framework for Measuring Rural Poverty" (International Fund for Agricultural Development, 2009).
[47] "Social Progress Index," n.d., http://www.socialprogressimperative.org/.

increasing family income, strengthening precarious jobs, creating new jobs, and graduating into the formal, tax-paying economy.[48]

However, after having been celebrated as the proverbial silver bullet in the fight against poverty,[49] [50] microfinance has come under criticism during the past decade. One of the main criticisms is that most MFIs suffer from mission drift, as they do not reach the truly poor with their services.[51] MFI incentives to achieve self-sufficiency and positive financial returns can be contrary to their mission of reaching the truly poor because poorer clients are more costly to reach and less profitable. In the worst cases, MFIs have average loan sizes that are geared more toward small businesses than microenterprises, they charge exorbitant interest rates, and they are more interested in making a profit off the poor than in being a positive development tool.[52] In order to not stray from their mission, it is essential that MFIs measure their clients' level of poverty in order to confirm whether they are actually reaching the poor with their financial services. Recognizing this, in 1998, USAID commissioned FINCA International, one of the world's leading MFIs, to contact more than 80 MFIs around the world and find out more about their poverty targeting and assessment models.[53] [54] The objective was to help MFIs

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[48] Joanna Ledgerwood, *Microfinance Handbook: An Institutional and Financial Perspective*, Sustainable Banking with the Poor (Washington, D.C: The World Bank, 1999).
[49] Muhammad Yunus and Alan Jolis, *Banker to the Poor: The Autobiography of Muhammad Yunus, Founder of Grameen Bank*, 1 edition (Karachi : New York: Oxford University Press, 2001).
[50] Phillip Smith and Thurman, *A Billion Bootstraps: Microcredit, Barefoot Banking, and The Business Solution for Ending Poverty* (McGraw-Hill Education, n.d.).
[51] Ledgerwood, *Microfinance Handbook: An Institutional and Financial Perspective*.
[52] David Roodman, "The Impact of Microcredit on the Poor in Bangladesh: Revisiting the Evidence - Working Paper 174" (Center for Global Development, 2013).
[53] John K. Hatch and Laura Frederick, "Poverty Assessment by Microfinance Institutions: A Review of Current Practice" (FINCA/Microenterprise Best Practices, August 1998).
[54] To the best of my knowledge, there is no comparable, more recent publication attempting to contrast poverty metrics used by the microfinance industry. A short description of the poverty measurement tools

select a poverty assessment strategy that would "serve as yardsticks by which donors can identify which programs serve which clientele on the poverty continuum."[55]

1.5 **How the Microcredit Summit Campaign is Measuring Poverty**

Faced with the danger of mission drift and fearing that the microfinance industry would abandon poor clients, in the 1990s international development agencies such as the World Bank and USAID began funding the design and development of new poverty metrics, while also developing their own.[56] The resulting tools make a series of epistemological choices, which affect how they approach and measure poverty. What follows is a brief overview of the most important poverty measurement tools that are featured by the Microcredit Summit Campaign.[57] [58]

1.5.1 **Grameen Bank Progress Out of Poverty Index**

The Progress Out of Poverty Index (PPI)[59] estimates the likelihood that a family is below the poverty line using a very short (1-page) survey. The PPI results from taking the national household survey data of a country, using the poverty line as defined by a country and producing an estimation function to choose characteristics that predict the poverty of a person. [60] These characteristics vary from country to country, and they can be pretty much any proxy indicator that is also contained in a household survey. For

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used by the microfinance industry can be found under Poverty Measurement Resources at Microcredit Summit Campaign's website:http://microcreditsummit.org/poverty-measurement-tools.html

[55] "MicroCredit Summit Poverty Measurement Tools."

[56] Ledgerwood, *Microfinance Handbook: An Institutional and Financial Perspective*.

[57] "MicroCredit Summit Poverty Measurement Tools."

[58] Larry Reed, "Mapping Pathways out of Poverty: The State of the Microcredit Summit Campaign Report 2015" (Microcredit Summit Campaign, 2015), http://stateofthecampaign.org/read-the-full-2015-report/.

[59] Mark Schreiner, "Progress Out Of Poverty Index (PPI): A Simple Poverty Scorecard for Paraguay" (Microfinance Risk Management L.L.C., December 7, 2012).

[60] Steve Boucher, "The Progress Out of Poverty Index: Detailed Analysis of MFI Implementation" (Multilateral Investment Fund, Inter American Bank, February 2014), http://www10.iadb.org/intal/intalcdi/PE/2014/13344.pdf.

example, in a figurative scenario where 95 percent of poor households had dirt floors, and 95 percent of non-poor households had brick floors, then the floor of the house would be an extremely good predictor of poverty. However, correlation does not imply causation, and therefore it does not necessarily follow that people are poor *because* they have dirt floors, but rather the type of floor *indicates* that a household might be poor because it has a characteristic that is extremely common among poor people. It would not make sense to conclude, based on the information of the PPI, that improving the floor of a household would be relevant to reducing the poverty of a household. The purpose of selecting ten predictors is mainly to reduce the questionnaire needed, from a long household survey, to a 10-item questionnaire that requires little specialization to carry out. The PPI is quite popular. It is currently used by more than 175 MFIs in over 55 countries, mostly countries in which a large segment of the population falls under the US $1.25/day poverty line.[61]

The PPI is unidimensional, simple, fast, and inexpensive while producing objective, quantitative data for MFI use. However, proponents of the PPI openly recognize and admit several limitations to their measuring tool. The main limitation has to do with the need to update or monitor the chosen predictors of poverty as their relationship to poverty can change over time. Continuing with the floor example, if for whatever reason the relationship between floors and poverty changed, such that 50 percent of poor people had dirt floors and 50 percent of non-poor people had brick floors, then floor material would no longer be a good predictor of poverty. These shifting

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[61] Ibid.

prediction capabilities could introduce bias.[62] Another limitation is that the quality of the PPI is always limited by the quality of national survey data.[63]

However, a bigger limitation has to do with what the limitations of what the PPI sets out to do in the first place. First of all, the PPI is only concerned with monetary poverty and not multidimensional poverty; it only predicts the national poverty line, which is usually based on income or consumption expenditure. Second, as mentioned before, indicators themselves are descriptive of poverty in a given country rather than explanatory of poverty. Third, the PPI does not measure how poor a household is; it only measures the *probability* that a household falls below the poverty line, and not how far this household is from reaching the poverty line. Fourth, because it results in a probability of poverty for a household, and not a discreet poor/non-poor, the identification of a single household as poor or not poor could be problematic if the probability of poverty of that household was ambiguous. It is more capable of aggregately predicting poverty. Finally, with all these characteristics, the PPI has little or no use for poor individuals or families because it is exclusively for MFI use.

1.5.2 **USAID Poverty Assessment Tool**

The USAID Poverty Assessment Tool (PAT), currently available for 37 countries, works with the same basic principle as the PPI: it seeks to simplify large surveys through data mining techniques in order to determine the level of poverty among a population.[64] The PAT is derived from national surveys and hence it is also country specific. The main distinction between the PPI and the PAT has to do with how national household surveys

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[62] Ibid.
[63] "PPI By Country," *Progress out of Poverty*, 2015, http://www.progressoutofpoverty.org/ppi-country.
[64] Social Performance Taskforce (2010) provides a good comparison between PPI and PAT.

are reduced into poverty prediction questionnaires, but in the final result they are quite similar.

Like PPI, the PAT measures unidimensional poverty, is rapid, deals with aggregated, quantitative and objective data, and measures absolute poverty within each country. It also uses an indirect approach to measuring poverty, meaning that it infers actual satisfaction of needs. Finally, it is not contextual, i.e. does not take into account human behavior within the social, cultural, economic and political environment of a locality. As with the PPI, results are only valid at an aggregate level and not at a household level, and thus cannot be used for valid statements about poverty status at the individual household level.

1.5.3 **Cashpor House Index**

The Cashpor House Index (CHI)[65] only uses the house as a proxy measure for poverty. Under this method, each family gets points for the type of construction of their house. The height and materials of walls and roofs are observed and points are awarded for their quality. For example, if walls are lower than 4 feet, they get 0 points; if made of mud and between 4 and 8 feet, 1 point; if made of mud but more than 8 feet, 2 points; and if made of brick or concrete and over 4 feet, 4 points. If the roof is thatched or made of straw, leaves or plastic, the family receives 0 points; if made of old tiles or galvanized iron sheet, 1 point; and if made of wood plank or concrete, 2 points. The Cashpor House Index, therefore, represents a very rapid poverty assessment tool that is based on the house.

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[65] "Cashpor House Index," *Cashpor Micro Credit*, 2010, http://www.cashpor.in/chi.html.

However, the index has many problems. First and foremost it can produce inverse incentives. For example, if households are benefitted only if their houses have bad characteristics, then they are potentially rewarded if they do not fix their house. Secondly, in contrast to the PPI and the PAT, the characteristics of the house are not correlated to national poverty beforehand, so its actual predictive power is unknown. Taking the house as a predictor is a normative decision, not an empirical one. Third, improving a house is a large commitment. Therefore, only observing the house does not closely reflect small changes in poverty status. Households can improve their welfare considerably before carrying out material changes to their house--for example, by purchasing clothes or more food. Finally, the status of the house is not understood by this tool as a cause of poverty; it is only an indicator of it. This means that the information produced by this tool is, similarly to the PAT and the PPI, not relevant to poor individuals or families. Its greatest advantage that it is a very practical measure as it is easy and cheap to carry out.

1.5.4 **FINCA Client Assessment Tool**

Unlike other poverty metrics used by MFIs, the FINCA Client Assessment Tool[66] (FCAT) is a relatively complex, comprehensive, and extractive survey that takes 30-60 minutes to complete. It has sections about demographics, loans, money metrics (expenditures), assets, and social metrics such as health, housing, education, business, client satisfaction, and program departure questions. FCAT uses approximately 100-130 indicators over 6 dimensions. Research fellows deployed in the field carry out the FINCA

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[66] Jon Bernt, Saba Nasser, and Debra Stein, "FINCA Client Assessment Report" (FINCA, July 2007).

assessment annually; they conduct interviews with clients using handheld PDA devices to capture clients' responses. The FCAT produces an absolute measure of poverty.[67]

Relative to the PPI, PAT and CHI, the FCAT is considerably more expensive to carry out. The positive aspect of the FCAT is that it provides a "comprehensive assessment of clients' well-being and a fair amount of information that can be used for management."[68] The FCAT is multidimensional, but all its dimensions are concerned with monetary poverty at the macro level. With these characteristics, the level of information produced is more informative and helpful for MFI decision-making than the proxies used by PPI, PAT and CHI. However, the negative aspect of the FCAT is that it relies on client recall of past expenditure to measure poverty levels, and this can be prone to measurement errors.[69]

1.5.5 **World Bank CGAP Poverty Assessment Tool**

The World Bank's Consultative Group to Assist the Poor's Poverty Assessment Tool[70] (CGAP-PAT) is explicitly designed to provide donors and investors with a standardized, globally applicable and rigorous set of indicators—with the purpose of comparing poverty outreach. The CGAP-PAT is built by randomly selecting a sample of 200 MFI clients, together with a matching sample of 300 non-clients living in the vicinity. Data are collected on a range of various poverty indicators (e.g. spending per person on footwear and clothes, households headed by woman, per person value of total assets, etc.). Poverty scores are then derived through principal component analysis. Non-

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[67] Ledgerwood, *Microfinance Handbook: An Institutional and Financial Perspective*.
[68] Ibid.
[69] Ibid.
[70] The Consultative Group to Assist the Poorest, "Assessing the Relative Poverty of Microfinance Clients: A CGAP Operational Tool" (Washington, DC: World Bank, September 2003).

clients are ranked by poverty scores and divided into terciles to determine cut-off levels in poverty scores; this yields three groups of equal size: the top 100, the middle 100, and the bottom 100. To determine whether an MFI program is well targeted clients are compared to non-clients to see if clients are overrepresented in the lower tercile created with non-client data.

Relative to the PPI, PAT, Cashpor House Index, and FCAT, the CGAP-PAT has the positive characteristic that it uses a flexible definition of poverty that can be adapted to fit local perceptions and conditions of poverty. It is also multidimensional, and indicators are chosen through extensive literature review and through expert consultation.[71] The CGAP-PAT is different from all the other poverty measurement tools because it is able to create theoretically relevant indicators that can be compared between different MFIs and which also maintain some local relevance. Further, it is different from the PPI, PAT, and CHI because proxy measures are not used, and it is different from FCAT because it can include non-monetary indicators.

However, the CGAP-PAT has several shortcomings. First, in relation to the PPI, PAT, CHI, and even FCAT, this tool is relatively expensive to use because it requires a large collection of data from clients and non-clients. Second, it produces information intended to serve donors evaluating MFIs, and not MFIs themselves. According to CGAP's technical guide, "[t]he tool is not meant for direct use by an MFI. Not only is the

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[71] Carla Henry et al., *CGAP: Microfinance Poverty Assessment Tool* (Consultative Group to Assist the Poor, 2003).

required level of specialized knowledge unlikely to be found among MFI staff, but direct field testing by an MFI could greatly bias household responses."[72]

This is a limitation because it means MFIs cannot use this tool to guard against mission drift. The PPI, PAT, CHI or FCAT would have to be used. On its own, the CGAP-PAT is not very useful to an MFI. Finally, the CGAP-PAT does not create information that is easily understandable by individual households.

1.5.6 **Participatory Wealth Ranking**

In a participatory wealth ranking, members of a community are asked to map every single household and to create a list of all household names, which are then put on index cards. Next, the index cards are sorted by groups of villagers according to their wealth (pile 1: richest households, pile 2: second richest, pile N: poorest). Each household is ranked by at least three groups. This rank is then converted into a score (100 is divided by the number of piles; then the pile number is multiplied by that number, so that the poorest households - in pile N - get a score of 100 and the richest households get a score of 100/N). For each household, the average score from all three groups is then calculated.

The participatory wealth ranking is different from all other tools in that it is the only tool that clearly emerges from a constructivist paradigm. What the participatory wealth ranking allows is a definition of poverty created by the members of a community, not by some external institution or organization. This means that the information produced by a participatory wealth ranking, in comparison to the PPI, PAT, CHI, FGAP and CGAP-PAT, is extremely locally relevant. The information produced by the

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[72] Ibid.

participatory wealth ranking is useful to an MFI because it results in a ranked index, but it can also be useful to the community members themselves that, through the ranking, realize who the poorest people in their community are.

However, the local relevance provided by the participatory wealth ranking comes at the cost of it not being able to generalize the results outside of the community where the participatory wealth ranking took place. Contrary to all the other poverty measurement tools, the participatory wealth raking is the least capable of generalizing its results. The ranking is a purely relative measure. It does not say anything about absolute poverty status of a household. Finally, each individual community may have a different definition of poverty as these definitions are locally generated on the spot, and, therefore, they may have different criteria for judging if someone is poor.

1.6 **Practical and Epistemological Implications of Poverty Measures**

When deciding on which poverty measurement tool to use, an MFI has to perform a balancing act between the information it requires and the expense it is willing to assume in order to get that information.[73] Not surprisingly, there is a permanent tension and inverse relationship between these two categories. MFIs have a trade-off between less detailed but rapid and inexpensive tools on the one hand, and technically demanding tools that provide more in-depth information on the other hand.

In regards to the burden or requirements placed on the MFI budgets, the PPI and PAT are simple tools, as the questionnaires only contain 10-20 items. Equally, the Cashpor House index is simple because it does not even require interacting with people of the community. All it takes is for someone to walk through a community and rank the

[73] Hatch and Frederick, "Poverty Assessment by Microfinance Institutions: A Review of Current Practice."

households *prima facie*. On the other hand, the participatory wealth ranking takes around four days per community and requires trained staff to carry it out. The participatory wealth ranking also becomes more difficult for large urbanized communities where community members do not know each other very well. The FCAT and CGAP are very taxing and require a high-level of specialized knowledge.

In addition to the choices about the level of expense an MFI is willing to spare for poverty measurement tools, the MFI also has to choose what kind of information it would like to receive from the tools. As mentioned before, the conception of poverty has expanded over the years and poverty can be observed through positivist and constructivist points of view. If an MFI chooses only to work with monetary poverty, it would choose the PPI, PAT, CHI, and FGAP, for example. On the other hand, if the MFI was concerned with multidimensional poverty, the PWR would be chosen. CGAP-PAT is not included because it is not really a tool for MFIs, but a tool for donors evaluating MFIs. In terms of epistemology, the PPI, PAT, CHI and FGAP are tools that seem to have been created under the positivist paradigm. The participatory wealth ranking is completely constructivist, as the very definition of poverty is given to the community members to decide upon, and the information produced by this tool is useful for the MFI and for the community members themselves.

In the context of these tools, and taking into consideration existing trends in academic literature surrounding the expansion of the concept of poverty as well hybrid approaches to measuring poverty, Fundación Paraguaya staff created the Poverty

Stoplight in 2010. [74] [75] Fundación Paraguaya reports[76] that it wanted a tool that addressed multidimensional poverty, produced useful information for its microfinance program and for its women clients in its village banks, was standardized, and was easy and quick to implement. Instead of using proxies, it opted for actionable indicators that informed Fundación Paraguaya staff about the cause of the problems affecting our clients and how to solve them. A more detailed explanation of how the Poverty Stoplight works is provided in the next chapter.

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[74] "MicroCredit Summit Poverty Measurement Tools."
[75] Martin Burt, "The 'Poverty Stoplight' Approach to Eliminating Multidimensional Poverty: Business, Civil Society, and Government Working Together in Paraguay," *Innovations: Technology, Governance, Globalization* 8, no. 1–2 (January 1, 2013): 47–67, doi:10.1162/INOV_a_00165.
[76] Fundación Paraguaya, "Poverty Stoplight Application Manual: A Simple Description of How to Apply the Poverty Stoplight and the Actions to Tackle Each Indicator."

2 Chapter 2: Poverty Stoplight

2.1 Introduction

In order to evaluate if the Poverty Stoplight is effective, first it is necessary to explain what the Poverty Stoplight sets out to achieve. This chapter reviews how the Poverty Stoplight metric actually works and compares it to the previously reviewed poverty measurement tools. This chapter is organized around these three main ideas: 1) the Poverty Stoplight is multidimensional, 2) the Poverty Stoplight is useful for MFIs and for the poor households themselves, and 3) the Poverty Stoplight attempts to balance both constructivist and positivist paradigms; that is, it is a realist tool.

2.2 The Poverty Stoplight is Multidimensional

The expansion of the concept of poverty requires that poverty measurement tools be multidimensional if they are to capture this wider definition, and these dimensions, like the concept of poverty itself, have to include both concrete and abstract concepts. The six dimensions of the Poverty Stoplight are: (1) Income and Employment, (2) Health and Environment, (3) Housing and Infrastructure, (4) Education and Culture, (5) Organization and Participation, and (6) Self-Awareness and Motivation. Table 2.1 below shows these 50 indicators organized inside the 6 dimensions. See Appendix 1 for a description of the 50 indicators with illustrations representing values of not poor (green), poor (yellow) and extremely poor (red). The Appendix includes a justification for each indicator as well as the main institutional sources where similar indicators are included.

Table 2.1 Poverty Stoplight: 6 Dimensions and 50 Indicators	
INCOME & EMPLOYMENT	26. Security
1. Income above Poverty Line	27. Sufficient and Appropriate Clothing
2. Stable Income	**EDUCATION & CULTURE**
3. Credit	28. Know How to Read and Write
4. Family Savings	29. Children with Schooling up to 12th Grade
5. Diversified Source of Income	30. Expertise and Skills to Generate Income
6. Documentation: Identity Card	31. Capacity to Plan and Budget
HEALTH & ENVIRONMENT	32. Communication and Social Capital
7. Access to Drinking Water	33. School Supplies and Books
8. Nearby Health Post	34. Access to Information (Radio & TV)
9. Nutritious Food	35. Entertainment & Recreation
10. Personal Hygiene and Sexual Health	36. Values Cultural Traditions
11. Healthy Teeth and Eyesight	37. Respects other Cultures
12. Vaccines	38. Awareness of Human Rights
13. Garbage Disposal	**ORGANIZATION & PARTICIPATION**
14. Unpolluted Environment	39. Are Part of a Self-Help Group
15. Insurance	40. Influence on the Public Sector
HOUSING & INFRASTRUCTURE	41. Problem and Conflict-Solving Ability
16. Safe Home	42. Registered Voters & Votes in Elections
17. Sanitary Latrines and Sewage	**SELF-AWARENESS & MOTIVATION**
18. Electricity	43. Self-Confidence (Self-Esteem)
19. Refrigerator and Other Appliances	44. Awareness of their Needs (*Mapa de Vida)*
20. Separate Bedrooms	45. Moral Conscience
21. Elevated and Ventilated Cook Stove	46. Emotional-Affective Capacity
22. Comfort of the Home	47. Aesthetic Self-Expression, Art and Beauty
23. Regular Means of Transportation	48. Family Violence
24. All-weather access road	49. Entrepreneurship
25. Fixed Line or Cellular Telephone	50. Autonomy & Decision-Making Capabilities

Dimensions represented in Table 2.1 range from very concrete dimensions, like Housing and Infrastructure, to extremely abstract dimensions, like Self-Awareness & Motivation. Table 2.2 reorganizes these indicators according to the kind of data they intend to approximate. Thus, there are 33 indicators that are concrete and 17 indicators that are abstract.

Table 2.2 Epistemology: 50 Poverty Indicators by Core Unit of Knowledge	
POSITIVISM: (Brute Data that Cannot be Questioned)	**CONSTRUCTIVISM: (Dialogical Agreements Based on Social Engagement and Participation)**
33 Poverty Indicators	**17 Poverty Indicators**
1. Income above the Poverty Line	30. Expertise and skills to generate income
2. Stable Income	31. Capacity to Plan and Budget
3. Credit	35. Entertainment & Recreation
4. Family Savings	36. Values cultural traditions
5. Diversified source of income	37. Respects other cultures
6. Documentation: identity card	38. Awareness of Human Rights
7. Access to drinking water	39. Are part of a self-help group
8. Nearby health post	40. Influence on the public sector
9. Nutritious Food	41. Problem and conflict-solving ability
10. Personal Hygiene and sexual health	43. Self-confidence (self-esteem)
11. Healthy teeth and eyesight	44. Awareness of their needs (*Mapa de Vida*)
12. Vaccines	45. Moral conscience
13. Garbage Disposal	46. Awareness of emotional needs
14. Unpolluted environment	47. Aesthetic self-expression, art and beauty
15. Insurance	49. Entrepreneurship
16. Safe home	50. Autonomy & Decision-Making Capacity
17. Sanitary Latrines and sewage	32. Communication and Social capital
18. Electricity	
19.Refrigerator and other household appliances	
20. Separate Bedrooms	
21. Elevated cook stove and ventilated	
22. Comfort of the home	
23. Regular means of transportation	
24. Access to all-weather roads	
25. Fixed line or cellular telephone	
26. Security	
27. Sufficient and appropriate clothing	
42. Registered voters and votes in elections	
28. Knows how to read and write	
29. Children with schooling up to 12th grade	
33. School supplies and books	
34. Access to Information (Radio and TV)	
48. Family violence	

This mix between concrete and abstract inside a single tool reveal the Poverty Stoplight's preference for a realist paradigm in measuring poverty. As mentioned before, realism, or what Shaffer calls "Q-squared," seeks to use aspects of both constructivism and positivism in order to approximate objective reality. Concrete indicators of the Poverty Stoplight are positivist indicators, which "rely on inter-subjective observability, and use brute data that cannot be questioned by different actors." On the other hand, abstract indicators are constructivist; that is, they "rely on intersubjective meaning," and use definitions of what it means to be very poor, poor, and non-poor "based on consensus and agreements based on social engagement and participation."[77]

In relation to social engagement and participation, a characteristic of the Poverty Stoplight indicators is that they can be adapted to better represent the realities of different countries. To a large extent, the Poverty Stoplight was developed with the assumption that poverty is an objective concept, as the realist paradigm assumes, which is why indicators in general remain constant.[78] For example, Fundación Paraguaya always considers deprivations in Indicator 7, "Access to Drinking Water," to be an important indicator of poverty, and this would be a characteristic of the positivist paradigm. However, it also include aspects of the constructivist paradigm because the Poverty Stoplight takes into account that being deprived in access to water can manifest itself differently in different countries or communities.[79] For example, in Paraguay being not poor in "Access to Drinking Water" means to have at least one water faucet in the yard.

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[77] Shaffer, *Q-Squared*.
[78] Burt, "The 'Poverty Stoplight' Approach to Eliminating Multidimensional Poverty."
[79] Fundación Paraguaya, "Poverty Stoplight Application Manual: A Simple Description of How to Apply the Poverty Stoplight and the Actions to Tackle Each Indicator."

However, in countries where water is scarce, an adequate level of access to living water may mean having a well within 500 meters from the house. In this sense, the overall definition of poverty that the Poverty Stoplight remains constant through the unchanging indicators, but definitions inside the indicators can be modified in order to take into account different realities. The methodology used to adapt indicators relies on local expert interviews and focus groups with clients themselves.

A final aspect of indicators is that they were chosen in order to be actionable. As mentioned before, the Poverty Stoplight is both a poverty metric and a coaching methodology that helps clients escape poverty. This means that in addition to measuring poverty, indicators have to serve the purpose of guiding the actions of the clients and the MFI. Actionable indicators are indicators in which the family can actually do something to move from red to yellow and green. For example, vaccinating children is actionable. However, an indicator about the country's mortality rate is not directly actionable by a family, so it would not be included among the indicators. The Poverty Stoplight uses actionable indicators to make poverty a series of small problems that an individual can overcome. According to Banerjee and Duflo, in their book *Poor Economics,* focusing on small problems can help "to turn away from the feeling that the fight against poverty is too overwhelming, and to start to think of the challenge as a set of concrete problems that, once properly identified and understood, can be solved one at a time."[80]

This is a stark contrast to tools that use proxy measurements like the PPI, PAT and CHI. Tools that use proxy measurements are useful in identifying, on average, whether a

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[80] Abhijit Banerjee and Esther Duflo, *Poor Economics: A Radical Rethinking of the Way to Fight Global Poverty*, Reprint edition (New York: PublicAffairs, 2012).

community is poor or not, but the individual indicators cannot be disaggregated to produce significant information that guides the actions of the poor individuals or of the MFIs. In other words, proxy measurements can inform an MFI about *who* might be poor, but not about *what* can be done to address that poverty. The choice of actionable indicators helps inform, both the MFI and the poor themselves, about what actions they can carry out in order to address poverty.

2.3 **The Poverty Stoplight is useful for MFIs and for the poor themselves**

The fact that the Poverty Stoplight is both a metric and a methodology also means that there are two main stakeholders that use the information produced by the tool: MFIs and the poor themselves. This fact shows that the Poverty Stoplight is also a realist tool as it can be used as an empowering tool,[81] which is characteristic of constructivist tools, and it can be used as an extractive survey, which is characteristic of positivist tools.

2.3.1 **Household Use**

For the female head of the household, the visual survey is a qualitative, awareness-raising exercise that prompts her to observe and point out the poverty indicators in which her family is poor. It is a qualitative measurement in the sense that, across 50 indicators, clients are asked to identify in which indicators they are poor, and the result is a description of how clients are or are not poor. As Kirk and Miller point out:

> Technically, a 'qualitative observation' identifies the presence or absence of something, in contrast to the 'quantitative observation,' which involves measuring the degree to which some feature is present. To identify something, the observer must know what qualifies as that thing, or that kind of thing. This entails counting to one.[82]

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[81] Burt, "The 'Poverty Stoplight' Approach to Eliminating Multidimensional Poverty."
[82] Kirk and Miller, *Reliability and Validity in Qualitative Research*.

In this sense, the Poverty Stoplight hopes to measure the degree to which a person is poor in a given indicator with the green, yellow, and red levels. However, as both red and yellow mean poverty, the presence or absence of poverty is a yes or no question, or a binary variable of zero and one.

For the results to be understandable to the clients and their families, these are presented in a *Mapa de Vida*, or a dashboard/scorecard. This dashboard/scorecard highlights her greens, yellows and reds in a poster, which the client can hang on the wall as if it were a calendar. With a visual representation of their deprivations, family members can understand in which aspects they are deprived and they can organize their efforts around improving these aspects.

The descriptive nature of the Poverty Stoplight is useful because in a single community, families may have completely different and unique combinations of deprivations and income-gaps. By focusing on poverty gaps for each indicator, clients find it easier to resolve specific problems one at a time instead of having to deal with an abstract and unmanageable concept of poverty. As Fundación Paraguaya's Poverty Stoplight application manual states, focusing on individual deprivations has been a useful way to deal with the complexity of multidimensional poverty. [83]

The Poverty Stoplight visual surveys are carried out by Fundación Paraguaya *asesoras* (credit officers). The *asesora* has an active role during the visual survey (the generation of client data) because she dialogues with the respondent to coach answers — providing clarifying information for clients to better answer each indicator. Ultimately,

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[83] Fundación Paraguaya, "Poverty Stoplight Application Manual: A Simple Description of How to Apply the Poverty Stoplight and the Actions to Tackle Each Indicator."

however, it is the woman who registers her own status into the tablet and self-assigns herself into the levels that are framed by the levels of each indicator. This process is intended to also be a constructivist aspect of the Poverty Stoplight, as reality is collaboratively created between *asesoras* and clients, but the discussion is framed around the indicators of the Poverty Stoplight. That is, the discussion gravitates around the Poverty Stoplight's conception of poverty, and not a spontaneously created definition. This caveat makes the interview process a realist process rather than a purely constructivist one.

2.3.2 **Microfinance Institution Use**

The second end-user of the Poverty Stoplight is Fundación Paraguaya's microfinance program. Fundación Paraguaya uses the Poverty Stoplight to be able to target clients who are truly poor, to be able to identify the intensity of the poverty that clients experience, and to better understand the characteristics of the poverty of its clients. In other words, the Poverty Stoplight is used to answer three questions: 1) Who are the poor? 2) How poor are they? 3) How are they poor? As a whole, Fundación Paraguaya uses the answers to these three questions for monitoring and evaluation purposes and to develop financial services or interventions to address different forms of poverty—alone or in partnership with other stakeholders or service providers.

In contrast to when clients use the information used by the Poverty Stoplight, Fundación Paraguaya produces an aggregate index of poverty in order to summarize data and better monitor improvement in its clients. This means that the information produced for the MFI is more quantitative than qualitative. Positivist aspects of the Poverty Stoplight that benefit the MFI are that the tool is standardized, with closed, multiple-

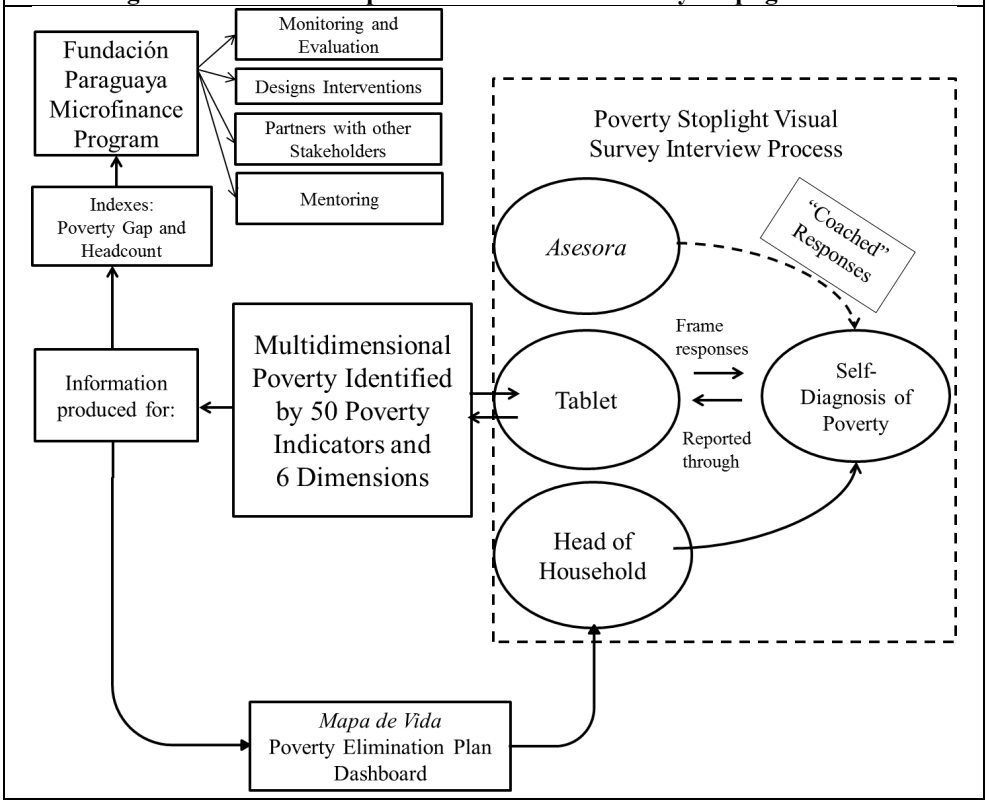
choice questions. The fact that all clients respond to the same stimuli and are limited in the ways they can answer for each indicator, in theory, facilitate the comparison between different clients and allow the responses to be aggregated. *Asesora* mentoring during the visual survey process is also vital to ensure that clients understand exactly what they are being asked, and to make sure that their self-reported responses represent their actual situation.

2.4 **Balancing Positivist and Constructivist Paradigms**

Figure 2.1 shows a visual representation of the entire Poverty Stoplight application process. This includes the coaching role of the *asesora*, the self-reporting into the 50 indicators, and the use that both Fundación Paraguaya and the head of the household give to the information produced. The Poverty Stoplight interview process includes a mix of both positivist and constructivist approaches. In relation to the other poverty measurement tools currently available to the microfinance industry, the Poverty Stoplight is the only tool that has such a strong focus on being set in the realist paradigm. Of the reviewed tools, the PPI, PAT, CHI and FGAP were mainly positivist tools, which were more focused on producing indexes based only on monetary poverty. The PPI, PAT and CHI also only used proxy measurements to poverty, which are limited in their descriptive capabilities. On the other hand, the participatory wealth ranking is solely constructivist, focusing entirely on local conceptions of poverty and semi-structured interactions. Only the CGAP-PAT is somewhat of a realist tool, but it has the limitation, as was pointed out before, that it is more of a tool used by donors than by MFIs themselves. This is the main gap that the Poverty Stoplight tries to fill. It provides a multidimensional tool that can measure both concrete and abstract dimensions of poverty.

It produces information that is relevant to both households and to MFIs. And finally, it is not overly expensive to carry out for the MFI.

Figure 2.1 Conceptual Framework of Poverty Stoplight Metric



In order for the Poverty Stoplight to be an adequate alternative to the poverty measurement tools currently being used by the microfinance industry, it has to be a robust tool. A systematic analysis of the robustness of the Poverty Stoplight as a measurement tool has never been carried out. The next chapter explains this dissertation's research design including its research questions and data collection methods in more depth.

3 Chapter 3: Research Design

3.1 Introduction

The Poverty Stoplight will be considered a robust measure if it is reliable, valid, if it has discriminatory power and is a practical tool.[84] Thus, my four research questions are:

1. "Is the Poverty Stoplight a reliable poverty measure?"
2. "Is the Poverty Stoplight a valid poverty measure?"
3. "Does the Poverty Stoplight have high discriminatory power?"
4. "Is the Poverty Stoplight a practical tool to measure poverty?"

In this chapter I delineate the research design that I use to answer these four research questions.[85] In Section 3.2, I outline the methods I use — specifically, reliability, validity, discriminatory power and practicality. In Section 3.3, I outline my data collection and data analysis design. Finally, in Section 3.4, I discuss ethical considerations related to my role in this dissertation research.

3.2 Methods

Reliability and validity have their origins in quantitative research and are thus deeply rooted in a positivist perspective—that there is one objective truth that can be

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[84] Mary J Allen and Wendy M Yen, *Introduction to Measurement Theory* (Waveland Press, 2001).

[85] I personally analyzed all the data reviewed in this dissertation, although I was assisted by Fundación Paraguaya staff for data collection (survey applications, focus groups, individual interviews) and coding of transcriptions. My research team consisted of two assistants and 23 field workers, all trained by Collaborative Institutional Training Initiative (CITI).

observed and, with the right tools, measured.[86] However, even though the Poverty Stoplight as a poverty measure is more closely related to quantitative research (structured questionnaire, closed-ended questions) than to more qualitative research, because it seeks to engage respondents, it has a participatory mission. It has some features that are more typical for dialogical and participatory approaches – e.g. the importance of the self-assessment aspect of the Poverty Stoplight intended to elicit respondents' behavior change. The Poverty Stoplight thus adopts a participatory-constructivist-hermeneutic characteristic and accepts that poverty is experienced in different ways and that thus there will also be some ambiguity in its measurement.

The Poverty Stoplight assumes that 50 indicators can capture poverty and that a person overcomes multidimensional poverty if all 50 indicators are green. In addition, the Poverty Stoplight provides pre-defined categories of red-yellow-and-green. Hence, the Poverty Stoplight has aspects of a positivist and of a constructivist tool of poverty measurement.

For these reasons in this dissertation research I use robustness criteria from both classical positivist and constructivist camps. In the next paragraphs I briefly lay out how I attempt to achieve this before I discuss in more detail the proposed methods for each quality criterion. Figure 3.1 below depicts the levels of information use and the measurement and practicality issues related to the four research questions.

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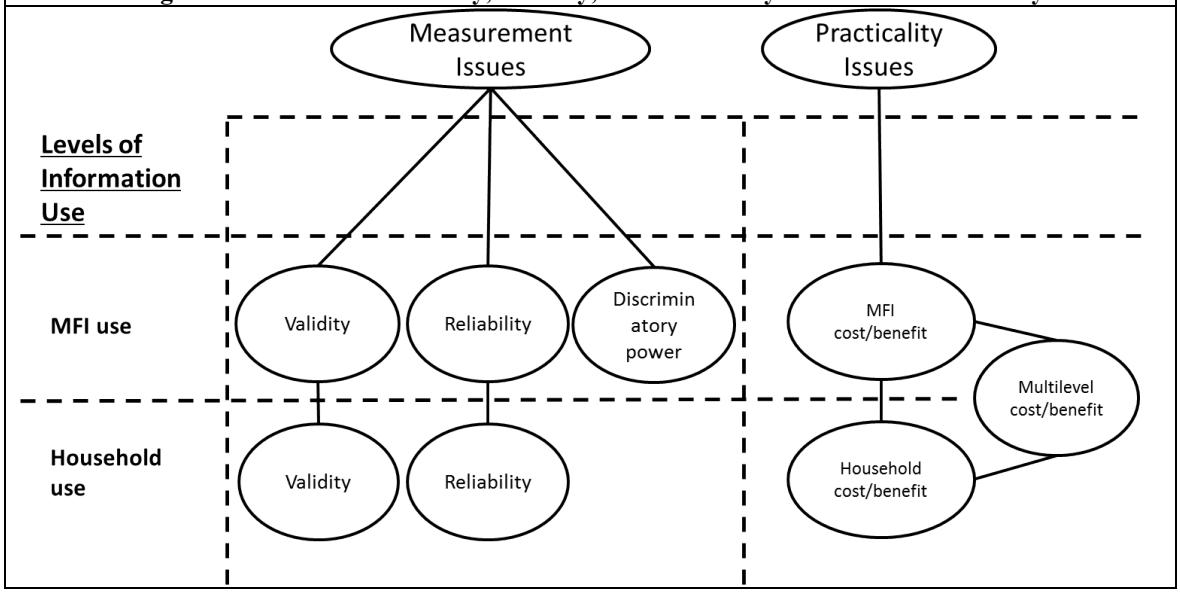
[86] Nahid Golafshani, "Understanding Reliability and Validity in Qualitative Research," *The Qualitative Report* 8, no. no. 4 (December 2003): 597–607.

Figure 3.1 Levels of Reliability, Validity, Discriminatory Power and Practicality



From a positivist perspective, reliability asks whether the measurement tool yields the same result if the measurement is repeated under comparable circumstances,[87] that is, is it consistent across time. Two classical criteria for reliability for quantitative measures are test-retest reliability and internal consistency reliability, which will be explained in more detail in Section 3.2.1.[88]

Given than, from a positivist perspective, validity asks whether the metric accurately measures what it purports to measure., "validity is not a property of the test score or assessment as such, but rather of the meaning of the test scores,"[89] as Messick

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[87] William Trochim and James P. Donnelly, *The Research Methods Knowledge Base*, 3 edition (Mason, Ohio: Atomic Dog, 2006).
[88] Amanda Jane Fairchild, *Instrument Reliability and Validity: Introductory Concepts and Measures* (James Madison University, n.d.).
[89] Samuel Messick, "Validity of Psychological Assessment: Validation of Inferences from Persons' Responses and Performances as Scientific Inquiry into Score Meaning," *American Psychologist* 50, no. no. 9 (September 1995).

states. The three classical criteria for validity are content validity, criterion-related validity, and construct validity, which will be described in more detail in Section 3.2.2.[90]

Although classical concepts of reliability and validity are rooted in a positivist tradition, in this research I also use alternative measurements to reflect the constructivist and participatory component of the Poverty Stoplight. For the purposes of this dissertation research, I use Baumgarten's [91] focus on trustworthiness as the basis of reliability and validity in the constructivist paradigm. Trustworthiness is composed of credibility, dependability, transferability, and confirmability. According to Baumgarten, dependability and confirmability make up the constructivist paradigm's version of reliability (Section 3.2.1), while credibility and transferability make up the constructivist paradigm's version of validity (Section 3.2.2).

Discriminatory power (Section 3.2.3), asks whether the tool is able to discern between poor and non-poor individuals, both overall and in all individual indicators. The ability of a poverty measurement tool to discriminate concerns mainly MFIs, as they need to identify who their actual or potential poor clients are. On the other hand, poor people themselves, it is assumed, are more concerned with how they are poor.

Finally, practicality (Section 3.2.4) asks whether the tool is useful and easy to carry out. For this purpose, the tool needs to fulfill the following operational requirements:[92] economy, convenience, and interpretability. Figure 3.2 below depicts

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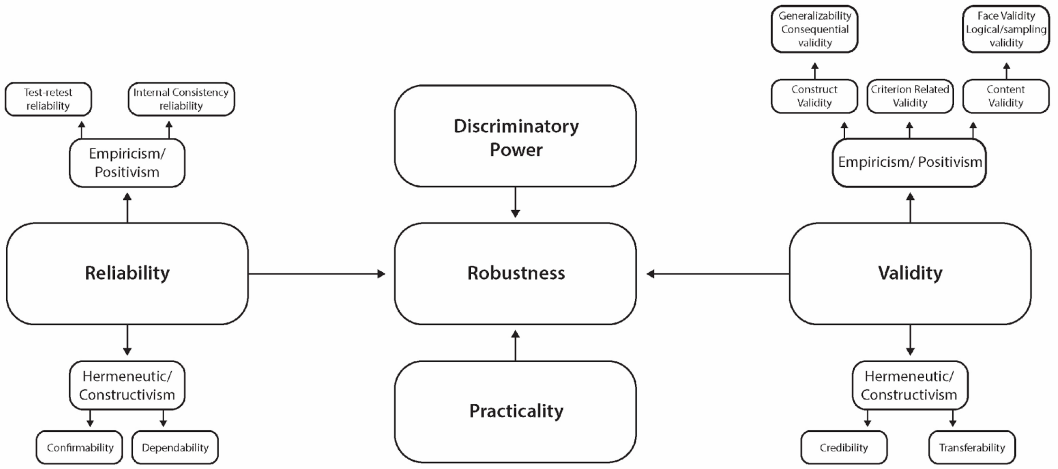
[90] Allen and Yen, *Introduction to Measurement Theory*.
[91] Baumgarten, *Paradigm Wars - Validity and Reliability in Qualitative Research*.
[92] Pradip Kumar Sahu, *Pradip Kumar Sahu, Research Methodology: A Guide for Researchers In Agricultural Science* (Springer Science & Business Media, 2013).

how robustness is a function of the four research questions in a conceptual map of this dissertation's research design.

Figure 3.2 Conceptual Map of Research Design



3.2.1 **Approach to Testing Reliability**

3.2.1.1 Test-Retest reliability

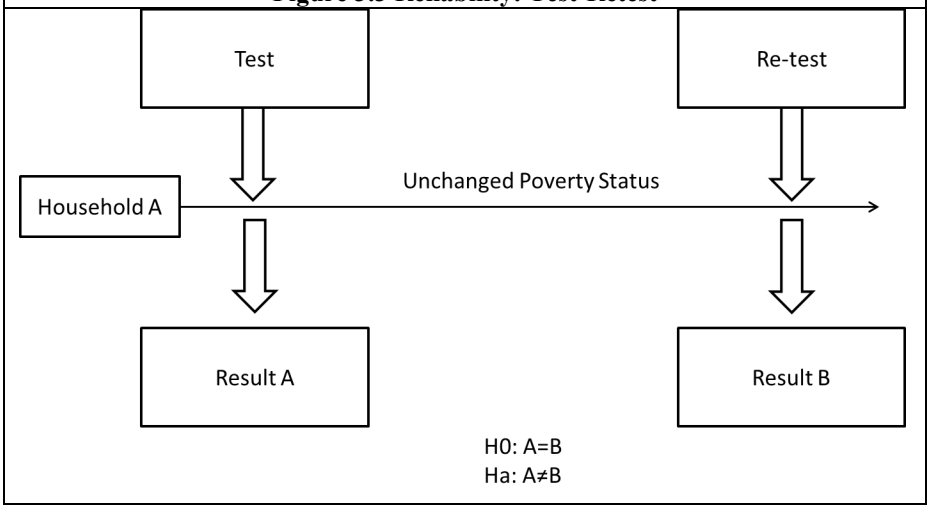
A measure is only reliable if a repeated application of the tool leads to the same measurement outcome; this holds true as long as the underlying reality has not changed.[93]t In order to test the degree to which test scores are consistent from one test administration to the next, measurements must be gathered from a single rater who uses the same methods or instruments and the same testing conditions.

[93] Trochim and Donnelly, *The Research Methods Knowledge Base*.

The empirical strategy I used was as follows: an *asesora* applied the same visual survey to the same family twice within a period of two to four weeks. A potential threat to this method was that the family might adapt their answer as a result of taking the visual survey or as a result of an actual change in their circumstance. In order to limit the effects that recall might have on the stability of the retest, the results of the test were withheld from the clients. Likewise, the *Mapa de Vida*, the coaching methodology that is usually developed by client and *asesora* after the self-diagnosis was not carried out until the retest.

Figure 3.3 below depicts the structure of the test-retest exercise as well as the nature of the null hypothesis. In order to prove reliability the collected data should fail to reject the null hypothesis.

Figure 3.3 Reliability: Test-Retest



3.2.1.2 Internal Consistency Reliability

Internal Consistency Reliability assesses the consistency of results across items within a test. A measurement tool has a high level of internal consistency reliability when the items used to measure the same construct are highly correlated. In order to test this, my empirical strategy consisted of a series of statistical tests for the 50 indicators, including: (1) average inter-item correlation: mean level of correlation of the 50 indicators; (2) average item total correlation: as before but adding the sum of all indicators as an additional variable); (3) split-half reliability: the 50 indicators are randomly split into two groups and summed up; then the correlation of the two groups is calculated; and (4) Cronbach's alpha: statistical measure that is equivalent to calculating all possible groups for split-half reliability, and then calculating the average of all correlations.

3.2.1.3 Dependability

Dependability contemplates the inclusion of an external review of the different processes being carried out during the research. According to Flick, as cited by Pickard and Dixon, this is done so that the "proceedings and developments in the process of the research can be revealed and assessed."[94] Similarly, according to Morrow, in order to achieve dependability:

> the process through which findings are derived should be explicit and repeatable as much as possible. This is accomplished through carefully tracking the emerging research design and through keeping an audit trail, that is, a detailed chronology of research activities and processes; influences on the data collection

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[94] Alison Pickard and Pat Dixon, "The Applicability of Constructivist User Studies: How Can Constructivist Inquiry Inform Service Providers and System Designers?" 9, no. 3 (April 2004), http://www.informationr.net/ir/9-3/paper175.html.

> and analysis; emerging themes, categories or models; and analytic memos. The audit trail may then be examined by peer researchers.[95]

Baumgarten describes dependability as a form of reliability that accepts the presence of change and instability. In this sense, findings can be considered dependable, not if results are stable across several applications of a tool, as test-retest reliability assumes, but rather if the research procedure is audited and accepted by multiple people—preferably detached from the study. This external audit allows one to depend or rely on the information produced. In order to understand the dependability of the Poverty Stoplight, I asked Fundación Paraguaya staff members and *asesoras* about the visual survey implementation procedure in order to explore whether sufficient safeguards are in place that would make the Poverty Stoplight dependable.

3.2.1.4 Confirmability

Confirmability depends on the ability of the researcher to minimize the amount of bias he inserts into interpreting the information produced. According to Schwandt & Halpen, cited by Pickard and Dixon:

> Confirmability is vital in order to demonstrate that investigator bias has not unduly influenced the research outcome. It is accepted that in constructivist research the knowledge and experience of the investigator will impact on the findings, but it is important to demonstrate that tacit knowledge has not been transferred from the researcher to the findings to such an extent that meaning has been changed.[96]

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[95] Susan Morrow, "Quality and Trustworthiness in Qualitative Researach in Counseling Psychology," *Journal of Counseling Psychology* 52, no. 2 (2005): 250–60, doi:10.1037/0022-0167.52.2.250.
[96] Pickard and Dixon, "The Applicability of Constructivist User Studies: How Can Constructivist Inquiry Inform Service Providers and System Designers?"

In order to understand whether the Poverty Stoplight has confirmability, I explore the role of *asesoras* during the visual survey application in focus groups and individual interviews with Fundación Paraguaya staff, *asesoras,* and clients.

3.2.2 **Approach to Testing Validity**

3.2.2.1 Content Validity

At its core, content validity asks whether the measurement tool is a good representation of all the facets of the underlying theoretical concept to be measured – that is, whether the items included in the measure adequately represent the universe of questions that could have been asked.

Two elements are taken into consideration: face validity and logical or sampling validity. Face validity indicates whether the measurement is accepted by those concerned as being logical on the face of it (also called expert validity). Logical or sampling validity asks whether the measure is truly representative of the underlying concept to be measured. This involves first a careful definition of all that is supposed to be measured and then the design of items that cover all those things. This ensures that the measure covers the broad range of areas within the concept under study. Of course, not everything can be covered, so items need to be sampled from all of the domains. Threats to content validity are construct underrepresentation, e.g. the assessment is too narrow and fails to include important dimensions or facets of the construct and construct-irrelevant variance, e.g. the assessment is too broad, containing excess reliable variance associated with other distinct constructs.[97]

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[97] Messick, "Validity of Psychological Assessment: Validation of Inferences from Persons' Responses and Performances as Scientific Inquiry into Score Meaning."

My empirical strategy to test content validity dealt with both face validity and logical/sampling validity. In terms of face validity, the question of validity is relevant for different aspects of the measure, and all of these were included in this research: (1) Choice of dimensions/indicators – what are the different aspects of poverty? (2) Choice of cut-offs with red, yellow, and green thresholds - what level of welfare/deprivation does one have to achieve in each indicator? (3) Choice of aggregation method: is having a red or yellow in one indicator enough to be poor? Or (4), is it necessary to have more reds and yellows to be poor?

With face validity, my empirical focus was on what the tool appears to measure, that is, on multidimensional poverty in general. My different questions were: does the tool appear valid to those who are being tested? Does it appear valid to those who apply it (the *asesoras*), and other people who are not technically trained? What does it mean to be poor? Thus, there were two elements of my empirical strategy: (1) focus groups with clients and with non-clients, in which[98] both client and non-client groups were tested to try to ensure that those who already have been exposed to the Poverty Stoplight do not simply repeat what they saw there; and (2) focus groups with *asesoras*: What does it mean to be poor?

To test logical/sampling validity focus groups, I interviewed clients, non-clients, and *asesoras* to ask whether there were aspects of poverty that the Poverty Stoplight does

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[98] Comparable non-clients signifies either Fundación Paraguaya microfinance clients that have absolutely no knowledge of the Poverty Stoplight or people with similar demographics to clients (neighbors) who have no experience with the Poverty Stoplight

not include. Also, I interviewed local Paraguayan poverty experts about content validity of the tool.[99]

3.2.2.2 Criterion-Related Validity

Criterion-related validity asks whether the measure agrees with an external criterion, i.e. an accepted poverty measure. The concept has two elements: predictive evidence and concurrent evidence. The former measures whether the tool is predictive of future events or a future outcome of interest. This dissertation research is only concerned with concurrent evidence, which measures whether there is a correlation with a gold standard at the *same* point in time. Specifically, it seeks to know if a high concurrent validity of the test correlates well with a measure that has previously been validated.

Here, to test criterion-related validity, I compared the Poverty Stoplight to a participatory wealth ranking that I conducted in a rural community. I used the same data and families to control whether the Poverty Stoplight coincided or agreed with the participatory wealth ranking results. I created a simple additive index for the Poverty Stoplight and then I correlated this index to the index produced by the participatory wealth ranking.

An important consideration is what it would mean if the exercise found or failed to find a high correlation or a high number of households with the same classification. A lack of correlation with the participatory wealth ranking would not necessarily imply that

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[99] For local poverty expert interviews ten local Paraguayan experts were selected, specifically a Catholic bishop; a National Senator and Board Member of *Frente Parlamentario Contra el Hambre*; a former Director of *Dirección Nacional de Lucha contra la Pobreza*; a former Minister of *Secretaría de Acción Social-SAS*; a former Minister of Justice and Labor; a former Minister of Justice and Labor and former President of *Instituto de Previsión Social-IPS*; a former Vice Minister of Micro and Small Enterprise; a former Board of Directors member of *Instituto de Bienestar Rural- IBR* and Avina Foundation executive; a former Director of *Dirección de Estadísticas, Encuestas y Censos*; and the Chief of Staff of *Secretaría Técnica de Planificación-STP*.

the Poverty Stoplight is a poor measure; it may just measure a different concept to begin with. There are articles in the literature that find that different poverty measures identify the same households as poor,[100] and others that find that there is very little overlap.[101] Hence, the validity of the Poverty Stoplight as a multidimensional poverty measure can never depend only on one comparison with other, already existing poverty measures.

3.2.2.3 Construct validity

According to Trochim and Donnelly, "construct validity refers to the degree to which inferences can legitimately be made from the operationalization in [the] study to the theoretical constructs on which those operationalizations were based."[102] Two questions were considered. The first question was whether the Poverty Stoplight fulfilled the requirement of generalizability, that is, whether inferences were possible. The second question was whether the tool had consequential validity; this is an important but often neglected part of construct validity.[103] Consequential validity has to do with a broader perspective on validity and is concerned with social utility and bias of interpretation of results. As was stated by Messick, "to appraise how well a test does its job, one must inquire whether the potential and actual social consequences of test interpretation and use are not only supportive of the intended testing purposes, but also at the same time

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[100] Robyn Von Maltzahn and Kevin Durrheim, "Is Poverty Multidimensional? A Comparison of Income and Asset Based Measures in Five Southern African Countries," *Social Indicators Research* 86, no. no. 1 (March 2008): 149–62.
[101] Caterina Ruggeri Laderchi, Ruhi Saith, and Frances Stewart, "Does It Matter That We Don't Agree on the Definition of Poverty? A Comparison of Four Approaches,"," *University of Oxford*, QEH Working Paper, no. Series Number 107 (May 2003).
[102] Trochim and Donnelly, *The Research Methods Knowledge Base*.
[103] Messick, "Validity of Psychological Assessment: Validation of Inferences from Persons' Responses and Performances as Scientific Inquiry into Score Meaning."

consistent with other social values."[104] In this sense, both the positive and negative effects of testing are relevant and were considered, as the social consequences of test scores and their subsequent interpretation should consider not only the original intention of the test, but also prevalent cultural norms.

To test the construct validity of the Poverty Stoplight it was important to determine whether its indicators in fact measured the underlying concept of multidimensional poverty. In fact, one of the major criticisms of multidimensional poverty measures (both aggregate indices and dashboards) is that the choice of indicators is somewhat arbitrary.[105]

First, I carried out confirmatory factor analysis to search for evidence that the Poverty Stoplight's 50 indicators, put together, indeed measured multidimensional poverty and that the indicators in one dimension, put together, measured one dimension of it. This served to analyze whether the measures of a poverty construct were consistent with the Poverty Stoplight's understanding of the nature of that construct.[106] This procedure had two steps: (1) I outlined the theoretical model of poverty implied by the Poverty Stoplight, i.e. how the six dimensions define multidimensional poverty, and how each of them are made up by several indicators, and (2) I tested whether there are underlying components around which the 50 indicators clustered. Ideally, the indicators would all cluster into the six dimensions. Through individual interviews and focus groups

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[104] Ibid.
[105] Martin Ravallion, "Mashup Indices of Development" (Washington, D.C.: The World Bank, 2010).
[106] Richard J Fox, "Confirmatory Factor Analysis," in *Wiley International Encyclopedia of Marketing* (John Wiley & Sons, Ltd, 2010), http://onlinelibrary.wiley.com/doi/10.1002/9781444316568.wiem02060/abstract.

I asked clients, non-clients, and *asesoras* whether the Poverty Stoplight was in fact capturing multidimensional poverty.

To test consequential validity, my empirical strategy consisted of individual semi-structured interviews and focus groups with clients and non-clients in order to assess the potential positive and negative effects of going through the Poverty Stoplight assessment; this included but was not limited to cultural norms, taboos, consciousness-raising/ *conscientización*,[107] sensitization, and empowerment. Focus group discussions dealt with topics such as collective empowerment or identification of, and changes in cultural norms and taboos, while semi-structured interviews with individuals focused on their particular family deprivations and basic needs.

Finally, I conducted individual semi-structured interviews with clients and *asesoras* who had already completed the Poverty Stoplight visual survey in order to ask two questions. The first question asked whether going through the Poverty Stoplight assessment changed anything in their lives and the second question asked if it spark some negative or positive processes in the household.

3.2.2.4 Credibility

According to Gasson as cited by Morrow,[108] credibility means "how we ensure the rigor in the research process and how we communicate to others that we have done so." Lincoln and Gubba, as cited by Pickard and Dixon, stated that credibility can be

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[107] Paulo Freire et al., *Pedagogy of the Oppressed, 30th Anniversary Edition*, 30th Anniversary edition (New York: Bloomsbury Academic, 2000).
[108] Morrow, "Quality and Trustworthiness in Qualitative Researach in Counseling Psychology.", pg 85.

established "by having (the findings) approved by the constructors of the multiple realities being studied."[109]

Credibility is especially relevant for the Poverty Stoplight metric, as clients have to accept the results of their Poverty Stoplight visual survey application in order for the information to be useful to them. If clients do not accept the results, they will not believe that they are poor in the indicators where they are red, and, presumably, they would not try to improve their lives in those indicators. In order to understand the credibility of the Poverty Stoplight, through focus groups and individual semi-structured interviews I asked *asesoras*, clients and non-clients whether they believed the Poverty Stoplight adequately measured poverty.

Additionally, Geertz, as cited by Morrow, proposed "thick descriptions" as a way of achieving credibility. According to Morrow:

> Thick descriptions…involve detailed, rich descriptions not only of participants' experiences of phenomena but also of the context in which the experiences occur. The 'thickness' of the descriptions relates to the multiple layers of culture and context in which the experiences are embedded. [110]

I also analyzed the thickness of the descriptions of poverty provided by the Poverty Stoplight.

3.2.2.5 Transferability

Transferability is similar to the idea of generalizability; however, it is narrower in scope. According to Lincoln and Gubba as cited by Pickard and Dixon, "the trouble with

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[109] Pickard and Dixon, "The Applicability of Constructivist User Studies: How Can Constructivist Inquiry Inform Service Providers and System Designers?"
[110] Morrow, "Quality and Trustworthiness in Qualitative Researach in Counseling Psychology."

generalizations is that they don't apply to particulars."[111] In this sense, transferability is not concerned with making broad generalizations, but rather it requires that the researcher provide rich descriptions about what is occurring in a specific context. Other researchers, through reading and digesting these rich descriptions, are thus allowed to decide which aspects of the research are transferable to other contexts. In relation to this dissertation research, I analyzed the richness of the information produced by the Poverty Stoplight in order to understand whether it might be transferable or not.

3.2.3 **Approach to Testing Discriminatory power**

In order to have discriminatory power, the Poverty Stoplight needs to be able to discern between poor and non-poor individuals, both overall and in all individual indicators. My empirical strategy consisted of comparing the results of the Poverty Stoplight between poor and non-poor individuals as defined by an independent measure, namely, by participatory wealth ranking. This methodology was chosen because relative to the other poverty measurement tools it was less expensive to carry out. As this dissertation was principally concerned with the validity and reliability of the Poverty Stoplight, investing a large amount of resources in carrying out other poverty measurement tools was not considered necessary. I compared a t-test of the overall score of the Poverty Stoplight to two categories, poor and non-poor, that were derived from the participatory wealth ranking.

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[111] Pickard and Dixon, "The Applicability of Constructivist User Studies: How Can Constructivist Inquiry Inform Service Providers and System Designers?"

3.2.4 **Approach to Testing Practicality**

In order for a tool to be useful for an MFI, a poverty measure needs to fulfill the following operational requirements: economy, convenience, and interpretability.[112]

3.2.4.1 Economy

Economy includes time-effectiveness and cost-effectiveness. The application of the visual survey should not take too long, the measurement results should be available in a timely fashion and the cost of applying the Poverty Stoplight should be acceptable given its utility. My empirical strategy to test economy consisted of interviews with clients and *asesoras* to investigate the time it took to complete a visual survey and ask them whether they felt the process was too long and/or disrupted their daily life. I carried out key informant interviews with Fundación Paraguaya administrative staff to assess how much time was reasonable from an operational perspective, which were the expected benefits from using the tool, to assess the costs, and to assess the acceptability and appropriateness of these costs in relation to the expected benefits.

3.2.4.2 Convenience

Convenience includes ease-of-use and layout and instructions. It should be easy to use the tool in the field and the time required for training and applying the tool should not take too long, usually no more than one hour. Technical requirements should not be cumbersome and it should provide the necessary data for analysis after data are collected. Administrative issues should be minor. In addition, the visual survey tool should be clearly laid out and include instructions for its application.

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[112] Sahu, *Pradip Kumar Sahu, Research Methodology: A Guide for Researchers In Agricultural Science*.

My empirical strategy to test for convenience consisted of individual semi-structured interviews with *asesoras* to gauge their experience with applying the Poverty Stoplight. Specifically, the test was to identify advantages and shortcomings as well as their confidence about knowing the tool and being able to explain it. I conducted key informant interviews with administrative staff to gauge the administrative ease of the tool, the time and resource requirements, and the problems encountered.

3.2.4.3 Interpretability

Interpretability entails three things. First, the measure must be simple and transparent, and easy and intuitive for non-experts to understand; the elements that either improve or deteriorate the measure should be easy to understand. Second, it must be believable and the results, and what drives them, should be easy to comprehend; these results should inspire non-experts confidence to interpret. Third, the measure must be relevant and meaningful, and results the results should be useful.

My empirical strategy to test interpretability consisted three steps. First, I carried out focus groups with clients and non-clients to see if the tool was easy to understand, whether the measurement results were intuitive and believable, and if the measurement was relevant and meaningful to individuals). Second, I conducted focus groups with *asesoras* to see if the tool was easy to understand, whether measurement results were intuitive and believable, and whether the measurement was relevant and useful to their work). Third, I carried out in-depth interviews with poverty experts to see what their informational requirements were and whether the Poverty Stoplight was able to fill these informational needs.

3.3 **Data collection**

I use a mixed methods approach for data collection. My intention was that a combination of qualitative and quantitative methods would provide a convergence of evidence of whether the Poverty Stoplight is a robust tool.[113] Quantitative methods included carrying out several applications of the Poverty Stoplight visual survey, calculation of poverty indexes, and analysis through descriptive and inferential statistics. Qualitative methods included focus groups, in-depth interviews, and key informant interviews. More details on data collection and analysis are provided below.

3.3.1 **Application of the Visual Survey**

3.3.1.1 Overview of Quantitative Data Collection

I collected quantitative data with repeated application of the Poverty Stoplight visual survey and I carried out statistical tests in order to answer the four research questions. I later complemented this quantitative data with qualitative data in order to better understand the positivist and constructivist aspects of validity and reliability.

Table 3.1 below describes how *asesoras* twice applied the Poverty Stoplight visual survey to a sample of poor families to control for reliability, internal consistency, construct validity and discriminatory power. For discriminatory power, we surveyed a sample of non-poor families once. These non-poor families were selected by carrying out a participatory wealth ranking in a community, and choosing the families that were ranked as the poorest. More details about the participatory wealth ranking will be given in section 3.3.2.

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[113] Michael Quinn Patton, *Qualitative Research & Evaluation Methods: Integrating Theory and Practice*, Fourth Edition edition (Thousand Oaks, California: SAGE Publications, Inc, 2014).

Table 3.1 Overview of Quantitative Data Collection through Poverty Stoplight Application (Visual Survey)		
Who?	**Round**	**Purpose/Principle**
Client	1	Test-retest reliability; Internal consistency reliability; Construct validity; Discriminatory power
Client	2	Test-retest reliability
Non-poor person	1	Discriminatory power

3.3.1.2 Sample

In terms of sample size, although there is no absolute rule for minimum number of participants in item analysis studies,[114] it is known that with an increase in sample size, there is a corresponding increase in the accuracy of validity and reliability predictions. In smaller sample sizes, it is harder to find statistical significance, so validity and reliability would be harder to demonstrate. Recommendations in the literature regarding sample size in a measurement tool validation study are that the sample size be relative to the number of variables. For example, if n is the number of observations and k the number of indicators, the ratio of n/k should be at least 15.[115] Another source recommends an n/k ratio of at least between five and ten.[116] I preferred the lower boundary, i.e. five. For a sample size between 25 and 50, one can only expect to find acceptable validity levels in the sample 25 percent to 35 percent of the time, even if the validity level is acceptable in the underlying population. A sample size of 200 or more was needed to reflect validity

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[114] Linda M. Crocker and James Algina, *Introduction to Classical and Modern Test Theory* (Holt, Rinehart, and Winston, 1986).
[115] James Stevens, *Applied Multivariate Statistics for the Social Sciences*, 4th ed (Mahwah, NJ: LErlbaum, 2002).
[116] Crocker and Algina, *Introduction to Classical and Modern Test Theory*.

levels of the population data correctly at least 90 percent of the time; I thus considered 200 as the lower limit.[117]

The formula to calculate the statistically representative sample size at the 95 percent confidence level is z/(1+(z/P)), where z= ((0.5*(1-0.5))/CI^2)*1.96^2, CI is the confidence interval, and P is the population size. At the time of this dissertation research Fundación Paraguaya worked with 1,500 clients in its Poverty Stoplight Poverty Elimination Program, which I took as the population size. For a confidence interval of +/- 5 (or, expressed differently, 0.05) the required sample size was thus 384.16/(1+384.16/1500) = 305.8.[118] Table 3.2 shows the sample sizes that I used for each data collection type:

Table 3.2 Sample Size for Poverty Stoplight Visual Survey Applications

Who?	Round	Sample size
Client	Round 1 (2-6 Nov. 2015)	325
Client	Round 2 (18-14 Nov. 2015)	325
Non-poor person	Round 1 (16-20 Nov. 2015)	50
TOTAL (number of participants)		373
TOTAL (number of visual survey applications)		698

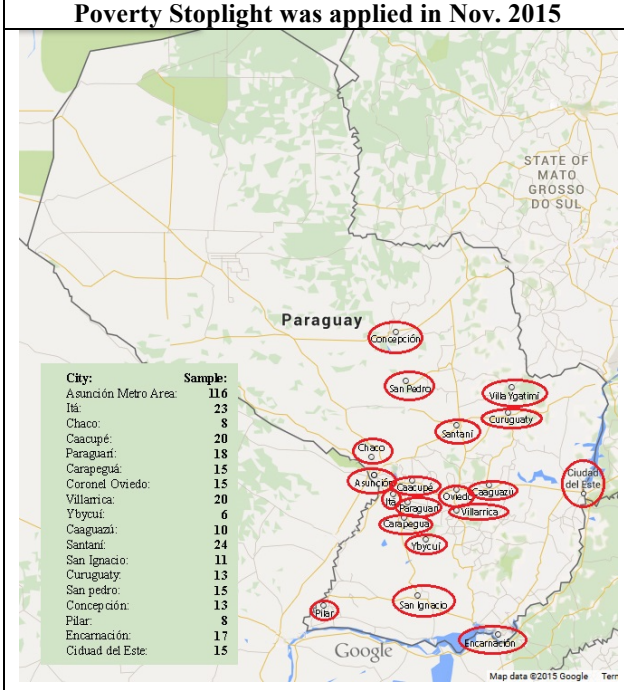
First, I selected 50 non-clients from a community where the Poverty Stoplight was being applied. On 31 October 2015 I conducted a participatory wealth ranking in this community and I asked the 25 top-ranked and 25 bottom-ranked heads of households to

[117] Ibid., 225–226.
[118] Bernard, *Research Methods in Anthropology*. p. 166-167, 178-185

complete the Poverty Stoplight visual survey on 16-20 November, 2015. Two responses were discarded due to synchronization errors in the database, resulting in only 48 cases being used.

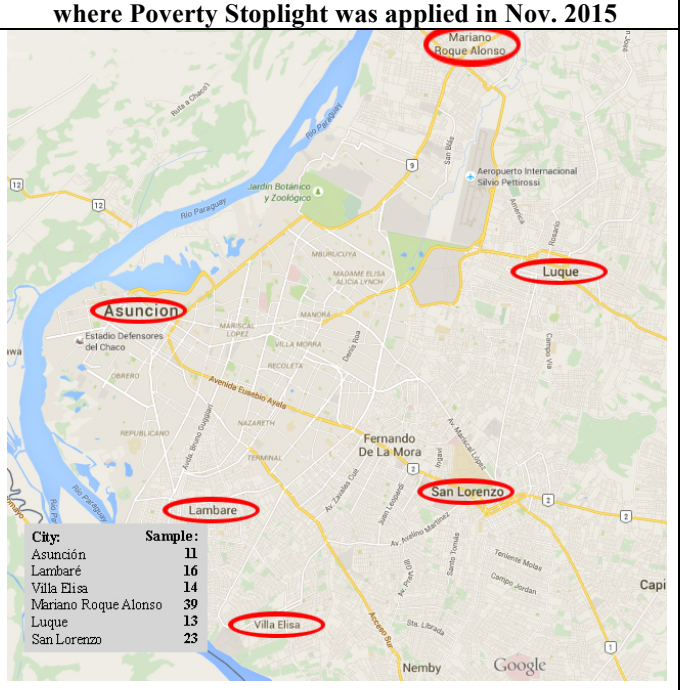
Figures 3.4 and 3.5 below show the maps of the communities where the data were collected.

Figure 3.4 Map of Paraguay showing cities where Poverty Stoplight was applied in Nov. 2015



City:	Sample:
Asunción Metro Area:	116
Itá:	23
Chaco:	8
Caacupé:	20
Paraguarí:	18
Carapeguá:	15
Coronel Oviedo:	15
Villarrica:	20
Ybycuí:	6
Caaguazú:	10
Santaní:	24
San Ignacio:	11
Curuguaty:	13
San pedro:	15
Concepción:	13
Pilar:	8
Encarnación:	17
Ciduad del Este:	15

Figure 3.5 Map of Asuncion Metropolitan Area where Poverty Stoplight was applied in Nov. 2015



City:	Sample:
Asunción	11
Lambaré	16
Villa Elisa	14
Mariano Roque Alonso	39
Luque	13
San Lorenzo	23

Then, for the test-retest, I used the following sample sizes. In Round One, carried out between 2-6 November 2015, 76 *asesoras* accompanied by 23 field workers applied the Poverty Stoplight visual survey to a sample of 325 individual women in 24 different cities. These data were used to test internal consistency, reliability, and construct validity, and as a baseline for testing test-retest reliability and discriminatory power. In Round

Two, after 2 weeks, between 18-24 November 2015, the same 325 individual women retook the visual survey with the same 76 *asesoras* to determine test-retest reliability.

3.3.2 **Participatory Wealth Ranking**

The activity sought to encourage maximum community involvement and consultation in order to compare wealth-ranking scores to the Poverty Stoplight results- in other words, using the participatory wealth ranking as an external control of the results of the Poverty Stoplight. I used participatory wealth ranking techniques proposed by Margoluis and Salafsky to create a list of families who were very poor, moderately poor, or not poor.[119] The participatory wealth ranking consisted of the following four steps. First, I identified a Paraguayan rural community, with similar characteristics to the communities where Fundación Paraguaya clients live. The selected community is called Colonia 4000, situated near the city of Santaní. I obtained a list of its 200 households from the local water board (*Junta de Saneamiento de la Calle 4000 Defensores del Chaco 2nda Fracción)*. Figure 3.6 below shows the map of Colonia 4000 where this participatory wealth ranking took place on 31 October 2015.

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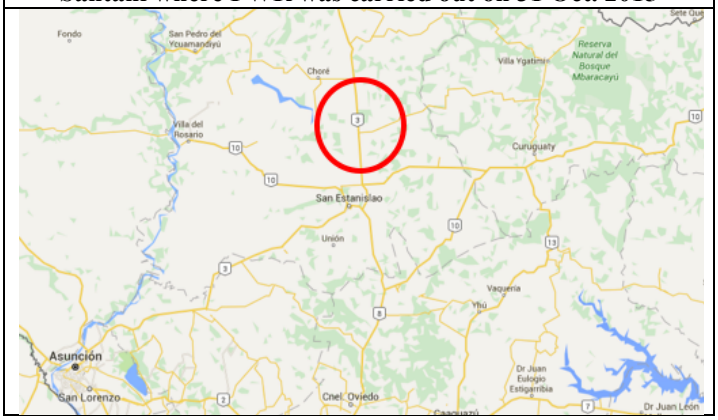
[119] Richard A. Margoluis and Nick Salafsky, *Measures of Success: Designing, Managing, and Monitoring Conservation and Development Projects*, Translated edition (Washington, D.C: Island Press, 1998).

Figure 3.6: Map of Colonia 4000, situated near the city of Santaní where PWR was carried out on 31 Oct. 2015



Second, I conducted five focus groups in order to have participants define their concept of poverty. Once I had these answers, I asked participants to engage in a participatory wealth ranking exercise. This consisted of each focus group moderator asking the members of their group to rank community family household names, which were listed in 200 individual note cards. Participants sorted the cards in groups according to their wealth (pile 1: richest households, pile 2: second richest, pile N: poorest). There were no pre-established number of possible piles imposed on participants; rather, they had the liberty to choose how many piles they could create. For the purposes of this exercise, these five groups chose to create between three and seven piles of names. I repeated this exercise twice, once with five groups and another with four groups, resulting in nine poverty rankings for each of the 200 individual household names.

Third, once the nine rankings were assembled, each one of the rankings was re-scaled onto a scale of 100. To create these re-scaled rankings, 100 was divided by the number of piles; then the pile number was multiplied by each individual rank, so that the poorest households - in pile N - received a score of 100 and the richest households received a score of 100/N*x. Once these re scaled scores were created for each individual

ranking, the multiple rankings for each family household were averaged out. This resulted in a poverty index.

Lastly, I used the resulting poverty index to target the 24 richest and 24 poorest community members. One week later, *asesoras* visited these targeted family groups and applied the Poverty Stoplight visual survey in order to test two questions: discriminatory power and criterion related validity. In other words, these visual surveys were applied to determine whether the Poverty Stoplight also identified these two groups as non-poor or poor, respectively, and also to test whether the Poverty Stoplight agreed with the participatory wealth ranking, which is an external, accepted poverty measure.

3.3.3 **Focus groups and Semi-Structured Interviews**

I used focus groups as the main form of qualitative data collection for the participatory wealth ranking for the following reasons:[120] (1) they provide an effective way of investigating people's opinion about something *in a group*; (2) they sometimes are better suited than individual interviews for capturing underlying social norms, and they permit data collection from group interaction; and (3) they are particularly well suited when the objective is to understand better how people consider an experience or idea, because the discussion in the group meeting is effective in supplying information about what people think or on the way they act.

However, there are also disadvantages of using focus groups instead of individual interviews, among them: (1) the research is not carried out in a natural setting, and the researcher has less control over the data generated; (2) focus groups require infrastructure

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[120] Henrique Freitas, *The Focus Group, A Qualitative Research Method. Reviewing the Theory, and Providing Guidelines to Its Planning* (Baltimore, MD: Merrick School of Business, University of Baltimore, 1998).

for assembling groups; and (3) focus groups are not well suited for confidential or sensitive topics that people do not feel comfortable discussing in public.

Due to the above outlined benefits of focus groups, I conducted most qualitative interviews in this format. I also conducted individual semi-structured interviews in order to compensate for some of the limitations that focus groups have, mainly to deal with sensitive issues that are difficult to discuss in public and for reaching certain groups of interviewees that are difficult to recruit for focus groups. However, individual interviews also have the disadvantage that the range of individual views does not necessarily represent the "group view."

3.3.3.1 Overview of Qualitative Data Collection

I collected qualitative data using focus groups and individual interviews to answer the four research questions, and my approach was to use both open and unstructured questions and also semi-structured questions. My interview guidelines can be seen in Appendices 5-10.

In regards to reliability, I collected relevant information from clients, non-clients, and *asesoras*. I asked clients about their *asesoras* and about the interview process in general in order to explore whether they were carried out in the same way. Also, I asked clients, non-clients and *asesoras* to explain the definition of each indicator and the meaning of each color in order to see whether everyone interprets them in the same way. Finally, I asked clients and *asesoras* about the *Mapa de Vida* in order to verify whether clients interpret it in the same way and in order to verify if *asesoras* present it in the same way. Failure to find consistency in all of these aspects, or other unanticipated aspects of the Poverty Stoplight, would suggest inconsistency and unreliability. Additionally,

understanding the procedures that revolve around carrying out the Poverty Stoplight provided information that was thought to be useful to understanding the confirmability and dependability.

Regarding face validity, I asked clients, non-clients, *asesoras*, staff members, and local poverty experts if they perceived the Poverty Stoplight as a tool that adequately measures poverty. These responses revealed important information about the perception of validity among stakeholders. This procedure also served to provide information about the constructivist validity requirement of credibility. Specifically, credibility requires that gathered information is accepted by the different respondents as the creators of their own reality.

I collected qualitative information about logical sampling validity. The opening question in each individual semi-structured interview and focus group with clients, non-clients, *asesoras*, participatory wealth ranking participants, and poverty experts was about respondents' definition of poverty. The reason why this was the opening question was because I wanted their answers to be unbiased by a Poverty Stoplight visual survey application. I then compared these definitions to the Poverty Stoplight's definition of poverty in order to see whether the Poverty Stoplight contained all the elements considered valid. Participatory wealth ranking participants' definitions of poverty were also included as they were relevant to test criterion-related validity.

I analyzed consequential validity by asking clients several questions such about how they felt during the Poverty Stoplight visual survey, whether they actually developed and used their *Mapa de Vida,* whether they would recommend the Poverty Stoplight to someone else, and whether they believed the Poverty Stoplight had positive or negative

effects for the community. Additionally, I asked *asesoras* how clients received the Poverty Stoplight and if they believed it had any negative effects for the clients.

I asked *asesoras*, clients, experts, and Fundación Paraguaya staff members, both in focus groups and in individual interviews, to provide information about the practicality of the Poverty Stoplight. Expert interviews focused on the existence or not of poverty measurement tools and information in Paraguay. My objective was to understand whether there was a demand for the kind of information that the Poverty Stoplight produces. I asked *asesoras* what were the implications of applying Poverty Stoplight for their daily workload. I asked clients how long the Poverty Stoplight visual survey generally takes and whether that time demand was acceptable or not. Finally, I asked staff members what an MFI that wanted to carry out the Poverty Stoplight would need for implementation purposes. I also asked them about the current cost of implementing the visual survey and the effect that this had on Fundación Paraguaya's microfinance program.

Finally, where the qualitative data provided the most value was around the concept of generalizability, a key element of construct validity. In order to properly explore this concept, I analyzed the operationalization of the Poverty Stoplight's concept of poverty. This allowed me to identify a series of potential sources of bias that could compromise the tool's ability to create generalizable results. I identified the following threats:

First, the colors red, yellow and green may be leading. Potentially, respondents can feel shame to admit being red in an indicator. Also, questions may appear to be leading if the color green is presented as the desirable option. I asked clients, non-clients,

asesoras and poverty experts what these colors meant to them in order to explore this potential bias.

Second, illustrations may be leading and suggestive as people are smiling in the green definitions and not smiling in the red ones. I asked clients, non-clients, *asesoras* and poverty experts how they understand the visual survey illustrations in order to explore this potential bias.

Third, some indicator levels have vague definitions. For example, Indicator 12 "Vaccines" states that Level 1 means "No family member is vaccinated;" Level 2 states that "Family members are partially vaccinated against major diseases: they are not vaccinated against all diseases or not every member of the family is vaccinated;" and Level 3 states: "Family members are vaccinated against the most serious diseases and those which are considered compulsory (sic)." The following questions may arise: What are the most serious diseases? How many vaccines are necessary to be red, yellow, or green? Are there vaccines that are more important than others? I asked clients and non-clients to explain what each indicator means in order to gauge whether they properly understand them. I also asked *asesoras* which indicators are the most confusing for clients.

Fourth, it was acknowledged that the fact that answers are public may cause embarrassment to the respondents. This may result in them either not answering some questions at all or not answering them truthfully. The methodology consists in the head of the household preparing a *Mapa de Vida* that has the form of a calendar that is posted on the wall of the house. In the case of Indicator 48 "Family Violence," for example, the respondent may not have wanted to admit that "there is family violence in the household

and no specific actions to avoid and eliminate it are being taken" (Level 1, red) or "in the family there is some kind of violence for which there are specific actions that have been taken to avoid and eliminate it-complaints, psychological support, etc." (Level 2, yellow). I asked *asesoras* if there were indicators that are usually uncomfortable for clients in order to explore this.

Fifth, the Poverty Stoplight leans toward the realist paradigm because it assumes an objective form of poverty represented by its 50 indicators, which never change. However, the Poverty Stoplight measures both concrete objects, such as the state of a bathroom, and subjective objects, such as self-esteem. Both kinds of objects are measured using the same self-assessment method, because it is assumed that the self-reported data produced can serve as an approximation for both kinds of objects. However, this may be problematic. As important as it may be to measure both concrete and subjective things to capture multidimensional poverty, it may be also important to measure these things in different *ways*. I therefore asked *asesoras* whether they believe client's responses are an adequate representation of the client's reality.

Table 3.3 Overview of Qualitative Data Collection through Focus Groups		
Participants	**Topics**	**Purpose/Principle**
Clients	What does it mean to be poor?	Content Validity (face v.)
	Does the Poverty Stoplight miss any important aspects?	Content Validity (sampling v.)
	Does the Poverty Stoplight capture multidimensional poverty?	Construct validity
	Potential positive and negative effects of going through Poverty Stoplight assessment	Construct validity (consequential v.)
	How long does it take to complete survey, and is this process too long/demanding?	Economy
	Is the tool easy to understand, intuitive, believable, relevant, and meaningful?	Interpretability
Comparable non-clients[121]	What does it mean to be poor?	Content Validity (face v.)
	Does the Poverty Stoplight miss any important aspects?	Content Validity (sampling v.)
	Does the Poverty Stoplight capture multidimensional poverty?	Construct validity
	Potential positive and negative effects of going through the Poverty Stoplight assessment	Construct validity (consequential v.)
Asesoras	What does it mean to be poor?	Content Validity (face v.)
	Does the Poverty Stoplight miss any important aspects?	Content Validity (sampling v.)
	Does the Poverty Stoplight capture multidimensional poverty?	Construct validity
	Is the tool easy to understand, intuitive, believable, useful, and meaningful?	Interpretability

Table 3.4 Overview of Qualitative Data Collection through Semi-Structured Interviews		
Interviewee	**Topics**	**Purpose/Principle**
Poverty expert	Are there aspects of poverty that the Poverty Stoplight does not include?	Content validity (sampling validity)
	How essential is each indicator for the construct of multidimensional poverty?	Content validity (sampling validity)
Clients	Has the process of going through the Poverty Stoplight assessment had any impact on clients' life?	Construct validity (consequential v.)
	Potential positive and negative effects of going through Poverty Stoplight assessment	Construct validity (consequential v.)
	How long does it take to complete survey, and is this process too long/demanding?	Economy
Comparable non-clients	Potential positive and negative effects of going through Poverty Stoplight assessment	Construct validity (consequential v.)
Asesoras	How long does it take to complete survey, and is this process too long/demanding?	Economy
	Experience with applying the tool (advantages and shortcomings); ease of application of visual survey	Convenience
Administrative staff	Benefits of the tool; acceptable and required time and costs	Economy
	Administrative ease of tool; problems encountered	Convenience

[121] Comparable non-clients signifies either Fundación Paraguaya microfinance clients that have absolutely no knowledge of the Poverty Stoplight or people with similar demographics to clients (neighbors) who have no experience with the Poverty Stoplight.

3.3.3.2 Sample

In qualitative methods, sample size is adequate when saturation is reached, that is, when asking and observing more people does not add any new information. [122]Thus there was no a priori knowing of how many focus groups will be necessary. In this research I included 10 client focus groups (4 in the Asunción metropolitan area and 6 in the interior), 5 non-client focus groups (2 in the Asunción metropolitan area and 3 in the interior), and 3 *asesoras* focus groups (2 in the Asunción metropolitan area and 1 in the interior). I also included 46 in-depth interviews with 11 clients (4 in the Asunción metropolitan area and 7 in the interior), 12 non-clients, 8 *asesoras*, 5 administrative staff, and 10 local poverty experts.

3.3.3.3 Qualitative Coding and Systematic Content Analysis

I undertook qualitative content analysis to answer a broad set of questions regarding poverty. My main objectives were: (1) to identify different definitions of poverty to see if they were aligned with the Poverty Stoplight indicators; (2) to explore clients and *asesora's* experiences and relationship with the Poverty Stoplight metric and methodology; and (3) to understand the demand for poverty-related information in Paraguay.

Once I finished conducting the interviews and focus groups, I hired transcriptionists to transcribe all the audio recordings. This resulted in a total of 69 transcriptions. Transcriptionists also served as translators when the audio recordings included Guaraní, to ensure that all the transcripts were in Spanish, making it easier to

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[122] Michael Bamberger, Jim Rugh, and Linda Mabry, *RealWorld Evaluation: Working under Budget, Time, Data, and Political Constraints* (Thousand Oaks, Calif.: SAGE, 2012).

analyze all of the interviews comparatively. Due to the large number of transcriptions that resulted from the focus groups and interviews I used a computer assisted qualitative data analysis software called Dedoose.[123] Appendix 12 provides a detailed description of the systematic content analysis carried out with Dedoose software.

As the focus groups and individual interviews were semi-structured, I carried out a form of eclectic coding, which included both grounded codes and predetermined codes.[124] Grounded codes are codes that emerge from the data and are not established by the researcher beforehand, while predetermined codes are codes created by the researcher before analysis of the qualitative data has taken place.[125] I used grounded codes to capture the unstructured segments of the transcriptions. I used predetermined codes to capture pre-established notions that were ingrained in the questionnaires themselves.

For example, I asked clients, non-clients, *asesoras*, participatory wealth ranking participants, and poverty experts what they thought poverty meant. I used pre-established codes to mark the sections of the 69 transcripts where each respondent was talking about what the definition of poverty meant to them. In a second round, grounded codes were created in order to identify and capture different feelings, descriptions, things, and characteristics that people related to the concept of poverty. Through the intersections between these pre-established codes, and through the classification of transcripts by mode (participatory wealth ranking, focus group or interview), and subject (client, non-client,

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[123] "Dedoose," n.d., http://www.dedoose.com/.
[124] Johnny Saldaña, *The Coding Manual for Qualitative Researchers*, Second Edition edition (Los Angeles: SAGE Publications Ltd, 2012).
[125] Ibid.

poverty expert, Fundación Paraguaya staff and participatory wealth ranking participants), I was able to achieve a detailed picture of what poverty meant to different respondents.

Many recurrent themes emerged during the process of systematic content analysis. I identified themes connected to the central question of this investigation by reading and coding each one of the interview and focus group transcripts. I coded using an iterative process, and although qualitative data analysis inevitably requires some degree of personal interpretation, each step of the coding procedure included discussions between Fundación Paraguaya staff and me in order to ensure that the resulting conclusions were as unbiased as possible. [126]

The Index Tree in Appendix 11 contains a list of all the codes I used to better understand the transcriptions; they are subdivided by grounded and pre-established codes. There are five categories in which the codes are divided: institutions, poverty, Poverty Stoplight methodology, visual survey, and information use. I also created sub-sections for topics such as impact, tablet, dimensions and indicators, operational, *asesoras*, reporting, tools, measurements, and advantages. In total, I created over 75 codes. Appendix 13 contains a list of code intersections.

3.4 **Ethical Considerations**

My most important ethical concern during this dissertation research was my potential conflict of interest, since I have been involved in the development of the Poverty Stoplight since its inception. This brings into question my objectivity as to the strengths and weaknesses of this poverty measurement tool. I took the following steps were to address potential issues and biases throughout the research project.

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[126] Ibid.

The first and most important step was transparency and prudence in the use of research methods. Throughout this dissertation I try to explain in detail every method that I used and the reasons for choosing them. In particular, I describe the process of selecting research participants in full detail. A potential source of bias was that I might focus more on the success stories, thus consciously or unconsciously emphasizing one side of the story. I tried to mitigate this risk by randomly selecting clients for participation in this research. A second step I took was to regularly invite input and feedback from outsiders. I have shared the progress of my work with my dissertation committee in order to seek an unbiased opinion about this research project. As a third step, I have tried to emphasize the problems with the tool that may be encountered during the research process. This practice allowed me to keep an open eye for the risk of confirmation bias, a natural tendency to search for, interpret, and favor information in a way that it confirms my own hypotheses and beliefs.

A second obvious ethical consideration for me was trying to avoid the danger of using or taking advantage of poor families for the purpose of my research project. Participants were compensated fairly for their time at a rate of 150% of the national minimum wage. In addition, I was always aware that Fundación Paraguaya clients are in a dependency relationship with their *asesoras* and that they may have felt pressure to participate in this research if they wanted to continue to receive loans. Poverty Stoplight visual survey applications were conducted with randomly selected clients. Random samples of eligible clients were drawn to assure that every client had the same chance to participate in this research. Most of the study participants were Fundación Paraguaya

microcredit clients, as the study aimed to validate a key instrument used in the organization's programs.

I made sure that Fundación Paraguaya staff received Collaborative Institutional Training Initiative (CITI) training and fully understood that client participation in data collection had to be voluntary. Clients were informed that participation was voluntary and that they could skip any question or stop participating at any time. I made sure a field worker, i.e. a staff member with no prior relationship with the client, accompany the *asesora* to ensure that clients were adequately informed about the nature of this research project and about her right not to participate or to withdraw at any time. Field workers asked all participants to sign informed consent forms and all field workers also signed these forms as witnesses. The person obtaining consent explained in at least two different ways that this research was not part of normal program operations, and that the clients' relationship or standing with Fundación Paraguaya would not change in any way, whether or not they decided to participate. Although informed consent forms were in Spanish, communication between the field workers and participants were in Spanish and Guaraní. All field workers and I speak Spanish, Guaraní and *jopará*, the local slang. Consent forms were obtained from clients, non-clients, Fundación Paraguaya staff, including *asesoras*, and participatory wealth ranking participants. An example of the consent form is presented in Appendix 10.

Finally, a main concern of mine was maintaining participants' privacy. I obtained information from Fundación Paraguaya's administrative database, from discussions with loan officers, and from the participants themselves. I only collected personally identifiable information when it was necessary to link data records and these data were

always anonymized and coded as soon as records were combined. Information collected about the participants included their self-reported poverty across 50 indicators. I collected no personal identifiable information from participants in individual semi-structured interviews, focus groups, and the participatory wealth ranking exercise, although I collected some background data, such as age range, education, and occupation, to facilitate data analysis. I always informed participants of this fact, and through written informed consent they agreed to this usage of their information.

4 Chapter 4: Results and Analysis

4.1 Introduction

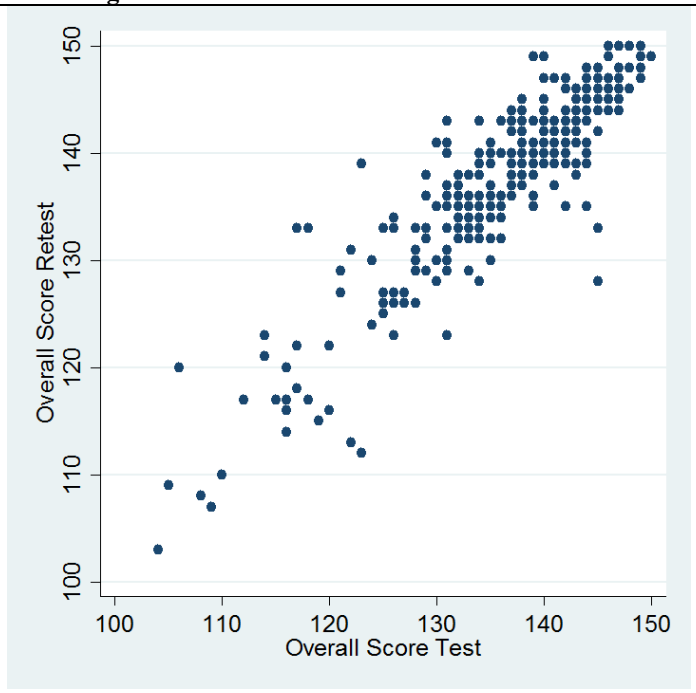
In this chapter, I present the results of the quantitative and qualitative data I collected and I analyze these data in relation to the research questions of this dissertation. Section 4.2 presents the results of the application of the Poverty Stoplight visual survey and it presents the statistical analyses that were carried out with these data. Section 4.3 presents the results of the participatory wealth ranking and the comparison between these data and those produced by the Poverty Stoplight. Finally, Section 4.4 presents the qualitative results derived from the focus groups and individual semi-structured interviews.

4.2 Application of the Poverty Stoplight: Reliability and Validity

This section covers the statistical analyses performed on the quantitative data that resulted from the applications of the Poverty Stoplight visual survey. Statistical procedures related to test-retest reliability, internal consistency reliability and factor analysis were performed on the data, and are presented below.

4.2.1 **Test-Retest Reliability of Overall Indexes**

Figure 4.1 Test-Retest Correlation Scatter Plot



To verify whether there was a significant difference between the mean of the test results relative to the mean of the retest results, I carried out a difference in means t-test. The null hypothesis, H0, was that there is no difference between the test and the retest. Thus, in order to prove reliability the comparison needed to fail to reject the null hypothesis; this meant that the p-value needed to be as large as possible.

Table 4.1 Paired T-Test

Paired t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
sumI1	341	136.9707	.4889825	9.029642	136.0089	137.9325
sumI2	341	138.1496	.4706256	8.69066	137.2239	139.0753
diff	341	-1.178886	.2052462	3.790114	-1.582598	-.7751734

mean(diff) = mean(sumI1 - sumI2) t = -5.7438

Ho: mean(diff) = 0 degrees of freedom = 340

Ha: mean(diff) < 0 Ha: mean(diff) != 0 Ha: mean(diff) > 0

Pr(T < t) = 0.0000 Pr(|T| > |t|) = 0.0000 Pr(T > t) = 1.0000

Paired t-tests are used when information of the same individuals are present in both samples because they take into account the individual variation of each respondent. Table 4.1 above shows the results of the paired t-test: there was a difference in means at the 99 percent confidence level (p value=0.0000). This means that there was a significant difference between the test and the retest, and it suggests that the Poverty Stoplight is not reliable overall.

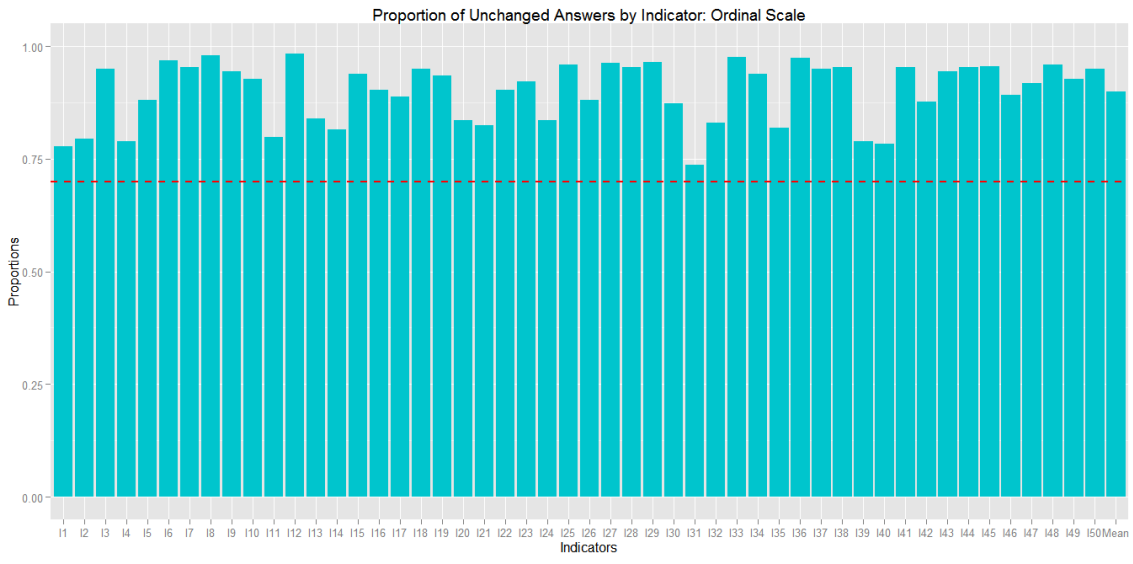
At the overall level the test-retest showed conflicting results. On the one hand, there was a high correlation between test and retest results (Figure 4.1), but, on the other hand, the paired t-test also showed a highly significant difference between the mean overall score of the test and the retest (Table 4.1). However, the correlation coefficient was so high (0.9), that it seems to make sense to accept that the overall results of the test-retest show a high level of reliability. Additionally, although the t-test shows a significant difference, the difference of means only range from -1.58 to -0.78 at the 95 percent confidence level. Thus, the difference is statistically significant, but it is not a large difference in relation to the mean overall poverty score of 137.56.

4.2.2 **Test-Retest Reliability of Individual Indicators**

In order to understand the test-retest reliability of each individual indicator, I carried out two procedures. First, as an exploratory measure, I calculated the percentage of unchanged answers, from test to retest, in order to see how many clients gave the same answers in each indicator. Secondly, I calculated correlation coefficients in order to see whether individual indicators were correlated with themselves from test to retest.

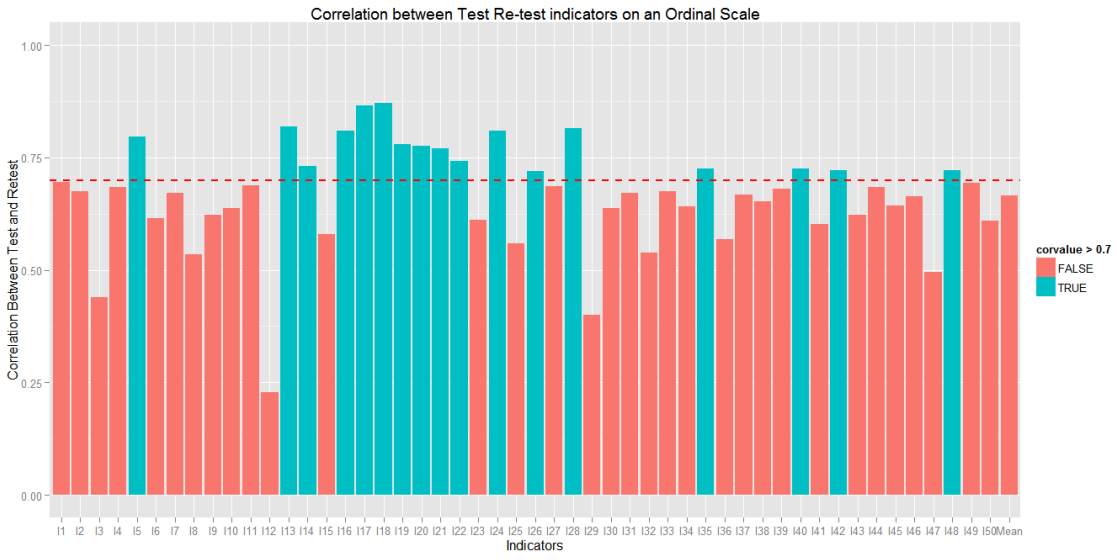
As an exploratory measure, I produced a bar plot that shows the proportion of unchanged answers from test to retest. As can be seen in Figure 4.2 below, more than 70 percent of responses remained unchanged in all indicators. This initial finding suggests a high level of reliability as a large portion of respondents chose the same response both times.

Figure 4.2: Proportion of Unchanged Answers by Indicator – Ordinal Scale



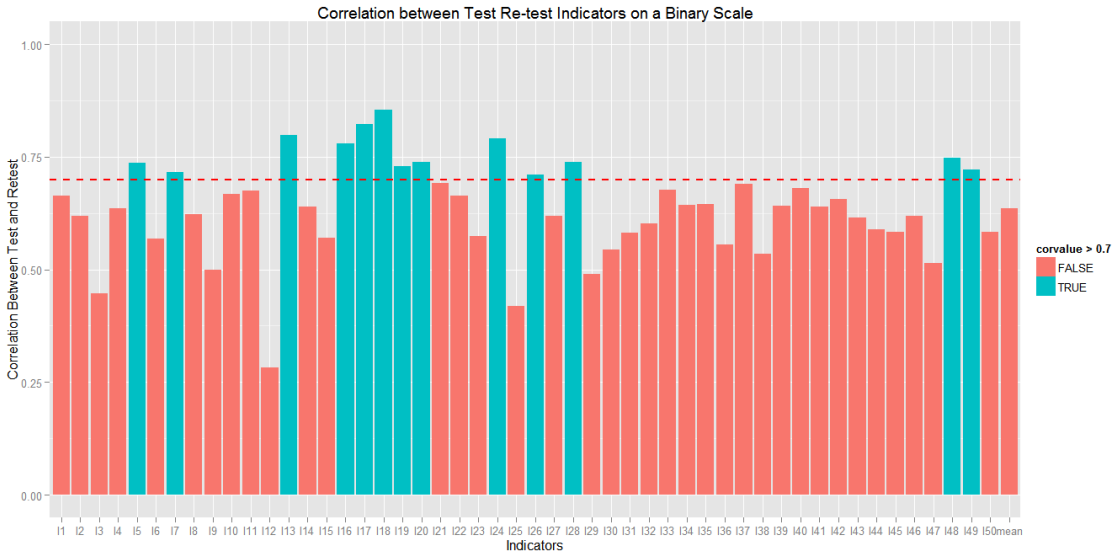
Secondly, I calculated correlation coefficients to see how highly correlated indicators were with themselves, when test and retest data was compared. Figure 4.3 below shows that when treated as continuous variables (red=1, yellow=2, green=3) many indicators were not highly correlated to each other from test to retest.

Figure 4.3: Correlation between Test-Retest Indicators on an Ordinal Scale



The same thing happened when I converted scales to a binary scale (1=deprived, 0=non-deprived). In both of these cases, the limited amount of options provided by the scales seems to restrict the ability of indicators to adequately correlate with themselves. At first glance, these results seem to make a statement about the limitations of the ordinal scales used by the Poverty Stoplight more than about the test-retest reliability of each individual indicator.

Figure 4.4: Correlation between Test-Retest Indicators on a Binary Scale



At the indicator level, test-retest results also showed apparently conflicting results. On the one hand, the high levels of unchanged answers suggested that there was a high level of reliability. On the other hand, the low correlation coefficients suggested a low level of reliability. The explanation for these apparently contradicting results is probably that low correlation coefficients are due to the ordinal scale on which the Poverty Stoplight is based. Having only three levels restricts the level of variability of the scale, allowing small changes to have a large effect on the correlation coefficient. Additionally, low variance and levels with unequal distances violate the assumptions of Pearson's correlations; I will discuss this later when analyzing factor analysis. This interpretation suggests that although the Poverty Stoplight indicators are probably test-retest reliable, the scales of the indicators of the Poverty Stoplight would need to be expanded if there was a desire to run more complex statistical tests.

4.2.3 **Internal Consistency Reliability**

I conducted four internal consistency reliability tests, including average inter-item correlation, average item-total correlation, split-half reliability, and Cronbach's alpha. Although these procedures were carried out for both test and retest data, the results were so consistent that only test data are reported below.

Table 4.2: Initial Internal Reliability Measures				
Test	Average Inter-Item correlation	Average item-total correlation	Split-half reliability	Cronbach's Alpha
Result	0.1207	0.1303	0.8412423	0.8729

Table 4.2 above describes the initial internal reliability measures. The average inter-item correlation is the average of a correlation matrix that results from the comparison of all indicators among each other. The average item-total correlation is similar to the previous procedure in that it is a mean that results from a correlation matrix, but the sum of each column of the correlation matrix is included in the average. Adding the sum of all items does not change the result dramatically. The average item-total correlation is 0.1303, which is still quite low.

For split-half reliability, I used Stata to randomly generate these two groups of indicators, which are listed below with numbers corresponding to the list in Table 2.1 ("I" represents Indicator):

Group 1: I15 I27 I40 I26 I18 I43 I45 I47 I48 I21 I44 I22 I50 I29 I10 I41 I11 I46 I1 I30 I25 I14 I7 I17 I19

Group 2: I3 I32 I12 I8 I9 I20 I37 I4 I36 I2 I49 I34 I6 I39 I33 I13 I24 I35 I28 I42 I23 I5 I16 I31 I38

The Pearson correlation between the sums of the two groups is high: r=.7260; this is highly significant (p=0.000). In order to arrive at the final measure for split-half reliability, I used the Spearman/Brown formula (r sh = 2*r /(1+r), where *r* is the Pearson coefficient from above. This gives a reliability coefficient of 0.8412423, which is an adequate reliability level (over 0.8 typically viewed as adequate, over 0.9 would be good).[127]

Finally, Cronbach's alpha is 0.8729, which is relatively high (0.7 is general used as the minimum benchmark, over 0.8 is considered good). It should be noted that the size of alpha depends on the number of items; as the number of items grows, so does alpha automatically. Acock explains that if items have an average correlation of only 0.1, the resulting alpha for a five-item scale is 0.36, but for a 50-item scale, alpha grows to 0.85. As Acock states, "Some major scales are like this where they gain consistency from the large number of items and not from the items sharing much common variance."[128] This in fact seems to be the case here. If one looks at Figure 4.5 below, or at the average inter-item correlation above, one can see that the items are not highly correlated.

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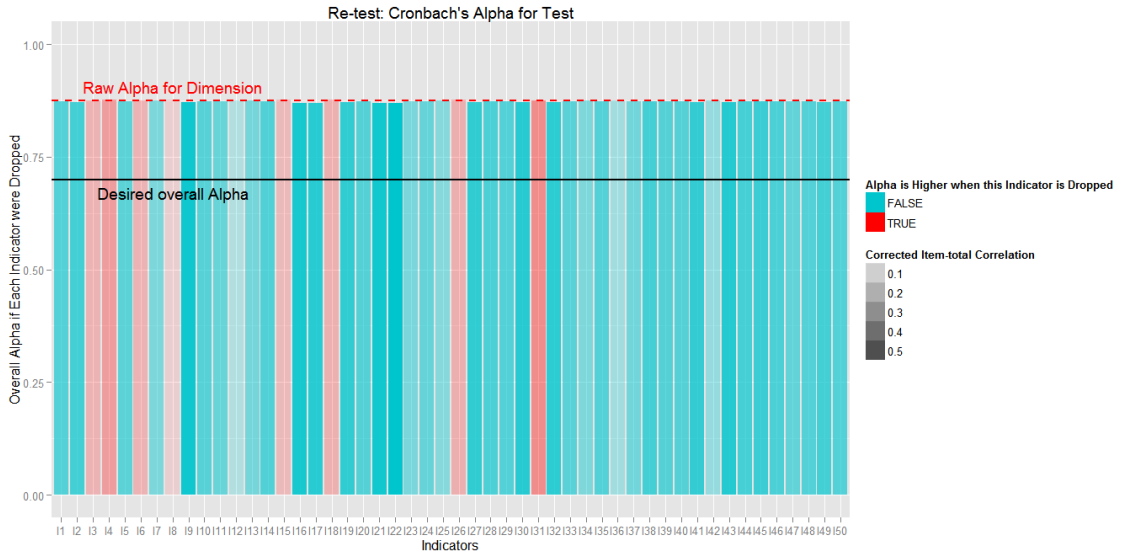
[127] G. David Garson, "Course on Quantitative Research in Public Administration PA 765-766," n.d., http://tx.liberal.ntu.edu.tw/~purplewoo/Literature/!DataAnalysis/Reliability%20Analysis.htm.
[128] Alan Acock, *A Gentle Introduction to Stata, Revised Third Edition*, 3 edition (College Station, Tex: Stata Press, 2012). p. 293.

Figure 4.5: Cronbach's Alpha for Test



The results from the Cronbach's alpha can further be analyzed by seeing how the alpha is influenced by individual indicators. As the figure above shows, red columns represent items that if eliminated would improve the overall alpha of the scale. Secondly, fairly transparent columns represent items that, when taken separately from the rest of the scale, have a low correlation with the rest of the scale. Therefore, red and transparent indicators are more problematic than the turquoise and solid columns.

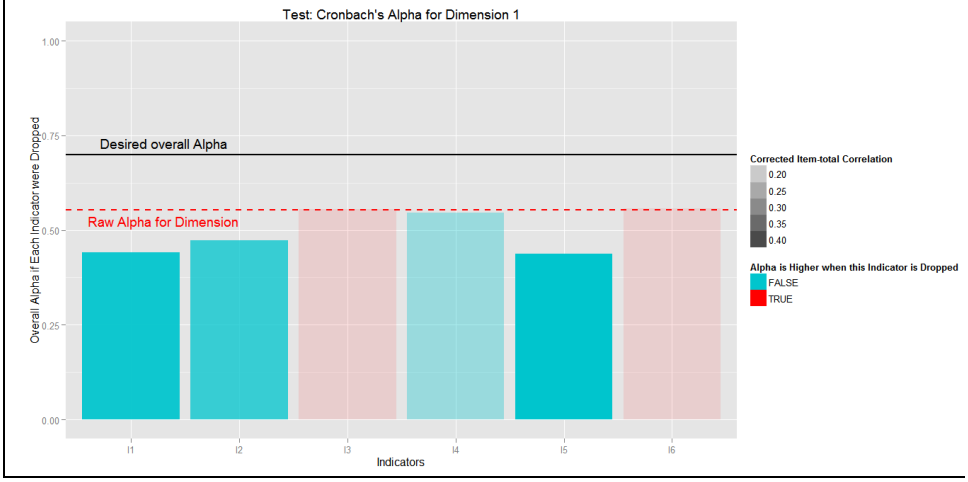
The corrected item-total correlations, the level of correlation between each item and the total scale, should be roughly the same for all items, which is not the case because correlations range from 0.06 to 0.61. The situation is similar for the item-rest correlation (correlation between each item and the scale of all other indicators, not including the item). The most transparent indicators in Figure 4.5 are the most problematic in this regard.

However, Cronbach's alpha changes very little if individual items are left out (range from 0.8662 to 0.875). This indicates a high overall level of reliability. It would

increase slightly if removing any one of the following indicators: I3, I4, I7, I8, I15, I18, I26, and I31[129]. In Figure 4.5, problematic indicators in this regard are represented by red bars.

There is a danger of inflation when Cronbach's alpha is calculated on a scale that contains many items, which may result in a false sense of reliability. In order to mitigate this inflationary effect that too many items can have on the alpha, Cronbach's alpha was also calculated for each one of the six dimensions of the Poverty Stoplight. By doing this, indicators were processed in groups that ranged from eleven indicators in the largest dimension, such as Education and Culture, to four indicators in the smallest dimension, such as Organization and Participation. What follows is a series of Figures that represent different aspects of the alpha for each dimension.

Figure 4.6: Cronbach's Alpha - Dimension Income and Employment



[129] Note, indicators listed above have numbers corresponding to the list in Table 3.1 (I means Indicator)

Figure 4.6 above shows that Dimension 1 for Income and Employment has a low alpha, indicating that its indicators have low internal consistency. The raw alpha does not reach the 0.7 desired threshold. Two indicators, Indicator 3 "Credit", and Indicator 6 "Documentation: Identity Card", if eliminated, would increase the overall alpha. In addition, several bars fall below the 0.3 threshold of corrected item total correlation.

Figure 4.7: Cronbach's Alpha – Dimension Health and Environment

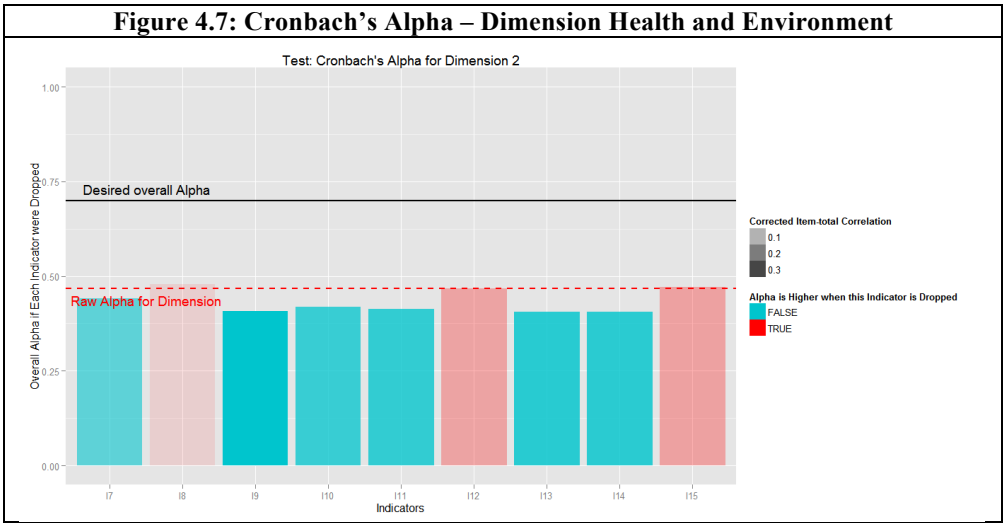


Figure 4.7 above shows that Dimension 2 for Health and Environment also has a low alpha. In addition, all bars fall below the 0.3 corrected item-total correlation desired threshold. Again, red bars (I8, I12, and I15) if eliminated would raise the alpha of the dimension.

Figure 4.8: Cronbach's Alpha – Dimension Housing and Infrastructure

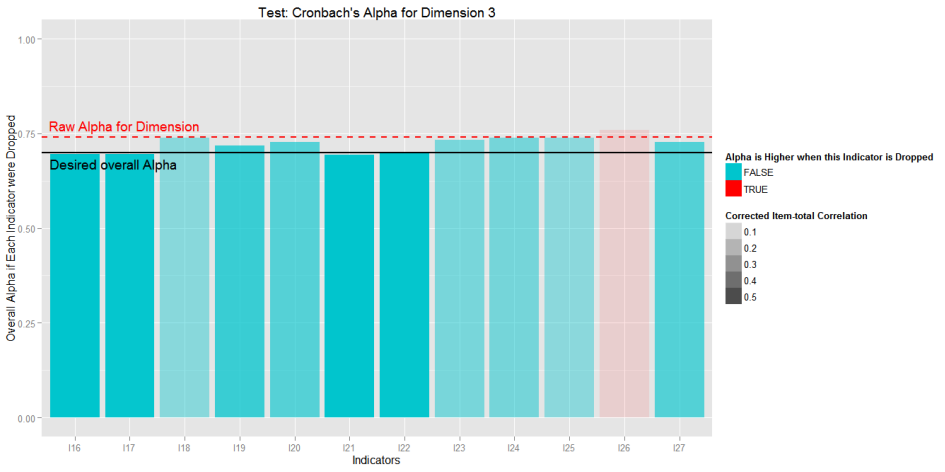


Figure 4.8 shows that Dimension 3 for Housing and Infrastructure does have a higher level of internal consistency than the two previous dimensions since the alpha is higher than 0.7. However, some indicators are problematic: red columns and transparent columns could be eliminated to improve internal consistency. Slightly transparent bars seem to fall below the desired threshold of 0.3.

Figure 4.9: Cronbach's Alpha – Dimension Education and Culture

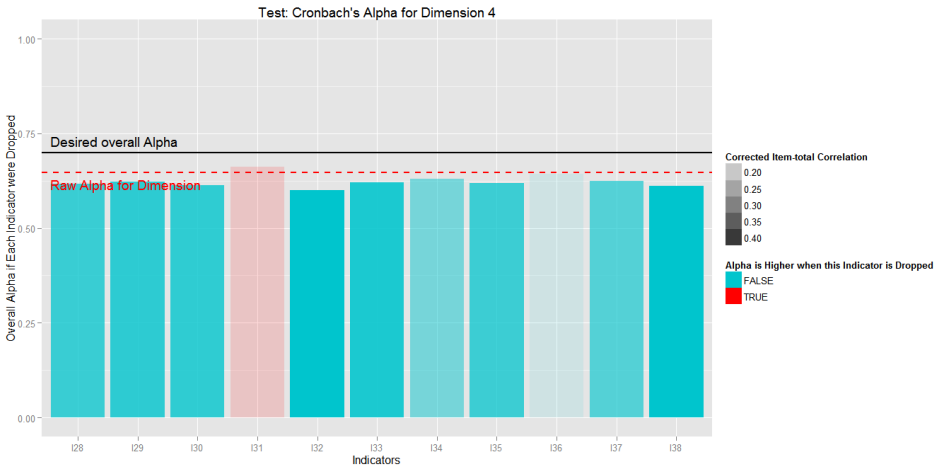


Figure 4.9 above shows that Dimension 4 for Education and Culture also fails to reach the desired threshold of 0.7 for the alpha. Several bars are problematic because they are either below 0.3 in corrected item total correlation (transparency), or their elimination would raise the overall alpha (red bars).

Figure 4.10: Cronbach's Alpha – Organization and Participation

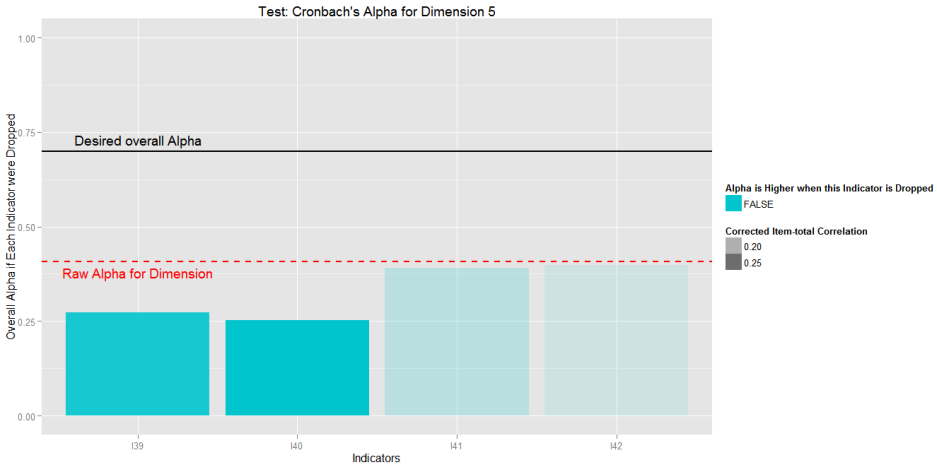


Figure 4.10 above shows that Dimension 4 for Organization and Participation has a very low alpha. All items are below 0.3 in corrected item total correlation.

Figure 4.11: Cronbach's Alpha – Dimension Self Awareness and Motivation

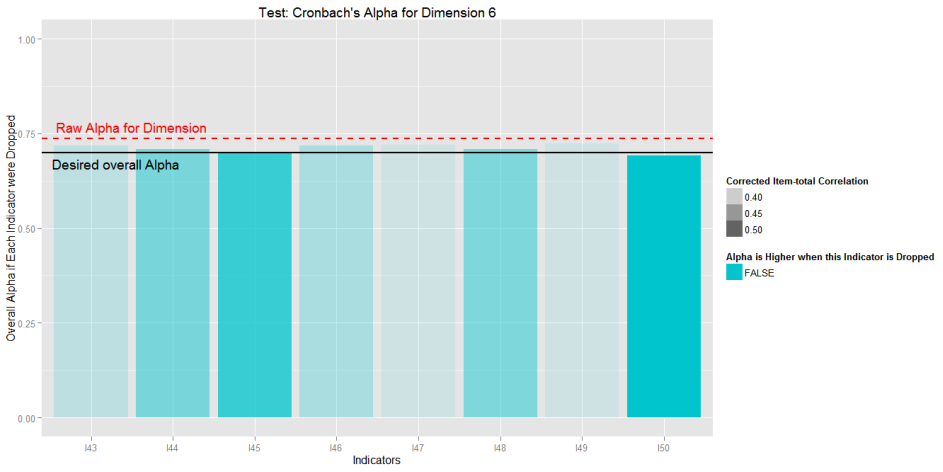
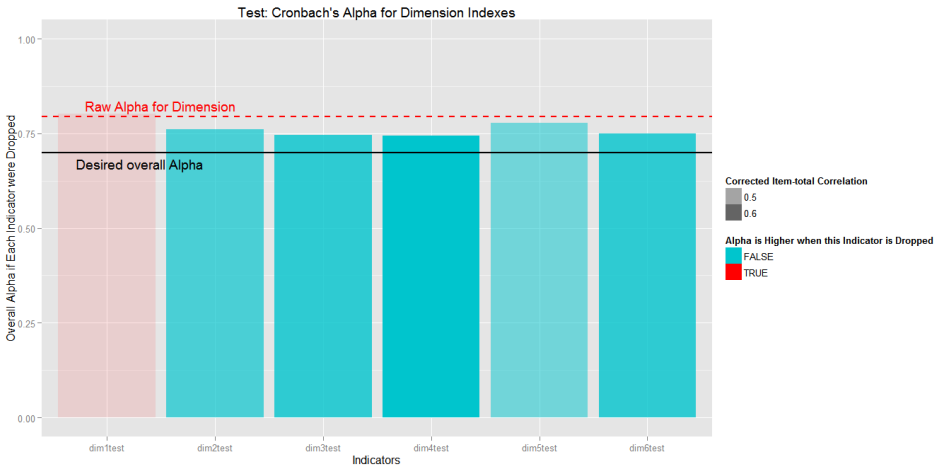


Figure 4.11 above shows that in Dimension 4 for Self-Awareness and Motivation the alpha is higher than the 0.7 threshold. None of the indicators need to be eliminated to increase the alpha, and they are all individually correlated among each other. Although bars appear to be transparent, the scale for transparency has a minimum of 0.4, suggesting that all indicators are higher than 0.3 in the corrected item-total correlation.

Figure4.12: Cronbach's Alpha – Dimensional Sub Indexes



These results show that the Poverty Stoplight, as a whole, does not have high internal consistency reliability. Although at first sight Cronbach's alpha and split-half reliability seem to be high for the Poverty Stoplight as a whole, these results can be driven by the high number of items considered at once. When Cronbach's alpha is calculated for each of the individual dimensions, the strength of the raw alpha is seriously constricted. These signs of low internal consistency reliability at the dimension level are also supported by the average inter-item correlation and the average item-total correlation of the overall Poverty Stoplight, which were also low. Finally, indicators are not internally consistent relative to the dimensions they are placed in. However, dimensions seem to be internally consistent relative to the Poverty Stoplight as a whole. This fact might be another indication that what constricts the performance of statistics on the Poverty Stoplight results is the ordinal scale on which the Poverty Stoplight is based. Comparing these results to the test-retest results, indicators had a low level of correlation when being compared to *themselves*. Therefore, it should not be too surprising to find that indicators also had a limited capacity to correlate to *each other*.

4.2.4 **Factor Analysis and Validity**

I carried out confirmatory factor analysis in order to understand construct validity. The purpose behind this was to see whether the data behaves as one would expect it to behave if the indicators were appropriately representative of the dimensions, and if the dimensions were appropriately representative of poverty. If factors load around pre-established dimensions of the Poverty Stoplight, that would provide support for the operationalization the tool uses in understanding poverty.

Several difficulties arose when trying to carry out the factor analysis. Initially, because the Poverty Stoplight database consists of ordinal data, Pearson's correlations could not be used to calculate the correlation matrix required for factor analysis. This is because Pearson's correlations assume that data is measured at least at an equal interval scale, and that there is a linear relationship between the variables.[130] The former is clearly not an assumption that the red-yellow-green ordinal scale of the Poverty Stoplight can support. This is because ordinal scales are useful to place different levels in order but, in contrast to interval or ratio scales, they cannot assume equal distances between such levels.[131]

An alternative to Pearson's correlation, however, is the use of polychoric correlations. "The polychoric correlation, which is an extension of the tetrachoric correlation, is a technique for estimating the correlation between two bivariate normally distributed continuous variables measured using an ordinal scale." [132] It can be shown in simulations that if the assumption holds that an underlying continuous latent variable is measured through the ordinal scale, the polychoric correlations are an unbiased estimate of the Pearson's correlations of the underlying latent bivariate normally distributed variables.

In order for the polychoric correlation matrix to be calculated, there can be no missing values in the underlying variables. Using the data from the test round of visual survey applications, there are two variables with missing values: Indicator 33 "School

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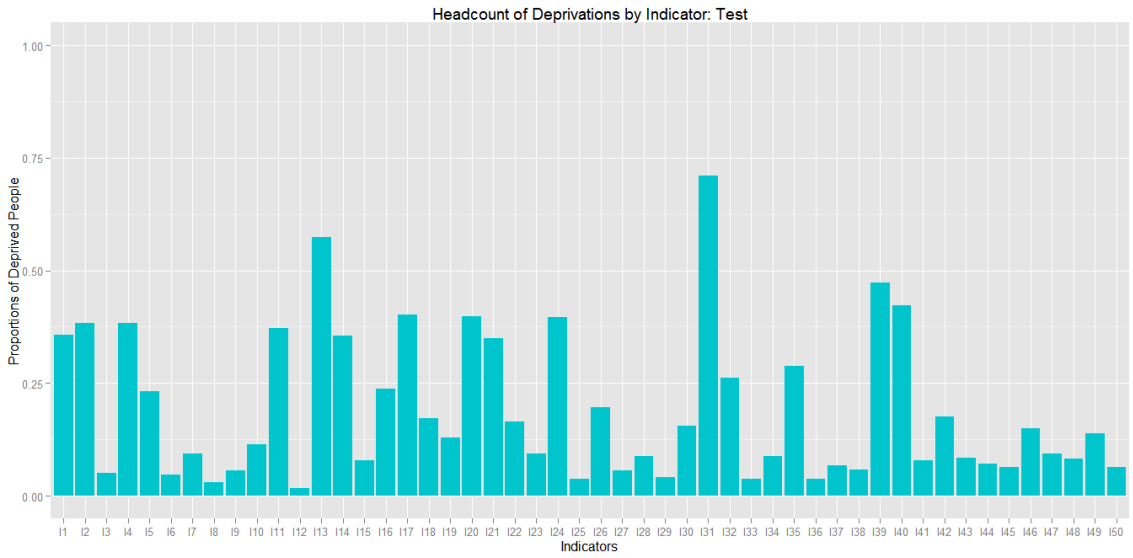
[130] Acock, *A Gentle Introduction to Stata, Revised Third Edition*.
[131] Bernard, *Research Methods in Anthropology*. p. 47-48.
[132] James Baglin, "Improving Your Exploratory Factor Analysis for Ordinal Data: A Demonstration Using FACTOR," *Practical Assessment, Research & Evaluation* 19, no. 5 (June 2014), http://pareonline.net/getvn.asp?v=19&n=5.

Supplies and Books" and Indicator 35 "Entertainment and Recreation". In order to resolve this problem, I recoded missing values in Indicator 33 into green. I made this decision because if indicators were not applicable to a respondent, for example, they do not have children, then they cannot be deprived in that indicator. For Indicator 35, I used Stata's imputation program to impute missing values. The resulting values for the two missing values in this variable were also green.

I carried out Factor analysis using the data analysis software FACTOR, which was developed specifically for the purpose of doing factor analysis, and thus is more flexible in this area than general statistical software packages such as Stata. This program also showed that many variables have very little variance. As I will discuss later in this analysis, this is an issue that MFIs using the Poverty Stoplight will need to address in the future, not just for the sake of statistical analysis, but for the sake of having indicators that actually add value to MFIs and to the individual clients. Indicators that are green for almost everybody may be of very little use. This is especially true for variables that completely lack a red. Figure 4.13 below shows the proportions of people who were defined as poor, red or yellow, in each indicator. As can be seen, many indicators show a very low level of deprivations, implying that clients overwhelmingly have greens in many indicators.

Figure 4.13: Percent of people defined as poor (yellow or red) by indicator



In the context of factor analysis, one problem with this low level of variance is that polychoric correlations cannot be computed without a high enough level of variance. The resulting standardized variance/covariance matrix has several 0 correlation entries, which is a problem given that factor analysis tries to extract factors from common correlations of indicators. If indicators do not correlate, then there are no factors than can be extracted. This is the single most important problem related to this factor analysis, and the one that probably drives the unsatisfactory results.

In order to decide how many factors to retain, Baglin recommends using parallel analysis. He argued that the commonly used Kaiser criterion, retaining all factors with an eigenvalue >1, or scree plots often overestimate the number of factors in the data. Parallel analysis has been found to be superior in correctly identifying the number of factors. In this method, “The mean eigenvalues of the factors extracted from the random parallel

datasets are compared to the samples' eigenvalues. All factors where the sample's eigenvalues are greater than the means of the random parallel datasets are retained." [133]

There are two ways of determining the number of factors: considering the 95 percent percentile or the mean of the random percentage of variance. Each was compared to the real-data percentage of variance. In this dataset, looking at the former 95 percentile, the advised number of factors to retain was 5. Looking at the latter, the mean, the advised number of factors was 13. FACTOR recommended the use of 13. Both options were followed.

FACTOR recommended the use of unweighted least squares, ULS instead, which was followed. With this extracting method, the extraction converged. In both cases, with 13 and with 5 factors, I used the oblique Promin rotation as the standard rotation method, as suggested by Baglin and as proposed by FACTOR.

Using 13 factors there are no clear patterns or clusters of factor loads, and many indicators loaded onto several factors (cross-loadings). Additionally, there were 11 negative loadings, suggesting that some indicators are negatively related to certain underlying factors. Put together, this is not an encouraging result for the Poverty Stoplight as far as construct validity is concerned because indicators do not load into their predetermined dimensions.

Given that the Poverty Stoplight was constructed around 6 poverty dimensions, the 5 factors found in the data analysis could be a better approximation of the underlying factors. As 5 factors was the second advised number of factors to be retained, the analysis was run with this number as well.

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[133] Ibid. p. 4

Using 5 factors, the result is similar to the analysis with 13 factors: there were hardly any clear clusters of indicators loading onto factors as predicted by the Poverty Stoplight's dimensions. There were a significant amount of indicators that did not load onto any factors, while there were a couple of indicators that loaded onto more than one factor. Again, the construct validity of the Poverty Stoplight cannot be demonstrated using factor analysis.

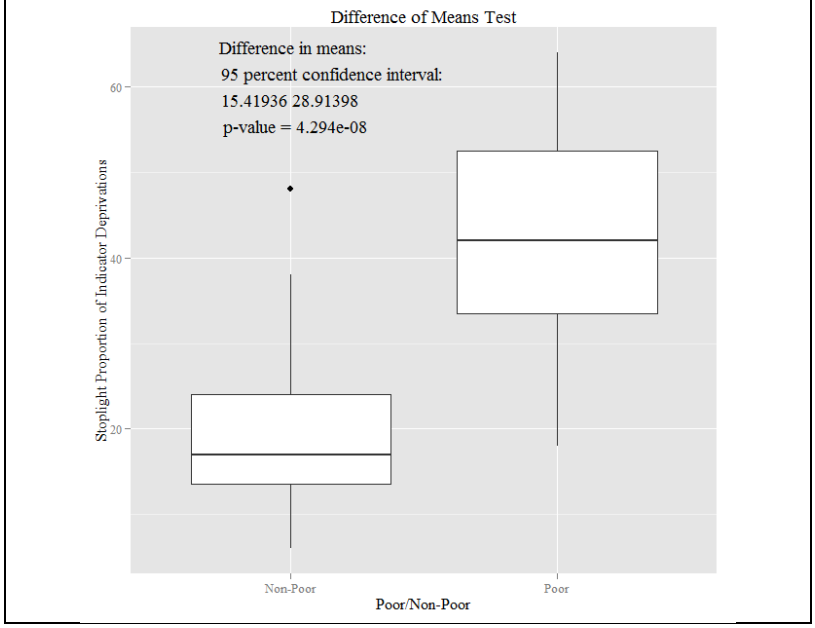
The results of the factor analysis support what Cronbach's alpha had shown before: Poverty Stoplight indicators do not properly make up the dimensions where they are currently placed. There is also consistency between the factor analysis and Cronbach's alpha in that they show the limitations that ordinal data create for statistical analysis. A three-level scale that cannot hold the assumption of equal distances between levels cannot support the assumptions needed in order to carry out Pearson's correlations, and this limitation restricts the ability to perform Cronbach's alphas and factor analyses on the data. These limitations negatively affect the generalizability of the Poverty Stoplight because they limit the researcher's ability to perform statistical analyses on the tool's data.

4.3 **Participatory Wealth Ranking: Validity and Discriminatory Power**

Results of the participatory wealth ranking and the 48 Poverty Stoplight visual survey applications that were carried out in the same rural community are relevant to the criterion-related validity of the Poverty Stoplight. In order to test whether there was a relationship between the participatory wealth ranking and the Poverty Stoplight, I carried out two tests: a t-test and a correlation.

As can be seen in Figure 4.14 below, the plot shows that there is a significant difference between the means of the two groups. This suggests that poor households, according to the participatory wealth ranking, are also consistently poor according to the Poverty Stoplight, and the same is true for non-poor households. The performed t-test shows, with 95 percent confidence, that the means of the two groups, poor and non-poor, as determined by the participatory wealth ranking, are different. In Figure 4.14, the x-axis shows the two groups, poor and non-poor, according to the results of the participatory wealth ranking. The y-axis shows the distribution of the results of the Poverty Stoplight, where higher numbers mean more deprivations, and therefore, more poverty.

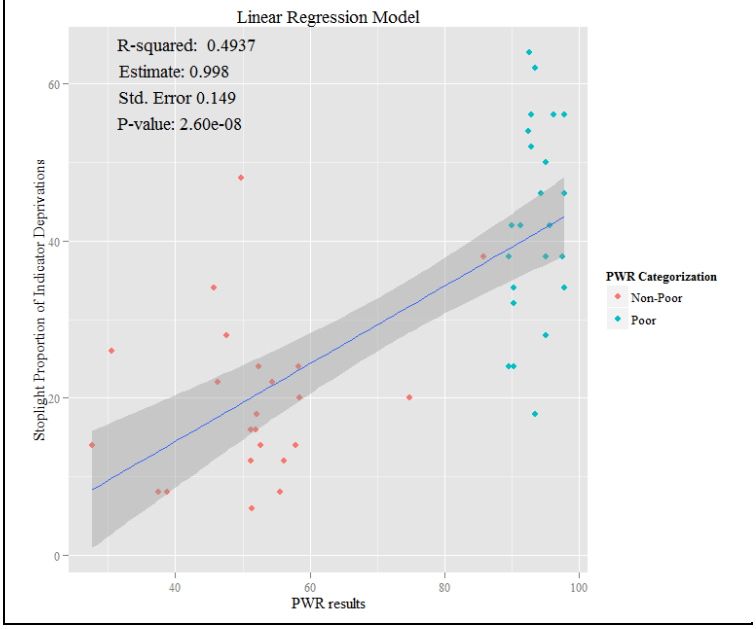
Figure 4.14. Box Plot Difference of Means Test of Participatory Wealth Ranking (PWR) and Poverty Stoplight



As can be seen in Figure 4.15 below, the linear regression model shows that both the participatory wealth ranking and the Poverty Stoplight are correlated if both measures

are used as continuous scales. Thus, the participatory wealth ranking can predict almost half the variance of the Poverty Stoplight results (r squared of 0.49), and this can be said at a 99 percent confidence level (p-value < 0.01).

Figure 4.15: Linear Regression Model of Participatory Wealth Ranking (PWR) and Poverty Stoplight



These results show that the information produced by the Poverty Stoplight seems to be corroborated by the participatory wealth ranking, meaning that both identify the same households as poor. These results suggest a strong criterion-related validity for the Poverty Stoplight when compared to the participatory wealth ranking. However, it must be remembered that because the participatory wealth ranking tool is intrinsically community specific, the relationship between the Poverty Stoplight and the participatory wealth ranking is only valid for this community. In future studies, this comparison would

need to be performed in other communities in order to see if the relationship is maintained.

In terms of discriminatory power, the comparison of the Poverty Stoplight with the participatory wealth ranking shows that both tools ordered the same households from most poor to least poor in a similar way. However, both the Poverty Stoplight and the participatory wealth ranking have the limitation that they do not have a multidimensional poverty threshold. Therefore, both tools are useful in ordering which households are poorer than others, but they are limited in their capacity to discriminate between households that are poor or non-poor overall.

4.4 **Focus Groups and Semi-Structured Interviews**

Although many questions were pre-established in the interview guidelines prepared for focus group moderators and interviewers (see Appendixes 5-9), answers provided by respondents were unpredictable and moderators and interviewers were given the freedom to deviate from these guidelines. The five main themes that resulted from analyzing qualitative data were: definitions of poverty and how to address it, interview process, dimensions and indicators, implementation process, and information demand by Paraguayan policy makers. This information is relevant to the Poverty Stoplight's reliability, face validity, logical sampling validity, consequential validity, generalizability, practicality, credibility, transferability, dependability and confirmability.

4.4.1 **Definitions of Poverty and How to Address it**

This section describes the different definitions of poverty that different stakeholders of the Poverty Stoplight have: clients, non-clients, participatory wealth

ranking participants, *asesoras,* and local poverty experts.[134] Each of these stakeholders was asked what poverty meant to them, how they thought poverty could be eliminated, and whose responsibility it was to eliminate poverty. Comparing and contrasting these answers is especially relevant to logical sampling validity.

4.4.1.1 How Clients and Non clients viewed poverty and how to address it:

> *For me, poverty is not having anything. Not having a job. If you don't have a job, you don't have anything. Having a job is the most important thing. But sometimes it's hard to get one. And sometimes, like you say, we need some help to get started*[135]- Non-client, Paraguarí

Clients and non-clients had mostly the same definitions of poverty, so they will be analyzed as a single group. This seems to make sense since non-clients are from the same socio-economic and geographic groups as the clients. There was a consensus between clients and non-clients about the definition of poverty, essentially having a good quality of life. This overall quality of life depended on not-lacking certain conditions (*carencia*). The number-one concern—identified through the frequency of coded text—for both these groups of people was the availability of work. Other *carencias* mentioned were housing, appropriate clothing, health care, nourishment, hygiene, education, training, basic rights, and access to opportunities.

> *I think the government needs to help… We need [the government] to give us a little push, like a car that doesn't want to start. To make us start, and we'll push*[136] - Client, Itá

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[134] Except for poverty experts and Fundación Paraguaya staff, all names have been changed to protect respondents' privacy.

[135] Pobreza para mí es no tener nada...No tener fuente de trabajo. Si uno no tiene trabajo no tiene nada, trabajo es lo principal, porque a veces cuesta conseguir. Y muchas veces, como vos decís, necesitamos de una ayuda para empezar.

[136] Yo creo que el Gobierno tiene que ayudar y nosotros mismo también… Que nos dé un empujoncito, como un auto que no quiere arrancar que nos haga arrancar y nosotros empujamos

When asked whose responsibility it was to address poverty, several stakeholders were mentioned, including the government, individuals, and families. This question is relevant to respondents' poverty definitions because understanding how they propose to solve the problem of poverty helps understand what they believe needs to be resolved in the first place; i.e. what poverty is. Respondents believed that the government had an important role because it was responsible for addressing one of the most important aspects of poverty, which was proving access to stable employment, income, and opportunities. Other opportunities respondents believed the government had to create were access to education and access to work.

> *It's not your fault if you are born poor. But if you die poor then that's your fault. While there is life, while one is healthy, you can keep on fighting day by day*[137]- Client, Santaní

Clients and non-clients also attributed responsibility for addressing poverty to individuals: hard work and determination were seen as a way to overcome *carencias*. The mindset of the individual, in particular self-esteem and self-efficacy, were considered to be key elements in being able to overcome poverty. Problems of individual motivation were described as habits of conformism, indulging in vices, or being stuck in their situation or in poverty. As one client stated, "Some people work hard every day, but there are also people who don't want to fight. And that's the difference: if you stay at home

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[137] No es tu culpa que nazcas pobre, pero que mueras pobre ya es tu culpa, mientras haya vida, mientras uno esté sano, puede salir luchando día a día.

sitting around, drinking *tereré*[138], you're not going to get anything, you're not going to get ahead, it's difficult[139]" (Client, Santaní).

> *Mothers are fighters. They fight for their children so they can succeed and so they don't follow their footsteps. Or like me, I fight because I don't have an education. I didn't finish school because my mother couldn't afford my school. But I fight for my daughter. I will do anything for my daughter to succeed. I don't want to see her in my shoes*[140]- Client, Itá

Clients and non-clients spoke about the role of the family both as a source of support and as a recipient of their support. Not having a supportive family was considered a weakness for poor people, as it represented abandonment and destitution. At the same time, respondents showed a strong sense of responsibility toward their families. Many women said their children as a source of motivation for overcoming poverty, saying that they wanted to provide their children with a better life than they had. How PWR participants viewed poverty and how to address it:

> *The government needs to create conditions such as security, less corruption in the government so that more resources reach the people, farmers. To make sure that the judicial system works… and that there be a concrete program for agriculture, so that people can generate income*[141] - Non-client, Santaní

For the purposes of this analysis, participatory wealth ranking respondents were considered separately because they were exclusively rural and because they included both men and women non-clients. Although in general many of the themes found in client and

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[138] Tereré is a traditional paraguayan tea.

[139] Y bueno, hay gente que por ejemplo lucha todos los días, pero también hay gente que no quiere luchar, y ahí está la diferencia, porque si vos te quedás en tu casa a sentarte, a tomar tereré, no vas a conseguir nada, no vas a salir adelante, difícil es.

[140] Las madres son muy luchadoras, luchan por sus hijos para que salgan adelante para que no sean más como ellas o como yo, por ejemplo yo lucho, porque no tengo estudio, no terminé mi colegio, porque mi mamá no podía hacerme estudiar, pero yo lucho por mi hija, cualquier cosa hago para que mi hija salga adelante, yo no le quiero ver a ella como yo estoy.

[141] El Gobierno tiene que crear condiciones, seguridad, que hay menos corrupción en el Estado, que llegue más recurso a la gente, a los agricultores, que funcione la Justicia... que haya un programa concreto para la agricultura, que haga que la gente pueda generar ingresos

non-client interviews were also found in the participatory wealth ranking focus groups, some points were different.

Similarly to clients and non-clients, participatory wealth ranking participants said repeatedly and consistently that the Paraguayan government had to play a central role in reducing poverty in the community. The second most talked about issue was the role that job training and formal education had in alleviating poverty. Third, themes such as income, unemployment were still equally present. Finally, participants referred to the negative effect of vices such as alcohol, drugs, and crime.

There were several points in which participatory wealth ranking participants differed from clients and non-clients. Their rural background seemed to influence the way in which they thought about poverty and the strategies they believed were necessary to overcome poverty. Two issues were repeatedly mentioned. One was the prevalence of rural-urban migration and also international migration to Argentina and Spain as a characteristic of poor families. The other was the impact of the fluctuation of prices of commodities, such as manioc and cotton). In addition, participants said that living in a rural community made it both more expensive and more difficult to access certain goods and services.

Two issues were also mentioned that were not related to being rural. One was religiosity as a characteristic of non-poor people. Some respondents related poverty to *spiritual* poverty: "Poverty is a term that one use for different things: spiritual poverty, poverty in knowledge, material poverty, among others[142]" (Non-client, Santaní). Another

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[142] Pobreza, es un término que se puede utilizar en varios aspectos, pobre en lo espiritual, pobre en los conocimientos, pobre en lo material y muchos otros.

was that these participants placed a bigger emphasis on aging and senior citizens. They considered these people to be more vulnerable to the effects of poverty, especially those that did not have family to take care of them.

4.4.1.2 How Experts viewed poverty and how to address it

> *Poverty... encompasses those people who do not have access to the minimum services to live a decent life*[143] - Raul Mongelós, former Minister of Justice and Labor and former President of Instituto de Previsión Social (IPS)

Interviewed experts focused mainly on the idea of opportunities. They consistently argued that people had to be given education, training, nutrition, health and housing in order to overcome poverty. When providing details about how to overcome poverty, experts concentrated on the role of individuals and the government.

> *I think the poor person does not have motivation to be able to succeed. It is a person who feels limited by their circumstances, and feels that they do not have the possibility to do anything to improve their situation. These limitation are seen in lack of employment, education, poor nutrition…All these factors make it difficult for a person to succeed*[144].- Lorena Segovia former Minister of Justice and Labor

When talking about what individuals can do to overcome poverty, experts' opinions were similar to those of clients and non-clients. They discussed people's mindsets such as self-esteem, motivation, and being stuck (*estancamiento)*. They also discussed the need for stability, which was related to income, employment, and capacity to plan and to take risks. In addition to a positive mental outlook, experts said that assets played a central role in poverty. Among the assets mentioned were: having a clean

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[143] La pobreza, sn una conceptualización así genérica, engloba a aquellas personas que no tienen acceso a los servicios mínimos para vivir decentemente.

[144] Creo que la persona pobre tiene la ausencia de motivación para poder salir adelante. Es una persona que se siente limitada por sus circunstancias y siente que no tiene la posibilidad de hacer algo más para mejorar su situación, y esa limitación se da en su ausencia de empleo, educación, mala alimentación… todos esos condicionantes que hacen que la persona no pueda trascender

bathroom, kitchen, being appropriately clothed, having savings, access to health and food.

According to experts, the government can support poor people by providing access to work, formal education and/or training, housing, health, security, and transport, water and sanitation. In addition, it is the role of government to defend the rights of poor people and provide them with opportunities.

4.4.1.3 Implications for Validity

Definitions of poverty provided by the different stakeholders of the Poverty Stoplight are especially useful to understand the logical or sampling validity of the tool. Logical or sampling validity asks whether the measure is truly representative of the underlying concept to be measured. Specifically, this involves a careful definition of all that is supposed to be measured and then the design of items that cover all those things. This insures that the measure covers the broad range of areas within the concept under study.

Table 4.3 below compares the Poverty Stoplight indicators with responses of clients, non-clients, participatory wealth ranking participants and poverty experts to the questions of what poverty meant, whose job it was to eliminate poverty, and how these actors should address poverty. Marked indicators (x) were mentioned by respondents; unmarked indicators were not mentioned by respondents. These responses, which served to understand the poverty definitions of these different stakeholders, were spontaneous—they were not framed by the Poverty Stoplight but rather by the concept of poverty in general—and indicator mentions were identified during this research through the systematic coding of the interview transcriptions. A comparison between the Poverty

Stoplight and respondents' spontaneous poverty definitions was carried out to see if indicators were similar to the various components of poverty that stakeholders mentioned. *Asesoras* and Fundación Paraguaya staff are excluded from this analysis due to the fact that they are familiar with Poverty Stoplight definitions of poverty

Table 4.3:Indicators Spontaneously Mentioned by Clients, Non-Clients, PWR, Experts

INCOME & EMPLOYMENT	X	Communication & Social capital	
Income above Poverty Line	X	School supplies and books	
Stable Income	X	Access to Information (Radio & TV)	
Credit		Entertainment & Recreation	
Family Savings		Values cultural traditions and historical heritage	
Diversified Source of Income		Respects other cultures	x
Documentation: identity card		Awareness of human rights	x
HEALTH & ENVIRONMENT		ORGANIZATION & PARTICIPATION	
Access to drinking water	X	Influence on the public sector	x
Nearby health post	X	Problem and conflict-solving ability	
Nutritious food	X	Registered voters and votes in elections	
Personal Hygiene and sexual health	X	Are part of a self-help group	
Healthy teeth and eyesight		SELF-AWARENESS & MOTIVATION	x
Vaccines		Self-confidence (self-esteem)	x
Garbage Disposal		Awareness of their needs (map of life)	
Unpolluted environment		Moral conscience	
Insurance		Emotional-affective capacity	
HOUSING & INFRASTRUCTURE		Aesthetic self-expression, art and beauty	
Safe home	X	Family violence	x
Sanitary Latrines and sewage	X	Entrepreneurship	x
Electricity	X	Autonomy and decision-making capabilities	x
Refrigerator and other household appliances		INDICATORS SPONTANEOUSLY MENTION ED THAT ARE NOT PRESENT IN POVERTY STOPLIGHT	
Separate Bedrooms		Perverse Consumption (Drugs, Alcohol)	x
Elevated cook stove and ventilated		Responsibility to Support family	x
Comfort of the home		Migration	x
Regular means of transport	X	Spirituality	x
All-weather access road	X	Plan for old age	x
Fixed line or cellular telephone		Interaction with Local Business	x
Security	X	Civil Society	x
Sufficient and appropriate clothing	X		
EDUCATION & CULTURE	X		
Knows how to read and write			
Children with schooling up to 12th grade			
Expertise and skills to generate income	X		
Capacity to plan and budget	X		

As can be seen above, there were spontaneous responses that matched 24 Poverty Stoplight indicators. It is important to note, however, that even though only 24 indicators were specifically mentioned, some indicators can form part of the concepts mentioned. For example, clients, non-clients, participatory wealth ranking participants and poverty experts said that education was very important. In this case, although not specifically mentioned, I assume that indicators 28, 29 and 33 "knows how to read and write," "children with schooling up to 12th grade," and "school supplies and books," would also be considered important as they are closely related to education.

On the other hand, there are seven poverty indicators that respondents mentioned that are not contained by the Poverty Stoplight indicators: consumption of drugs and alcohol, sense of responsibility towards family, migration, spirituality, old age, and interaction with local businesses and NGOs. Finally, some indicators were not spontaneously mentioned during interviews nor can they be assumed to fit within a general definition. For example, indicator "Access to Information" (Radio and TV) was never specifically mentioned by any of the stakeholders.

These results suggest that the Poverty Stoplight may have logical or sampling validity because its indicators are generally representative of clients, non-clients and experts' definition of poverty. There is a possibility that there can be some construct irrelevant variance because respondents do not specifically mention several indicators. On the other hand, there might be some construct underrepresentation as certain indicators were mentioned as being important and are not contained within the Poverty Stoplight. However, the collected data is not enough to make strong conclusions about

logical sampling validity because what is true for respondents of this dissertation research might not be true for other populations.

4.4.2 **Interview Process**

This section describes the Poverty Stoplight interview process. This data mainly includes opinions of clients and *asesoras* and covers details about the logistics of carrying out the visual survey, manner in which visual surveys are conducted, how *asesoras* are perceived, misreports, and the survey's legitimacy. This information is relevant to all research methods of this dissertation: reliability, validity, discriminatory power, and practicality, and to all paradigms: positivist and constructivist.

4.4.2.1 Manner in Which Visual Surveys were conducted

The conceptual framework depicts the way in which the Poverty Stoplight visual survey should be carried out, which includes the *asesora* visiting the client's home with a tablet, the client completing the visual survey with support from the *asesora*, and finally the *asesora* and client discussing the visual survey results presented in the *Mapa de Vida*. In focus groups and individual semi-structured interviews, clients and *asesoras* were asked to describe the process in which the visual surveys were actually conducted, evaluating both strengths and weaknesses of the process.

> *I [work on] Saturdays and Sundays, working on the Poverty Stoplight, and behind me are my family, my husband is the driver and my children are the copilots*[145] - Asesora, Luque

According to *asesoras,* in order to carry out their duties their first challenge is arriving at the client's house. This can sometimes be problematic because clients can live

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[145] Yo hago sábado y domingo detrás del semáforo, y detrás mío mi familia, mi marido el chofer y mis hijos los copilotos.

far away and roads are usually in a bad state, which may make households inaccessible if it rains. Also, *asesoras* need to schedule a time that works for both her and the client, and find a mode of transportation to get to the client's house.

Asesoras reported that once they arrive at the household they proceed to interview clients. When asked about their experience in carrying out the visual survey, the majority of clients reported that completing it was an easy and fun exercise, and that they liked using the tablet. *Asesoras* reported that the illustrations were helpful for client comprehension, and that the tablet also made the visual survey quicker. Clients reported that the completion of the visual survey took between 30 and 60 minutes. Some clients who completed the survey in a group setting reported that at times it took more than 60 minutes.

> *For them, first of all, it's fashionable. They really like the tablet because it's [like] a new cellphone 'Is this your new cellphone?' is the first thing they ask you. The majority that knows [how to use the tablet] likes to touch it and starts selecting [illustrations]. But there are women who don't want to even touch it, 'If it breaks I don't know [what I would do]' they say*[146] - Asesora, Itá

At times, *asesoras* reported that they had to deal with clients who were initially apprehensive. However, clients reported that after a few minutes of talking with the *asesora* about the process they felt more comfortable *(entrar en confianza*) and no longer felt nervous about the process. One *asesora* commented,

> *"It took time working with the women. So they could share some things, I had to earn their trust. [I had to] give them the assurance of confidentiality, which I wasn't going to tell anyone, not even another member of the village bank. And that's when I got the women to start opening up and sharing things"* (Asesora, Paraguarí).

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[146] Para ellos, primero, es fashion, demasiado le gusta la tablet porque es un celular nuevo. "¿Ese es tu celular nuevo?," es lo primero que te preguntan. La mayoría que entiende le gusta tocar y empezar a marcar, pero hay señoras que no quieren ni tocar, "si se descompone, no sé," dicen.

Clients repeatedly expressed that the *asesora* adopted the role of a teacher or counselor during the survey process of the Poverty Stoplight. They also said that *asesoras* supported them in gaining insight and reflecting about their own lives and situations in relation to poverty: “To us, she is our teacher, our guide, because she is the one who explains things to us, who gives us directions when there are things to do.” (Client, Itá) The *asesora* would explain the indicators and the visual survey using her own words, in a way that made it easier to understand for the client. Clients agreed that a role of the *asesora* was to motivate them to self-reflect on their own situation about poverty and that they were inspired by the *asesora* to improve their lives.

In addition to the difference between group setting and individual setting interviews, clients also noted different ways of carrying out the visual survey interview. Sometimes, the *asesora* would physically mark the visual survey while the client would explain her situation. At other times, the client herself would select the illustration on the tablet. Some women also reported that they did not complete the visual survey with an *asesora*, but rather the president of their village banking group, who had been trained by an *asesora* beforehand, instructed group members on how to complete the visual survey. Some clients reported that they were unable to see the illustrations because of the way the *asesora* held the tablet during the visual survey.

Another reason why *asesoras* carried out the Poverty Stoplight in different ways was due to technological limitations that the tablet presented for them. In some cases the illustrations were too small, there were connectivity problems, and at times the software unexpectedly restarted, creating delays and sometimes confusion. To make the interview process faster, some *asesoras* said that they completed the visual survey on the tablet,

while the client simultaneously completed her survey on her *Mapa de Vida* dashboard. On some occasions, an *asesora* would report not even having a tablet with her, and in these cases, the visual survey would be conducted solely on paper.

After the visual survey process was completed, *asesoras* said that Fundación Paraguaya protocol required that the *asesoras* discuss the Poverty Stoplight results with clients. However, several clients reported that they did not receive their personalized *Mapa de Vida* after completing the Poverty Stoplight. Some clients claimed that they did remember completing their dashboard but that they did not remember the contents of the plan when asked. Likewise, *asesoras* reported that in many instances they did not leave the *Mapa de Vida* with their clients, and instead took it back to Fundación Paraguaya offices for safekeeping.

Clients who did receive their *Mapa de Vida* had different reactions when the results were presented to them. Some clients reported that they were surprised by their results when they visualized them in their dashboard, while others reported that their results were exactly what they expected. Overwhelmingly, however, clients accepted the diagnosis resulting from the visual survey. Clients expressed that the Poverty Stoplight was helpful because it created a checklist and organized the issues they needed to solve to overcome poverty. One client expressed, “I think it is positive, because the Stoplight is like an accounting book for your business or in your life. Because, based on that, it

teaches us in what level we're low and how we can lift ourselves up. That's how I understand the Stoplight, it's like an accounting book[147]" (Client, San Lorenzo).

4.4.2.2 Misreporting

> *In terms of family violence [it's difficult] because they don't want to say that there's no violence. You have to tell them that it's important for them to answer. I can tell [when they're not telling the truth] because it's hard for them to respond at first, they become quiet, and then they respond*[148] - Asesora, Santaní

According to *asesoras*, a very important issue that they have to deal with when interviewing clients is the fact that their self-reports are not always accurate. *Asesoras* reported that clients usually misreported answers in indicators Indicator 17 "Sanitary Latrine and Sewage", Indicator 48 "Family Violence", Indicator 5 "Diversified Source of Income" and Indicator 4 "Family Savings." Some *asesoras* have also claimed that clients misreport their income, possibly thinking that if they reported fewer earnings this would jeopardize receiving loans from Fundación Paraguaya. Finally, some *asesoras* also said that clients had a preference for answering green.

Generally, clients seem to misreport their situation for three reasons: fear, shame, and denial. For example, *asesoras* have reported that their clients were afraid to complete the visual survey with their husband present. For the most part, this is related to Indicator 48 "Family Violence". This indicator is problematic both because of fear and shame: fear

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[147] Para mí es algo positivo, porque el semáforo es como un libro de contabilidad, ya sea económico o de la vida, porque a base de eso nos enseña a qué nivel estamos bajando y nos enseña de qué forma poder levantarnos. Así yo entiendo este semáforo, es como un libro de contabilidad.

[148] En cuanto a violencia familiar yo digo por qué, porque ellas en un primer momento no te quieren responder que no hay violencia de repente, y tenés que más o menos decirle que es muy importante que ellas respondan, porque… ¿Vos te das cuenta cuando ellas están mintiendo? Sí, me doy cuenta, porque les cuesta responder en un primer momento, medio que se callan y luego responden.

because the woman was afraid of the repercussions of her answers and shame because there is a stigma attached to being a victim of family violence. One *asesora* shared:

> *I had a very particular case… the husband was getting changed behind a wall and I asked her, 'family violence?' And she said 'no, nothing'. But with gestures she told me that her husband beat her but she couldn't say it [out loud] because her husband was there. The lady cried, and I got her message, but she couldn't say it because her husband was there*[149] (Asesora, Luque)

There were other indicators that were problematic because of shame. One *asesora* explained, "the bathroom, for example. They are ashamed to say they have an outhouse[150]" (Asesora, Santaní). Lastly, there were some cases in which *asesoras* reported that clients were in denial about their situation. Another *asesora* said, "sometimes, I see that [the client] selects green. But I look [around] and I immediately realize that she is lying. I try to lead them to respond to what I see, but they don't want to assume that they are in a contaminated environment[151]" (Asesora, Santaní).

Asesoras reported that they had several strategies to deal with clients' misreports. First, some *asesoras* said they would give the hard truth to the clients. They would explain to the clients why their answer is not accurate and guide them to selecting the *true* answer. The second option, only possible for concrete indicators, was that the *asesora* would simply observe the reality and select this situation in the tablet without even asking the client a question. The third option was to allow the client to misreport

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[149] Yo tengo un caso muy particular en eso, la señora se estaba…su marido se estaba cambiando detrás de una pared, y yo le pregunte, ¿Violencia familiar?, y me decía: No, ninguna. Y con su gesto me decía me pega mi marido, pero no podía decir, porque su marido estaba. Y la tipa lloraba verdad, y yo entendí su mensaje verdad, pero no podía expresarse por que su marido estaba.

[150] En el baño por ejemplo. En el baño lo que ellos tienen verguenza para decir que es baño común

[151] A veces yo, por ejemplo, veo que es así, y están en verde... pero veo y en seguida me doy cuenta de que me están mintiendo. Trato de inducirles para que me respondan lo que veo, pero no quieren asumir que están en un ambiente contaminado.

because some *asesoras* believe that they should not override the client's self-diagnosis. A fourth option was for *asesoras* to attempt to get the true answer in a roundabout way. When some *asesoras* suspected that the client would not respond accurately, they would ask many indirect questions to finally get at the correct, obvious or suspected answer.

4.4.2.3 Legitimacy

> *It's not a waste of time for them, and they say it, they like it. My clients like it because they can see their situation, because I show them 'in this we're in red, in this in green, and in this in yellow' and they look at it and they say 'This is helpful, I need such a thing. Sometimes I don't pay attention, but it looks like it's missing. They say that it's helpful, that they like the Stoplight... I don't have any clients that don't want to complete the visual survey. They want to participate in the Stoplight*[152]- Santaní, Asesora

Clients overwhelmingly expressed very positive feelings towards the Poverty Stoplight. They reported that the Poverty Stoplight helped them gain insight into their own living condition, motivated them, and eventually led them to improve their lives. They would recommend the Poverty Stoplight to others; some clients reported that they were pleased that upon receiving their results they realized that they were not as poor as they originally thought. Others said that after taking the visual survey they realized that they were poorer than they thought.

Among the non-client group, there was also very positive feedback about the Poverty Stoplight. They reported that the tool seemed to help a person to gain insight into their own present situation, that it was motivating, and that it effectively measured poverty. After being shown what the Poverty Stoplight consisted of, many non-clients

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[152] No es pérdida de tiempo para ellos, y lo dicen, les gusta. A mis clientes les gusta, porque ellos ven cómo están, porque yo les muestro otra vez "en esto estamos en rojo, en esto en verde, en esto en amarillo," y ellos ven y dicen "me es de ayuda esto, tal cosa me falta. A veces yo no le doy importancia, pero había sido que me falta". Ellos dicen que les viene bien, que les gusta el Semáforo, a los clientes les gusta, yo no tengo ningún cliente que se enoja porque uno quiere hacerle la encuesta. Ellos quieren hacer el Semáforo.

reported that they were interested in using the tool themselves to self-diagnose their level of poverty.

Asesoras responded positively when asked if they thought the Poverty Stoplight had an impact. They reported that they could see that it built awareness, motivated, and prompted their clients to take action over some negative aspects of their life. *Asesoras* also stated that clients generally accepted the results of the Poverty Stoplight. Asesoras also spoke to the fact that the Poverty Stoplight promoted a feeling of self-efficacy in the clients.

There were conflicting opinions among *asesoras* about the accuracy of the Poverty Stoplight. Some stated that it measured poverty with precision, while others stated that they did not believe the tool was exact, particularly in measuring income. Some *asesoras* stated that some clients were not sure how much their husbands made and what was the general income level of the whole family.

Several women reported that their *Mapa de Vida* was useful and that it motivated and helped them create a plan to overcome their deprivations. One *asesora* says,

> *There are different opinions. Some look at [their Mapa de Vida] and realize 'I need to change this', 'I didn't know I was in red' or 'I want to be all green'. Some get excited, 'How long do I have to do this?'... Some become aware [and say] it doesn't just depend on me' or 'I don't want that red' ... they understand [their situation and] that once they're done [they will] have their Mapa de Vida to look at. They appreciate it and say, 'yes, I will hang it up right there' [on the wall] to look at it.*[153] *(Asesora, San Lorenzo).*

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[153] Hay diversas opiniones, algunas miran y se dan cuenta "esto tengo que cambiar," "había sido en este estoy rojo," y "yo ya quiero pasar todo en verde," algunos ya se emocionan, "¿en cuánto tiempo yo tengo que hacer esto?"... Algunos ya toman conciencia, no depende solo de mí, "no quiero ese rojo ahí," te dicen.. Entienden una vez que terminan, cuando ya tienen el cuadernillo pueden mirar mejor, y aprecian y dicen "sí, allá voy a colgar," para mirar.

4.4.2.4 Implications for Reliability, Validity and Practicality

Interview process-related data are useful to analyze the reliability, face validity, generalizability, consequential validity, dependability, credibility, confirmability and practicality of the Poverty Stoplight.

4.4.2.4.1 Reliability

The fact that *asesoras* carry out the visual survey in different ways may suggest, from a positivist perspective, that the Poverty Stoplight is unreliable. If the Poverty Stoplight is carried out in significantly different situations and in different ways, clients could also modify the way they respond relative to the situation they are in. *Asesoras'* different reactions to dealing with misreports also limit the reliability of the Poverty Stoplight. If *asesoras* react differently in resolving perceived misreports, then this could result in different answers being selected for the same situation. For example, if a woman says her bathroom is green, when that is factually incorrect, an *asesora* might mark red if she prefers to correct the report, or green if she prefers to be true to the report. In this example, the *asesora's* registered answer reflects her decision rather than a change of the underlying reality—in this case the bathroom—and this suggests unreliability.

From a constructivist perspective, two elements are worth analyzing: dependability and confirmability. Regarding dependability, the issue is not that the *asesora* chooses to carry out the visual survey in different ways, but rather the limitation is that these choices are not made explicit. In order for this interaction to be dependable, the *asesora* would have to register each decision she made throughout the interview, and she would have to provide a justification for her decisions. Due to the fact that *asesoras* are not instructed to create a detailed audit trail for each interview, the Poverty Stoplight

is not dependable. Also, failing to deliver the *Mapa de Vida* to the client means the Poverty Stoplight in some instances fails to be an empowering tool, as it is supposed to be the part of the Poverty Stoplight that is useful for the client. The lack of an audit trail also makes it impossible for Fundación Paraguaya to know if the *Mapa de Vida* was in fact delivered.

The confirmability of the tool was compromised when clients reported that the Poverty Stoplight results were not what they expected. For example, some clients believed they were poorer or richer than their results suggested. This is because clients' opinion of their level of poverty is *their* reality. Confirmability is concerned with excluding the researchers' biases and opinions from the data collection and interpretation in order for the resulting information to represent the subjects', not the researchers', reality as much as possible. If the Poverty Stoplight modifies, rather than reflects, the reality of the respondent, then it does not have confirmability. Also, when *asesoras* correct the answers presented by the clients, they sacrifice the confirmability of the tool. This is because the correction is a direct imposition of the *asesoras'* opinion on the clients' opinion. In fact, if an *asesora* corrects the client's response, then the registered response is not a self-report at all.

4.4.2.4.2 Validity

From a positivist perspective, if the unreliability of these answers is large enough, this could also prove to be a problem for the generalizability of the Poverty Stoplight, as the volatility of self-reported answers could compromise their usefulness as a representation of the actual situation of clients. Also, the issue of misreporting seriously limits the generalizability of the Poverty Stoplight. This is because if clients are

inaccurate about their own situation, then their reports are not an adequate representation of the underlying reality, which in turn limits a proper operationalization of poverty. What is unclear is the degree of this effect on different indicators. It is clear that indicators such as Indicator 48 “Family Violence” are more prone to inaccurate reports than others.

However, the fact that clients accepted their Poverty Stoplight results provided support for the face validity and credibility of the tool. Clients seemed to be willing to accept the results that the Poverty Stoplight assigns to them regardless of the opinion they had about their situation before taking the visual survey. This means that they assign more legitimacy to the visual survey results than they did to their own opinions. This fact could also be relevant to consequential validity, as the legitimacy of the test results could be more persuasive in making clients modify their behavior in an attempt to improve those test results. In terms of legitimacy, clients expressed that they liked completing the visual survey, that it was easy, that it was useful to them, and that they would recommend it to others. Clients also reported that they understood what the results of the Poverty Stoplight meant in relation to their own life.

From a constructivist point of view, misreports are relevant to the credibility of the tool. However, the implications are mixed. If the misreport is due to shame or fear, then the report is not credible. This is because the reality of the client is not expressed because of fear of repercussions or because of shame. On the other hand, denial, from a constructivist point of view, would not even be considered a misreport because denial is a true expression of the clients’ reality.

4.4.2.4.3 Practicality

Several issues are especially important to the practicality, specifically cost-effectiveness, of the Poverty Stoplight. The Poverty Stoplight is not performed in a vacuum, but rather it mainly exists within the context of an MFI. Difficulties in allocating human resources to this task, having to balance loan officers' time between microfinance and Poverty Stoplight visual survey applications, having to make transportation available to the people that have to apply the Poverty Stoplight are all operational considerations that an MFI would have to accept in order to adopt the tool. On the other hand, *asesoras* and clients reported that the Poverty Stoplight was time-effective, as the visual survey only takes between 30 minutes and an hour to complete.

4.4.3 **Dimensions and Indicators**

This section describes the Poverty Stoplight dimensions and indicators. I interviewed Fundación Paraguaya staff members to better understand how indicators were originally created. In addition, I interviewed clients, non-clients, and *asesoras* and asked them what the most and least important indicators are. I also asked them about indicator definitions, the unit of analysis, indicator colors and multidimensional thresholds. This information is especially relevant to the generalizability of the Poverty Stoplight.

4.4.3.1 Indicator Creation

Interviewed staff said that Fundación Paraguaya created the indicators first, and grouped these indicators into dimensions later. Staff members said that, in fact, indicators were not created, but rather selected from other existing poverty measurement tools, and were later validated with local focus groups. Also, they said that the data collected by the

Poverty Stoplight was not originally intended to be aggregated into summary statistics. This meant that it did not produce a percentage of poverty for each individual client, but rather that it focused on individual deprivations for each client. When asked how many or which deprivations a client had to have in order to be considered poor, staff members initially said that all indicators were equal and that there is not a determined number of indicators someone needs to be deprived in in order to be considered poor.

4.4.3.2 Most and Least Important Indicators

Clients, non-clients and *asesoras* were asked to identify the most and least important indicators within each dimension, and this gave great insight into what they considered a priority. These responses were coded and the most frequently mentioned indicators as most important or least important were ranked in priority order.

In general, it was easier for all respondents to select important indicators than it was to select unimportant indicators. This suggests that in general, for all respondents, few indicators were considered to be superfluous. Table 4.4 below shows the most important indicators subdivided by client, non-client and *asesoras*.

Table 4.4: Most and Least Important Indicators According to Different Respondents (organized in descending order)					
Most Important for Clients	**Most Important for Non-Clients**	**Most Important for *Asesoras***	**Least Important for Clients**	**Least Important for Non-Client**	**Least Important for *Asesoras***
Safe Home	Safe home	Problem and conflict-solving ability	Sufficient and appropriate clothing	Influence on the public sector	Influence on the public sector
Knows how to read and write	Are part of a self-help group	Safe home	Insurance	Registered voters and votes in elections	Aesthetic self-expression, art and beauty
Income above the Poverty Line	Problem and conflict-solving ability	Self-confidence (self-esteem)	Registered voters and votes in elections	Sufficient and appropriate clothing	Problem and conflict-solving ability
Family Savings	Self-confidence (self-esteem)	Diversified source of income	Entertainment & Recreation	Entertainment & Recreation	Documentation: identity card
Problem and conflict-solving ability	Stable Income	Access to drinking water	Garbage Disposal	Insurance	Garbage Disposal

When asked which indicators were most important, clients, non-clients, and *asesoras* generally agreed on the following: (1) "Safe Home," (2) "Problem and Conflict Solving Ability", and (3) indicators related to income ("Income above Poverty Line", "Stable Income", and "Diversified Source of Income"). When asked about the least important indicators, clients, non-clients and *asesoras* mostly responded: (1) "Sufficient and Appropriate Clothing" (clients and non-clients), (2) "Influence in Public Sector" or "Registered Voters and Votes in Elections" (clients, non-clients and *asesoras*), (3) "Entertainment and Recreation" (clients, non-clients), and (4) "Garbage Disposal" (clients, *asesoras)*. The implications of these data are further analyzed in Section 4.4.3.7.

4.4.3.3 Definitions of Indicators and Levels

> *It depends on each client. Sometimes there are people who can't read, so… they don't understand they say. We try to read and also [to] explain using our own words so they can understand what we're trying to say, in Guaraní*[154] - Asesora, Paraguarí

The majority of *asesoras* reported that they have to use their own words when explaining terms and definitions to their clients. Most of the time, this entails translating to Guarani and at times just using examples and not reading the entire definition. *Asesoras* reported that a big part of their job is to be patient and kind with their clients and having to sometimes go through the notions a few times until the client understands the Poverty Stoplight.

Clients, non-clients and *asesoras* reported having problems with definitions of at least twelve indicators. Appendix 2 lists these problematic indicators and their associated issues. Many times, the indicator itself contained a word that was not understood by the respondents. Most of all, this fact shows how important *asesora's* role is in explaining indicators and definitions to clients, and also that the indicators are not fool-proof. There were a few indicators that were not clear for clients, and *asesoras* had to define the term for the clients: Indicator 5 "Diversified Source of Income", Indicator 47 "Aesthetic Self-Expression Art and Beauty", and Indicator 37 "Respects other Cultures", among others. This is significant as it shows that some terminology and wording might need to be changed to make the visual survey easier to understand.

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[154] Depende de cada cliente, de repente hay gente que no puede leer, entonces...No entienden dicen Tratamos de leer y explicarles también con las palabras que ellas puedan entender que es lo que queremos de ellas, en guaraní.

Clients and non-clients interpreted violence in a more limited way than the indicator expresses. Several times *asesoras* said that when clients responded that there was no physical violence they would insist on telling women that violence could take other forms, such as economic violence or psychological violence. According to *asesoras,* when this happens, women may not realize that they are being victims of non-physical forms of violence, or they may not realize that they themselves may be the source of non-physical violence within the household.

There were many discussions about indicator Personal Hygiene and Sexual Health, mainly because many women did not feel comfortable with the word *sexual*. Some women said that this indicator was not important, just because they did not like the sound of it. One client said, "this is the least important to me… I don't like this… [the word sexual]... because this is for young people, I don't like talking about this[155]" (Client, Paraguarí). This demonstrates the challenges of discussing important issues related to women's health in Paraguay, even discussing them in a group of all women, as was the case of the women's interviews and focus groups.

A few clients expressed their dislike for indicator Respects other Cultures because they did not believe that certain groups of people, such as certain religious groups, foreigners, homosexuals, and transsexuals, deserved their respect. This was particularly an issue because some *asesoras* agreed with this feeling of dislike, especially when it was related to homosexuals. As one *asesora* said, "When you ask them if they respect the

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[155] Es menos importante para mí...este lo que no me gusta... (la palabra sexual) (risas)… porque esto ya son para jóvenes. Para empezar, no me gusta hablar de esto.

culture of other countries they say, 'No, I respect the culture of our country but not of other countries" (Asesora, Paraguarí).

Finally, some clients claimed that the illustrations included in the visual survey were not clear enough and could be confusing. Indicators with the most problematic illustrations were Indicator 41 "Problem and Conflict-solving Ability," Indicator 12 "Vaccines" and Indicator 4 "Family Savings". On the other hand, *asesoras* principally stated that having illustrations facilitated their task of explaining each indicator to clients.

4.4.3.4 Unit of Analysis: Family vs. Individual

> *In the "Self-Confidence" [indicator], for example, four people live in a home. The husband, for example, doesn't have self-esteem, but the woman does, and the son does more or less. How would I help that family overcome that indicator?*[156] - Asesora, Itá

Some *asesoras* reported that they had difficulty properly understanding the unit of analysis of the Poverty Stoplight. They said it was challenging to know if it was their job to determine and understand if the client was poor or if the client's family was poor. This was due to the fact that while the client was responding the survey, clients and *asesoras* had to discern whether each indicator was related to the client or whether it referred to the client's family. A difficulty in understanding the unit of analysis that an *asesora* shared was, for example, when the husband owned a cell phone and he took it with him when he went to work. In this case, the woman respondent would have intermittent access to the cell phone (yellow), but if the family includes the husband, then the family would have continued access to a cell phone (green).

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[156] En "Confianza en sí misma," por ejemplo, entre cuatro vienen a casa. El marido por ejemplo no confía en sí mismo, pero la señora sí, el hijo también más o menos, cómo le ayudaría a esa familia para superar este indicador?

4.4.3.5 Colors

> *These colors… really help so that [clients] can measure themselves. As a Fundación employee I can go door to door and show them in what color they are [in] and how they can improve. Honestly, it's fundamental*[157].- Asesora, Paraguarí

In general, all clients understood that red was meant more deprived than yellow, which in turn meant more deprived than green. However, conceptually the distances between these three options seemed to differ. For example, some respondents considered red to mean extreme poverty — people who "don't even have manioc to eat" (*no tienen ni mandioca que comer*) — and green to mean rich. In this case, where red is understood to be absolute destitution and green is wealth, yellow could be understood as a middle point —comfortable. However, others understood red as poor, yellow as on-the-way out of poverty, and green as non-poor. In this context, yellow is still poverty, but not as much, and green is non-poverty, but not extreme wealth either. This is something that usually happens with ordinal scales: they help understand which level is more or less than the other, but they are not good at determining the distance between the levels.[158]

For the most part, *asesoras* reported that having three universal colors, such as green, yellow, and red, was simple and easy for the clients to understand. *Asesoras* all agreed that having three colors was enough, and not too many. They also stated that using colors was helpful because by simply looking at a client's Poverty Stoplight results they could easily assess the situation of the client by looking at the colors.

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[157] Estos colores, ayudan muchísimo los colores para que ellas puedan medir, una vez como yo colaboradora de la fundación pueda ir casa por casa y poder indicarles en qué color están y que puedan mejorar en ese aspecto, sinceramente es fundamental, un método muy lindo, muy llamativo, excelente, de mi parte muy satisfecha con este método.

[158] Bernard, *Research Methods in Anthropology*. p. 47.

A few *asesoras* noted some issues with the colors, namely the difference between red and yellow. Some reported that the difference between red and yellow for some indicators was small, so it was difficult to assess whether the client was red or yellow.

4.4.3.6 Multidimensional Thresholds

> *It depends on which indicator it is. If I see that they have more than five or six [reds], to me they are poor… Because, as I said, it depends a lot on which indicator it is. Let's say it's the budget and other similar indicators … It isn't that these aren't important. But they don't make the family poor [by] itself, because there are basic things that you can do to solve them. But when I see that they have problems with their house, separate bedrooms, bathrooms I think they are poorer because those are difficult things to solve*[159]- Asesora, Santaní

There was no consensus among clients and non-clients as to how many reds one needed to have to be considered poor. While clients' opinions ranged from 1 to 50 red indicators, non-clients' opinions ranged from 1 to 35.

Asesoras had a solution-oriented perspective when considering how many red indicators meant poverty. In general, although there was some variation, *asesoras* settled around 5 or 6 indicators as being enough to classify someone as poor. However, when asked why, they would say that it was because anything over 5 or 6 was more difficult to address, "Six [reds and yellows] drive me crazy… I ask myself, how am I going to get everything done? [160]" (Asesora, Itá). Other *asesoras* defined one indicator as being the threshold that divides poor from non-poor people overall. On talking more about this subject, some *asesoras* would say that it actually depended on which indicators the

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[159] Y depende de qué indicador sea, y si veo que tiene más de cinco o seis para mí ya es pobre. ..porque, como te dije, para mí depende mucho de qué indicador sea. Vamos a suponer presupuesto, todas esas cosas... no son menos importantes, pero no hace que la familia se incline en que es pobre en sí, porque son cosas básicas que pueden hacer y ya solucionar con eso. Entonces, cuando veo que tiene problema en cuanto a la casa, dormitorios separados, el baño, digo más que son pobres, porque son cosas que más difícil de afrontar, para hacer, para solucionar.

[160] Seis ya me desespera a mí…. "Y después cómo voy a trabajar," digo.

clients were red in, because some were very easy to improve quickly while others needed more difficult and long-term solutions. In this sense, not all indicators were considered to be absolutely equal: some weighed more than others.

4.4.3.7 Implications for Reliability, Validity and Discriminatory Power

This section provided data that mainly described the generalizability of the Poverty Stoplight, but some information about the tool's credibility, transferability, and reliability are also present.

4.4.3.7.1 Reliability

When interviewed, Fundación Paraguaya staff members said that indicators are the main focus of the Poverty Stoplight, and dimensions are only arbitrary groupings of these indicators. These reports help make sense of why the statistical procedures used to test for internal consistency reliability found the Poverty Stoplight dimensions to be internally inconsistent. As Russell Bernard states, to operationalize something means to "reduce any complex variable to a set of measurable traits."[161] If indicators were created before dimensions, as was the case of the Poverty Stoplight, then the measurable traits — in this case individual indicators — were given priority over the complex variable —in this case the dimensions. This is significant because it calls into question the relevance of the dimensions and the Poverty Stoplight's operationalization of poverty. If indicator selection preceded the conceptualization of dimensions, then it can be assumed that indicators do not actually represent dimensions, but rather they are stand-alone constructs. In order for the Poverty Stoplight to be more internally consistent, indicators

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[161] Bernard, *Research Methods in Anthropology*. p. 28

would have to be re-formulated as more direct representations of the construct of each dimension.

In addition, the issue of definitions that are either misunderstood or rejected by respondents affects the Poverty Stoplight's reliability. This is because if clients interpret poverty level definitions in different ways, even in the cases where every physical stimulus such as text and illustrations are held constant, clients would be responding to different meanings. If these are sufficiently unreliable, this could have an effect on the generalizability of the Poverty Stoplight as varying interpretations could distance the indicator responses from the concept they seek to represent.

4.4.3.7.2 Validity

As staff members said, all Poverty Stoplight indicators have the same weight. However, the fact that clients, non-clients and *asesoras* consistently identified what they believed to be most and least important indicators suggests that there should be a manner of weighing indicators according to their importance. This suggests that there is a potential problem in having all indicators with equal weights. If in practice different indicators contribute more or less to a person being poor, then this would be a limitation to the generalizability of the Poverty Stoplight. In addition to the opinions of the clients and non-clients, simply looking over the indicators of the Poverty Stoplight can give the reader a sense that some indicators should clearly be given more weight than others. Respondents did not seem to believe that "School supplies and books" were as important as "Access to Drinking Water" in terms of poverty. That being said, further research is needed to be able to determine exactly how to weigh these different indicators.

The unclear unit of analysis, family vs. individual, of the Poverty Stoplight is also a limitation to the generalizability of the tool. For example, if different indicators have different units of analysis, then when an index is created, the meaningfulness of this index becomes unclear. The unclear unit of analysis can also result in *asesoras* answering the same indicators differently according to how they understand the unit of analysis, and this can lead to unreliability.

Both factor analysis and internal consistency reliability tests showed low levels of variability, and these statistical procedures were also limited by the inability to calculate Pearson's correlations. Qualitative data revealed in this section show that the distances between red, yellow and green were perceived differently. This provides support for the idea that levels have different distances among each other. Ordinal scales that cannot hold the assumption of equal distances among each other are seriously constricted in their ability to be used for complex statistical tests, and this limitation restricts the generalizability of the Poverty Stoplight.

From a constructivist point of view, the credibility of the Poverty Stoplight is constricted by the absence of thick descriptions. Although the interaction between *asesora* and client may be information-rich and somewhat unstructured, the *asesora* only registers a combination of 50 reds, yellows, or greens for each interaction. The richness of the interaction is enormously reduced by this process. The Poverty Stoplight indicates if a person is red, yellow or green; but it does not explain why, and this fact eliminates qualitative information that could be useful. For example, if an *asesora* registers that a family is red in "Family Violence," an uninformed observer cannot know, only by looking at that red, whether the husband is hitting the wife, or whether the wife is hitting

the children, or whether the husband is hitting the children, or whether it is physical violence, or verbal abuse, among other possible scenarios.

Also in relation to constructivism, an important limitation to transferability is that the Poverty Stoplight does not result in extensive registries about the interactions between *asesoras* and clients. Transferability is not concerned with making broad generalizations, but rather it requires that the researcher provide rich descriptions about what is occurring in a specific context. Other researchers, through reading and interpreting these rich descriptions, are thus enabled to decide what aspects of the research are transferable to other contexts. Similarly to the problem for credibility, as the Poverty Stoplight works today, not enough descriptive data is collected in order for transferability to be accomplished. Closed, multiple-choice responses seem more geared towards generalizability than towards transferability, as no information about particular situations is allowed, or, at least, information about these particular situations is not registered.

4.4.3.7.3 Discriminatory power

Finally, the fact that there was no consensus about how many "reds" or "yellows" a family had to have in order to be considered poor, and the fact that Fundación Paraguaya does not provide a multidimensional threshold, seriously constricts the Poverty Stoplight's discriminatory power. If there is no fixed and determinate line, then it is actually impossible to determine whether a household is poor. Although the Poverty Stoplight does have fixed thresholds for each individual indicator, it is unclear what combination of deprivations is needed in order to be considered poor.

4.4.4 **Implementation Process**

This section describes the Poverty Stoplight implementation process. This data mainly includes the opinions of Fundación Paraguaya staff and *asesoras*, and their responses were assembled into the following categories: Fundación Paraguaya poverty elimination goals, targets and incentives for asesoras, random client selection, and integrating the poverty stoplight into MFI activities. This information is useful to understanding the practicality, confirmability, dependability and consequential validity of the Poverty Stoplight.

4.4.4.1 Fundación Paraguaya Poverty Elimination Goals

> *The asesora who has goals to solve indicators for the families with whom she works needs to be very aware of which indicators she needs to work on. At the offices, managers use this information to oversee activities [and to see if] the asesora is doing her job or not. Our [coordinating] team uses [this information] to see the progress of the asesora, [such as] how many people we are reaching, but also to find activities or alliances that we can establish to solve these indicators*[162] - Jimena Vallejos, Fundación Paraguaya Poverty Stoplight Coordinator

When interviewed about the Poverty Stoplight, staff members emphasized the tool's coaching methodology component, i.e. the tool's effect on the lives of the clients and not the tool's metric or measurement capability, the subject of this dissertation research. This suggests that at Fundación Paraguaya there is more of an emphasis in eliminating poverty rather than defining and measuring it. An example of this is how

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[162] La asesora que tiene por meta lograr la solución de los indicadores de las familias con quienes trabaja, tiene que tener muy presente con qué indicador necesita trabajar, a nivel de oficina la utilizan los gerentes más bien a un nivel de control, está el asesor haciendo su trabajo o no, nuestro equipo utiliza para ver el progreso de las asesoras, la cantidad de gente a las que llegamos, pero también para buscar que actividades se pueden hacer o que alianzas se pueden generar para solucionar estos indicadores.

Fundación Paraguaya staff talk about the importance of making Poverty Stoplight materials didactic, attractive and user-friendly.

4.4.4.2 Targets and Incentives for Asesoras

> *In our case [those of us who] are just starting out [as employees of Fundación Paraguaya], we're investing time on the Stoplight instead of doing [loan] promotions and looking for new clients. The pressure is heavier on us because we have to find new clients. [Fundación Paraguaya managers] ask you for a certain number of groups. And on top of that you have to do the Stoplight. It takes up time too*[163]. - Asesora, San Lorenzo

Some members of Fundación Paraguaya staff expressed concern about *asesoras* possibly conflicting roles: one as a microfinance loan officer and the other as the Poverty Stoplight mentor. This issue was exacerbated by the fact that *asesoras* have loan portfolio targets, which are associated with the microfinance program, and also have poverty elimination targets, which are associated to the Poverty Stoplight. Loan portfolio targets made it difficult for *asesoras* to prioritize the Poverty Stoplight program. Not meeting the microfinance program goals could lead to sanctions.

Poverty elimination goals could lead to perverse incentives because as the Poverty Stoplight is both a metric and a methodology, *asesoras* carry out the methodology and measure their own progress. Although there is third-party verification by the regional office manager, incentives could result in cheating. *Asesoras* are rewarded with financial bonuses for meeting poverty elimination goals, and *asesoras* themselves carry out the Poverty Stoplight in order to verify whether the goals are met. Staff also said that sometimes *asesoras* felt pressured to include their clients in the Poverty Stoplight

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[163] Depende mucho, en el caso de nosotras, que estamos empezando. Nosotros estamos invirtiendo tiempo en el semáforo en vez de hacer promociones, buscar clientes nuevos, y la presión es mucho mayor sobre nosotros porque tenés que meter clientes, te piden tantos grupos, y encima tenés que hacer el semáforo. Te quita tiempo también.

program even when the clients themselves were not interested in participating. Pressure from office managers on *asesoras* to include clients that do not want to participate in the Poverty Stoplight program could lead *asesoras* to pressure clients into participation.

4.4.4.3 Random Client Selection

> *I don't agree with the raffle because there are many women who do not want to be helped. They don't want to succeed... You go [to their home] and they say 'No, I'm going to stay the way I am, I don't need this'. Yet there are women who do want to succeed, who do want help, and these women aren't selected… That's the drawback*[164] - Asesora, San Lorenzo

Asesoras must survey clients who are chosen randomly through a raffle (*sorteo)*. Fundación Paraguaya does this for the Poverty Stoplight data to be representative of its entire client base when it conducts its impact evaluations. Some *asesoras* expressed that random selection may not be a good idea, because at times clients who did not want to participate in the Poverty Stoplight program were selected. These *asesoras* suggested that the Poverty Stoplight should only be carried out with with willing clients. This might suggest that although the Poverty Stoplight metric needs to be randomly distributed, this random distribution can make the Poverty Stoplight coaching methodology more cumbersome for *asesoras*.

Another issue regarding this selection process is that Fundación Paraguaya calls it a raffle (*sorteo*). This term implies that the selected client won a prize. Asesoras noted that they used the raffle as a tactic in order to convince clients to participate in the Poverty Stoplight. They said they would frame it as if clients were lucky or fortunate for

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[164] En el tema del sorteo lo que no estoy de acuerdo, porque hay muchas señoras que no se dejan ayudar, que no quieren salir adelante, y desde ese punto es que a mí no me gusta mucho el sorteo que sale. Te vas y te dicen: "No, yo voy a ser así nomás, no necesito esto," y ven que hay señoras que sí quieren salir adelante, y quieren que les ayudes, y esas no te salen por ejemplo. Ese es el inconveniente.

being selected. This caused confusion at times, since the client thought that the *asesora* was bringing her a prize or money, and some have expressed feeling a little disappointed when they learned otherwise. *Asesoras* explained, "Since they were chosen through a raffle they think they won something… Many times I don't want to tell them that they were selected because they think it's something else… They automatically think there is prize… like the lottery[165]" (Asesora, Itá).

4.4.4.4 Integrating Poverty Stoplight into Microfinance Activities

> *If we're talking about microfinance, it's complicated because it depends on the institution. If we're talking about one [MFI] that looks for profit, then they will have to be aware that certain operational targets, in terms of loan portfolio, are going to have to be balanced… If we're talking about microfinance, [MFIs] will have to sacrifice part of their expected profitability to apply the Poverty Stoplight. That will be a high cost that they would have to consider. Now, if we're talking about another type of institution, with a similar vision to ours, I don't think there should be any problems in starting to implement the Stoplight*[166]- Omar Sanabria, Fundación Paraguaya Microfinance Program director

Finally, Fundación Paraguaya staff said that integrating the Poverty Stoplight into daily microfinance activities was challenging due to a few factors. First, *asesoras* and office staff had to be trained in the methodology and the software. Second, tablets had to be purchased. Third, internet access had to be consistent. Last but not least, ambitious financial returns may not be possible, at least at the beginning of the program.

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[165] Por haber salido sorteadas ya piensan que ganaron algo… Muchas veces yo no les quiero decir que salieron sorteadas porque ellas ya piensan otra cosa.. Automáticamente ya piensan en un premio… Tele-Bingo por ejemplo. (Risas)

[166] Si hablamos a nivel de microfinanzas, es complicado porque depende del tipo de institución, si hablamos de una que persigue el lucro va a tener que ser consciente de que ciertas metas operativas en tamaño de cartera van a tener que buscar un equilibrio... Si hablamos de microfinanzas tiene que sacrificar parte de la rentabilidad esperada para poder aplicar el Semáforo, ese sería un costo casi fuerte que ellos tendrían que realizar. Ahora si hablamos de otro tipo de institución, que tenga una misión similar a la nuestra yo creo que no debería de haber mayor problema para empezar a aplicar el semáforo

4.4.4.5 Implications for Reliability, Validity and Practicality

4.4.4.5.1 Reliability

From a constructivist point of view, two facts uncovered by the qualitative data presented in the previous section are relevant to the confirmability of the Poverty Stoplight: 1) Fundación Paraguaya staff seemed to prioritize the coaching methodology over the metric, and 2) clients perceived the role of the *asesora* as that of a mentor or a teacher. Confirmability is concerned with ensuring that the researcher's preconceived notions do not overly bias the information produced by the research. In this respect, the Poverty Stoplight is extremely limited because, as the Poverty Stoplight is both a metric and a coaching methodology, its purpose is to change the way that clients perceive poverty. From a constructivist point of view, changing the way clients think is a form of bias. This is because the new information is not a representation of their reality, but rather the researcher's reality. To properly understand respondents' reality, their opinions have to be as unframed as possible, and framing is exactly what the 50 indicators attempt to do. Therefore, the Poverty Stoplight does not fulfill the constructivist requirement of credibility. Fundación Paraguaya seemed more focused on presenting the clients with information rather than extracting information or collaboratively generating information.

4.4.4.5.2 Validity

In terms of positivism, incentives that Fundación Paraguaya establishes for *asesoras* through poverty elimination goals can threaten consequential validity. As was mentioned before, consequential validity is concerned with insuring that the application of a measurement tool does not have adverse, unintended consequences for participants

or their communities. Targets and incentives for *asesoras* can lead them to excessively pressure clients into participating.

4.4.4.5.3 Practicality

Targets and incentives for *asesoras* are also relevant to practicality, as the opinions revealed in this section show the prerequisites that have to be set in place in order to carry out the Poverty Stoplight. A common practice in the microfinance industry is to pay loan officers a base salary in addition to bonuses for low delinquency rates and high performance. If an MFI wants to carry out the Poverty Stoplight in the same way as Fundación Paraguaya it will also have to include a bonus for Poverty Stoplight visual survey applications and follow-up. Also, the more time *asesoras* spend on the Poverty Stoplight metric and coaching methodology, the less time they can assign to take care of their microfinance loan portfolio. According to Fundación Paraguaya staff, this usually leads to a smaller portfolio and a smaller bonus at the end of the month, and this cost can be a large limitation.

Finally, the client selection process for visual survey applications is principally relevant to the practicality of the Poverty Stoplight. The problems that *asesoras* mentioned seem to be due to the fact that the Poverty Stoplight is both a metric and a methodology. Random selection of clients is desirable for the Poverty Stoplight metric because surveyed clients have to be representative of the entire client base of Fundación Paraguaya. However, according to *asesoras,* the Poverty Stoplight coaching methodology would be easier to carry out with clients who are open to participating in the program. By having both the metric and the methodology be contained in a single tool, the Poverty Stoplight coaching methodology is imposed on unwilling clients with the desire of

fulfilling the requirements necessary for the metric. On the other hand, the Poverty Stoplight coaching methodology might also be made unavailable to other clients who might want to participate because random selection, rather than self-selection, makes the tool available to clients.

4.4.5 **Information Demand by Paraguayan Policy Makers**

This section presents the different stakeholders that use the information produced by the Poverty Stoplight. Data presented in this section mainly come from interviews with Fundación Paraguaya staff and local Paraguayan poverty experts. Ten local Paraguayan experts were interviewed, specifically a Catholic bishop; a National Senator and Board Member of *Frente Parlamentario Contra el Hambre*; a former Director of *Dirección Nacional de Lucha contra la Pobreza*; a former Minister of *Secretaría de Acción Social-SAS*; a former Minister of Justice and Labor; a former Minister of Justice and Labor and former President of *Instituto de Previsión Social-IPS*; a former Vice Minister of Micro and Small Enterprise; a former Board of Directors member of *Instituto de Bienestar Rural- IBR* and Avina Foundation executive; a former Director of *Dirección de Estadísticas, Encuestas y Censos*; and the Chief of Staff of *Secretaría Técnica de Planificación-STP*.

The objective here was to understand what type of information experts currently had access to and what information they felt they needed to have in order to better understand poverty in Paraguay. This information is useful to understanding the practicality of the Poverty Stoplight.

4.4.5.1 Who uses the information produced by the Poverty Stoplight?

> *For asesoras, on a lesser scale, [information] is helpful because they can see the situation in which her clients live, and [it also helps them] to organize their work*

> *in a certain period of time, because [she] also has targets to achieve*[167] - Nancy Ramos, Fundación Paraguaya staff

According to Fundación Paraguaya staff, many stakeholders, both inside and outside the organization, use the information produced by the Poverty Stoplight. Internal stakeholders include clients, *asesoras*, office managers, regional coordinators, and headquarters. All these stakeholders rely heavily on the information produced by the Poverty Stoplight, but they rely on it for different purposes. Individual clients rely on the Poverty Stoplight in order to manage the way they address their own poverty, emphasizing the educational aspects of the tool. *Asesoras* use it to organize the resources they leverage in order to address clients' poverty, emphasizing the descriptive aspects of the tool). Regional coordinators, office managers and headquarters use it for monitoring and evaluating *asesoras'* work, and to understand the characteristics of the clients they provide services to, with an emphasis on standardization, inferences, and generalizability of the tool.

In terms of external stakeholders, Fundación Paraguaya staff said that it was their goal to make the Poverty Stoplight metric and methodology relevant to a wide range of organizations, both national and international. They expressed a desire to work not only with MFIs but also with NGOs, private-sector companies, and government entities. In their attempts to scale the Poverty Stoplight they described how it could be customized in order to become useful to this wide range of different stakeholders. However, they also recognized that this flexibility to adapt also made the Poverty Stoplight less generalizable.

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[167] Para las asesoras, ya a menor escala, les sirve a ellos porque pueden ver la situación de vida de sus clientes y cómo voy apuntar el trabajo en un periodo de tiempo, porque también tengo metas que lograr.

4.4.5.2 Dispersion of Information

> *Data from the Census Bureau, from what I understand, are not up to date. Because generally, in Paraguay, the problem of [updated] statistical data has not yet been resolved*[168] - Raul Mongelós, former Minister of Justice and Labor and former President of Instituto de Previsión Social (IPS)

Experts coincided that there is a general lack of high quality information about poverty in Paraguay, either because it does not exist or because it is outdated. The general problem, according to experts, was that several government institutions collected information for their own use but did not coordinate their efforts with others, resulting in each institution being able to only work with the information that it collected for itself.

4.4.5.3 Poverty Measurement Tools Currently in Use

> *[Those organizations] who base their work on census data and income collaborate with the Census Bureau. Every year the National Household Survey is carried out, where you can see a sample of the income level of each family. From there you extrapolate information on income and [cost of] basic foodstuffs*[169]. - Celsa Acosta, former Director of Dirección Nacional de Lucha contra la Pobreza

Experts were asked about the poverty measurement tools they currently, or formerly, used to guide their poverty-related work. Two out of ten interviewed poverty experts stated that they hardly had access to information about poverty for their work. To make up for this, they had to use sector-specific data such as information related to agriculture, industry, social policy, or civil registration information. They all admitted that this was not ideal.

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[168] Datos de Estadísticas y Censo, que son datos, a mi entender, no actualizados, porque, en líneas generales, en Paraguay, el problema de datos estadísticos ha sido un elemento que no ha llegado a una conclusión.

[169] Los que trabajaban en base a censos y al nivel de ingreso, esta información se hace con la Dirección de Estadísticas y Censos, y cada año se hace la encuesta de hogares, donde se ve el nivel de ingreso de una familia, una muestra y ahí se extrapola la situación de ingreso y cómo va por canasta básica.

4.4.5.4 Types of Information

> *We have information systems with the different ministries and government agencies who also work with poverty… and what we are doing now with information is creating a database which we are calling "dashboard." The idea is having managerial information about all the programs… that are working to reduce poverty. [We hope] to centralize this information [because]… it helps us make decisions*[170] - Juan Carlos Pane, Chief of Staff, STP

There were two types of information that the poverty experts used. Some followed a bottom-up approach and others used top-down approach. Bottom-up approaches focused on understanding information about individual households or people, while top-down approaches focused on generally using aggregated information to get an idea about how to carry out their poverty-related work.

STP for example, uses both bottom-up and top-down approaches. For bottom up, the STP uses a household poverty questionnaire it developed called the social survey questionnaire in order to get detailed information about poor people at the household level. STP emphasized the importance of knowing exactly who the poor are and where they are. To compliment this tool they also use the national census data and a government performance dashboard that gave general ideas of what was happening at the country level. As Juan Carlos Pane, chief of staff at the Secretaría Técnica de Planificación, said:

> *[We need] to know who [the poor] are, their names, telephone numbers, how many people live in the family, what they do, what conditions they live in, what they plant. We need all this information about the [poor] people in the community*

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[170] Tenemos sistemas de información con los diferentes ministerios o entes del Gobierno que también trabajan con el tema de la pobreza...y lo que estamos haciendo hoy con la información es genera una base de datos que lo estamos llamando tablero de control…en donde la idea es tener información gerencial de todos los programas.. que están trabajando para reducir los niveles de pobreza, y esa información está centralizada… ayuda a tomar decisiones.

> *to know how to take [government] services to them and how to help them generate income.*[171]

At the bottom-up level, there was also a mix of qualitative and quantitative tools. While STP uses the social survey questionnaire poverty questionnaire, which was quantitative, Bishop Cárdenas said that he used qualitative tools, such as extended interactions in order to understand poverty affecting the people he works with.

Experts also mentioned the need for information to be objective. This emphasis on objective information seemed to exist because the definition of poverty was controversial. It appeared that, in order for government institutions to be able to work towards reducing poverty, the STP had to choose a definition of poverty that could not be politicized. This perceived need led some experts to prefer monetary poverty, what they considered objective and relatively unquestionable.

4.4.5.5 Information needed to work in poverty programs

> *[We needed] information that had to do with their access to housing, the characteristics of their house, access to water, access to health services, what income they had. [We needed] not only monetary income [data] but [also] what…they could produce in their fields*[172] - Victor Rivarola, former Minister of Secretaría de Acción Social (SAS)

Poverty experts mentioned the need to have information about peoples' income, employment, education, health, housing, and nutrition. However, information was not only required at the individual level. Experts also said that in order to understand poverty

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[171] Saber quiénes son, sus nombres, números de teléfono, cuantas personas viven la familia, a que se dedican, en que condiciones viven físicamente, que plantan, necesitamos toda la información de las personas de su entorno para saber cómo llevar los servicios y cómo generar ingresos familiares para ellos.
[172] Eran datos que tenían que ver con su acceso a la vivienda, la característica de la vivienda, al acceso a la salud, a qué niveles de acceso a salud tenía, qué ingresos poseía.. no solamente el ingreso monetario, sino lo que significaba la propiedad de esas personas, lo que podían producir en sus terrenos.

effectively, they needed information about government policies, land ownership, and household size.

4.4.5.6 Implications for Practicality

Since so many different stakeholders rely on the information produced by the Poverty Stoplight, and because they depend on it for different reasons and for different purposes, it is especially important for the Poverty Stoplight to be — at least partially — valid and reliable from both constructivist and positivist perspectives. From a practicality point of view, it is necessary for these different stakeholders to understand exactly what the Poverty Stoplight is and is not useful for.

In terms of practicality, the Poverty Stoplight is relevant because a demand exists among local Paraguayan poverty experts for high quality information about poverty, which is currently in low supply. However, currently, many different stakeholders, both within and outside Fundación Paraguaya, use the information produced by the Poverty Stoplight for their own purpose, and these different purposes have different requirements of reliability and validity that the Poverty Stoplight finds difficult to meet simultaneously. Finally, the fact that the Poverty Stoplight uses objective and subjective multidimensional poverty indicators rather than focusing solely on monetary poverty can be controversial and difficult to accept by certain stakeholders. For example, if a given stakeholder does not accept the definition of poverty used by the Poverty Stoplight, then the information produced will be considered meaningless.

5 Chapter 5: Conclusions and Recommendations

5.1 Main Findings

The purpose of my research dissertation was to prove or disprove the following overarching hypothesis: the Poverty Stoplight is a robust poverty measurement tool. In order to do this I was guided by four research questions: 1) is it reliable? 2) is it valid? 3) does it have discriminatory power? 4) is it practical? What follows are the main findings of my dissertation research. I organize these findings according to strengths and weaknesses in relation to each of the research questions used to determine robustness.

5.1.1 Is the Poverty Stoplight a Reliable Poverty Measure?

From a positivist point of view, the Poverty Stoplight had to satisfy test-retest reliability and internal consistency reliability. I find that the major strength of the Poverty Stoplight is that it is a reliable poverty measure as repeated application of the visual survey tool leads to the same measurement outcome. It is test-retest reliable at both overall and indicator levels. At the overall level there is a high correlation between Poverty Stoplight test and retest results and individual indicators had a high percentage of unchanged responses.

Weaknesses are that it does not have internal consistency reliability. In addition, procedures surrounding the implementation of the Poverty Stoplight are also unreliable. Poverty indicators are not adequate representations of poverty dimensions, thus they do not have internal consistency reliability. Fundación Paraguaya staff said that the Poverty Stoplight was created so that indicators would be considered stand-alone constructs and

not components of each dimension. However, the problem of internal consistency reliability can also be a representation of the limitation of ordinal scales being used in complex statistical processes. Finally, interviews with *asesoras* revealed that procedures surrounding the implementation of the Poverty Stoplight are many times unstandardized and therefore unreliable.

From a constructivist point of view, I find the Poverty Stoplight to be weak in terms of reliability. First of all, the Poverty Stoplight does not produce a detailed "audit trail." Therefore, it does not satisfy the constructivist requirement of dependability. Secondly, Fundación Paraguaya and *asesoras* had a focus on achieving change in the lives of clients through the use of the Poverty Stoplight. This fact led to the focus on presenting the clients with information, rather than extracting information from, or collaboratively developing information with, the client. This effort to provide the client with information resulted in *asesoras* inserting bias into their interactions with the clients. Therefore, the Poverty Stoplight also lacks confirmability.

5.1.2 **Is the Poverty Stoplight a Valid Poverty Measure?**

From a positivist point of view, the Poverty Stoplight had to satisfy content validity, criterion-related validity and construct validity in order to be considered valid overall. Content validity can be further subdivided into face validity and logical/sampling validity. Construct validity can be further subdivided into generalizability and consequential validity.

I find that the major strength of the Poverty Stoplight is that it has a high level of face validity, consequential validity, and criterion-related validity. In terms of face validity, clients, non-clients, and *asesoras* all thought the Poverty Stoplight was an

adequate poverty measure. In terms of consequential validity, clients, non-clients, and *asesoras* believed the Poverty Stoplight would have a positive effect in poor communities. Clients and *asesoras* reported that the Poverty Stoplight helped clients see poverty from a different perspective and made poverty a more manageable problem, which, in turn, empowered clients to feel capable to overcome it. In terms of criterion-related validity, the Poverty Stoplight is valid, as a high correlation was found when compared to the participatory wealth ranking. However, a limitation of carrying out a participatory wealth ranking in order to test for criterion-related validity was that validity judgments could only be made about the community where this dissertation carried out both tests. More research is needed in order to see if this criterion-related validity between the participatory wealth ranking and the Poverty Stoplight holds for different communities.

Weaknesses of the Poverty Stoplight in terms of validity have to do with generalizability and logical sampling validity. In terms of generalizability, the Poverty Stoplight has many limitations. Misreports, internally inconsistent poverty dimensions, equal importance of indicators, unequal distance between levels, lack of clear multidimensional thresholds, and ambiguous units of analysis are all unresolved issues with respect to generalizability.

In terms of logical/sampling validity, results are not so clear-cut. Several indicators were expressed to be important by respondents, while others were considered to be missing. Further research is needed in order to adequately judge whether the Poverty Stoplight uses a locally relevant poverty definition.

From a constructivist point of view, I find that the Poverty Stoplight is weak in terms of validity. This is because the Poverty Stoplight does not meet the requirements of credibility and transferability. On the one hand, clients believed that the Poverty Stoplight adequately measured their poverty, which adds to the credibility of results. On the other hand, the Poverty Stoplight did not provide thick descriptions of the interactions between clients and *asesoras*, so it is impossible for external researchers to verify the choices made, in terms of reporting, during each client-asesora interaction. In this sense, the Poverty Stoplight is not credible. The lack of thick descriptions also has a negative impact on the transferability of the Poverty Stoplight. Because there are no detailed descriptions of the interactions between clients and *asesoras,* external researchers cannot adequately understand and judge which aspects of the interactions are transferable to other situations.

5.1.3 **Does the Poverty Stoplight have Discriminatory Power?**

A major strength of the Poverty Stoplight is that it has discriminatory power in the sense that it can create a complete ordering of households. This was supported by the fact that the comparison between the participatory wealth ranking and the Poverty Stoplight showed that the results of both measurements were highly correlated. However, a major weakness is that, because the Poverty Stoplight lacks a multidimensional poverty threshold, it cannot accurately differentiate between poor and non-poor people.

5.1.4 **Is the Poverty Stoplight a Practical Tool?**

A major strength of the Poverty Stoplight is that it is a practical tool in the sense that it is time-effective, easy to use, has a user-friendly layout, and has the potential to be relevant to different stakeholders. Carrying out the Poverty Stoplight is time-effective as

each individual visual survey application only took between 30 minutes to an hour. In terms of convenience, the visual survey itself was easy to complete. People felt that it was easy because the layout was didactic and user-friendly, and instructions were easy to understand. Finally, in terms of interpretability, it was clear that the information that the Poverty Stoplight tried to produce was in high demand.

However, the weaknesses of the Poverty Stoplight are that it is not extremely cost effective, instructions for *asesoras* are unclear, and information produced can be misinterpreted. First, in terms of cost-effectiveness, *asesoras* had to travel long distances in order to reach clients at their households and they had to balance their microfinance work with the Poverty Stoplight coaching methodology and the Poverty Stoplight metric. Also, Fundación Paraguaya had to implement bonuses and quality controls to ensure that *asesoras* carried out all their responsibilities. Secondly, instructions for *asesoras* trying to carry out the Poverty Stoplight were not always clear, as could be seen through the unreliability caused by their unstandardized visual survey application procedures. Finally, in terms of interpretability, as this dissertation research shows, there are limitations to the Poverty Stoplight's measurement capabilities. If Fundación Paraguaya intends the Poverty Stoplight to be useful to different stakeholders — poverty experts, MFIs, households, private businesses — then it is important to improve its measurement capabilities.

5.1.5 **Visual Representation of the Main Findings**

Figure 5.1: Visual Representation of the Main Findings

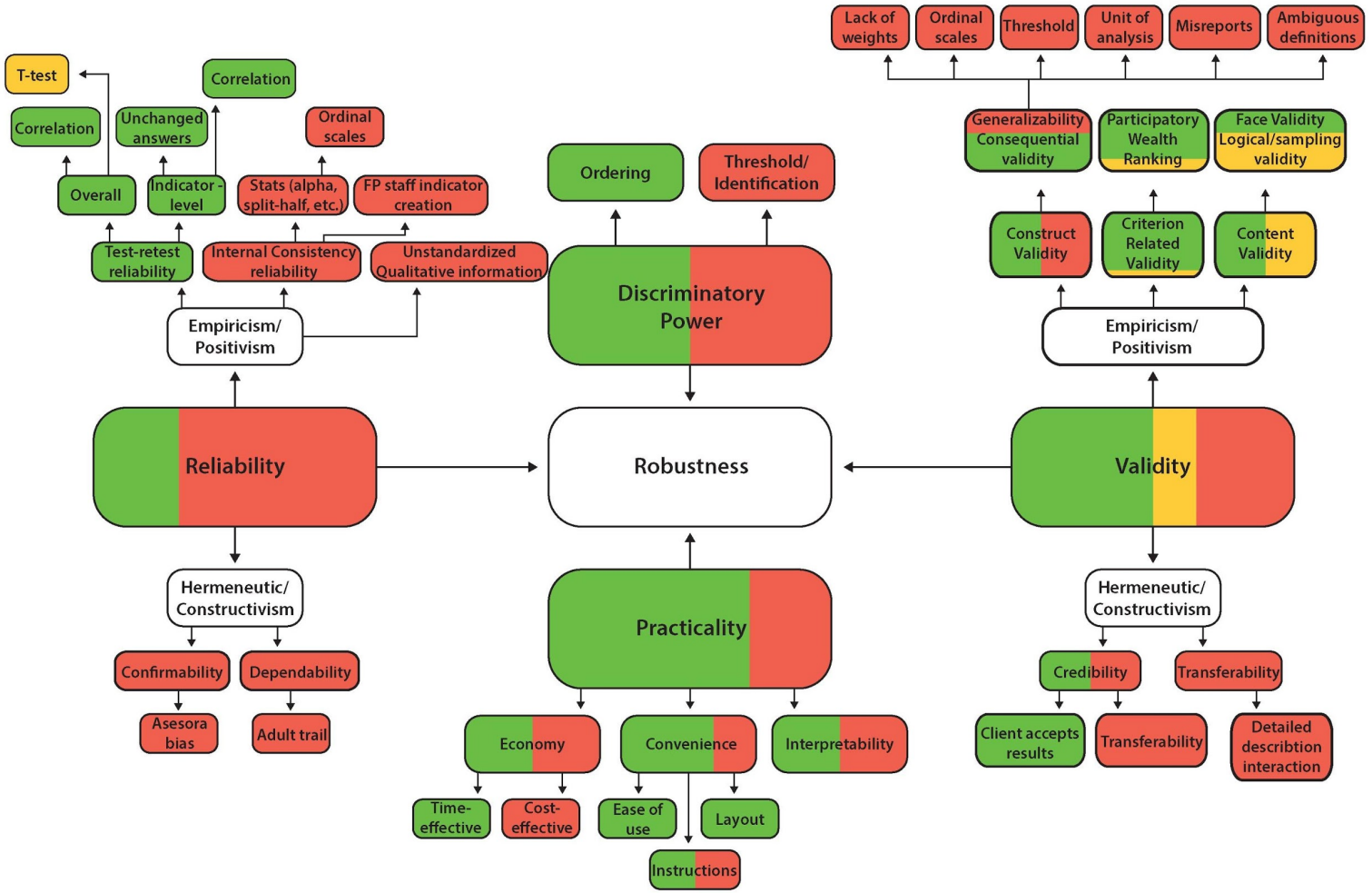


Figure 5.1 shows the implications that the findings of this research dissertation have for the different research questions and the different topics within those research questions. For the Poverty Stoplight, topics in red are where it has serious limitations, topics in yellow show moderate limitations or the findings of the dissertation that are inconclusive, and topics in green represent positive findings. As a whole, this figure summarizes the ample range of topics that I cover in this dissertation, and the implications that these topics have for the robustness of the Poverty Stoplight.

5.2 **Recommendations**

There were several epistemological choices that the Poverty Stoplight made in its approach to measuring poverty. At its heart, the biggest issue for the Poverty Stoplight is its fundamental prioritization of being an empowering tool over being an information extraction tool. This is where many measurement-based problems seem to stem from as certain tradeoffs have to be made in order to make the tool accessible and relevant for the clients and for the MFIs simultaneously. The primacy of this concern is evident in the fact that Fundación Paraguaya considered the Poverty Stoplight to be both a metric and a coaching methodology.

The Poverty Stoplight metric and the Poverty Stoplight coaching methodology have several competing goals. The coaching methodology is obviously concerned with guiding or directing clients in a proper direction. Similarly, *asesoras* or advisors, who were perceived as mentors or teachers, are the ones in charge of carrying out this coaching. In addition, Fundación Paraguaya staff said that they wanted to make the Poverty Stoplight didactic and understandable. On the other hand, the metric has to be

valid and reliable. Even though positivist and constructivist points of views differ on what reality means, both paradigms hold that research, in order to be valid and reliable, has to produce information that is an unbiased representation of reality. An effective methodology can be perfectly content with changing reality without needing to properly understanding that reality. A symptom that this might be occurring with the Poverty Stoplight is that Fundación Paraguaya chose early on to create the Poverty Stoplight with actionable rather than representative indicators. Another symptom is that these actionable indicators were mainly presented in dashboard rather than in summative index form.

The fundamental issue that Fundación Paraguaya will have to decide is how to balance the Poverty Stoplight metric with the coaching methodology. As it stands, I find that the Poverty Stoplight sacrifices too much of its measurement capabilities in favor of the coaching methodology. I have two recommendations: separating the metric from the coaching methodology or reformulating the Poverty Stoplight indicators and dimensions into a stronger metric

My first recommendation is to separate the metric from the coaching methodology. This separation could bring many benefits. First of all, it would allow the coaching methodology to be more flexible. Clients would no longer have to be randomly selected in order to participate in the coaching methodology. *Asesoras* would be able to act in a more flexible manner than they would be able to act under a rigorous measurement tool. For example, if *asesoras* were only working with the coaching methodology, bias would not be a concern. By opting in clients would be agreeing to participate in the methodology, and therefore would be open to receiving the information

being presented by the *asesora.* Another benefit would be that the coaching methodology could become extremely customizable. Without a requirement for standard indicators, indicators could change from community to community—or even from person to person—for low-level goals. For example, if a client was trying to improve neighborhood security, instead of having an "Incidence in the Public Sector" indicator, an *asesora* could create a "Neighborhood Security" indicator and guide the client into trying to achieve that personalized goal.

Other benefits of separating the metric from the coaching methodology would be that the metric would be able to become much more rigorous. This would provide Fundación Paraguaya with better information for monitoring and evaluation, and for decision-making. Finally, if the metric and the coaching methodology were completely separated, then the contradicting requirements of random sampling for the metric and self-selection for the coaching methodology would disappear.

My second recommendation, in order to solve the internal consistency reliability problems, is to reformulate indicators so that they become operationalizations of their dimensions. This would make each dimension more internally consistent, and it would make each indicator an adequate representation of the dimension in which it is placed. The down side of this approach is that the breadth of poverty indicators currently available would be reduced.

Another option would be to disaggregate each indicator. Several indicators could be considered, in themselves, dimensions. This is because each indicator is currently not one question, but rather it is many. For example, Indicator 11 "Healthy teeth and

eyesight" can actually be divided into two concepts: healthy teeth and healthy eyesight. If each indicator were decomposed into several indicators, the effect would be that the 50 indicators would become 50 dimensions and these dimensions would each have their smaller, more precise indicators. The down side of this approach is that the Poverty Stoplight questionnaire would be considerably lengthened.

In order to improve the generalizability of the Poverty Stoplight, I suggest the following steps: (1) ordinal scales could be changed to continuous scales or larger equal distance ordinal scales; (2) indicator definitions could be smaller and more precise; (3) self-reporting could be replaced or indicators should be easily verifiable to minimize the effects of misreports; (4) indicators or dimensions could be given weights relative to their theoretical contribution to the concept of poverty; (5) a multidimensional poverty line could be created; (6) the unit of analysis could be made unambiguous; and (7) *asesoras'* interview procedures could be more standardized.

For the Poverty Stoplight to be attractive and useful to other MFIs, Fundación Paraguaya's implementation of the Poverty Stoplight will have to be a model for other MFIs to follow. As it is, the Poverty Stoplight requires a heavier burden on MFI daily activities than standard microfinance industry practice, and the data produced need to be more precise. Although these are recommendations that this dissertation research enabled, these should not be considered exhaustive. Much research could be produced around how to improve the Poverty Stoplight's measurement capacities, and that task exceeds the scope of this work.

5.3 **Future Research**

This dissertation raises a series of questions that could be answered through future research. These questions have to do with poverty measurement, the meaning of poverty, and the integration of poverty measurement into microfinance operations. Answering these further questions will allow researchers to continue to contribute to the growing field of poverty measurement.

In terms of poverty measurement, several issues uncovered about reliability and validity can lead to future research questions. First, in the visual survey test-retest, although in general more than 70 percent of answers remained the same from test to retest, around 30 percent of participants changed some of their responses from the first visual survey to the second (2-4 weeks later). Future studies could look into what leads people to change their answers. Second, a constant theme in the research was the *asesora's* role and influence in the visual survey. Further research and theoretical analysis must be done to better define the role of the *asesora* in her interaction with the clients. Also, research could be carried out to see how bias can be minimized, and what these procedures would operationally require from an MFI.

In terms of validity, since the research uncovered that poverty indicators are not adequate representations of poverty dimensions, a question to be explored is whether dimensions are actually needed. Further research could also reveal whether a change in the scales used by individual indicators to allow for more variance can make dimensions more internally consistent. Also, an important issue to explore is whether or not clients become more empowered and change their situation after taking the Poverty Stoplight. In

terms of the visual survey itself, further questions to be resolved include, determining what role colors play in the visual survey; how to minimize the effects unequal distance between levels have; how to weigh indicators; and how to minimize misreports. Closely related to the idea of indicator weights, a multidimensional threshold will also have to be created and theoretically justified through further research.

The definition of poverty used by the Poverty Stoplight will also require further research. As the logical or sampling validity tests showed, there were seven spontaneously mentioned indicators that the Poverty Stoplight did not already include. In this sense, analysis is needed in order to precisely define whether clients themselves should define poverty, or whether it should be theoretically defined and standardized by the MFI. Whichever choice is made, this will still require analysis in order to define what method will be used in order to permit clients to create their own definitions, or in order to precisely lay out and theoretically justify what the indicators of poverty will be.

Finally, as the Poverty Stoplight is a tool intended to be used by MFIs, further research is needed about the everyday needs that MFIs have in carrying out their operations. Researchers will have to take into account what carrying out the Poverty Stoplight implies for an MFI, and what benefits it may provide for its daily activities.

5.4 **Conclusions**

I started this dissertation by indicating that there were two trends in academic literature surrounding poverty: the expansion of the meaning of poverty to consider it a multidimensional phenomenon and the measurement of poverty through hybrid positivist and constructivist methods. I argued that competing poverty measurement tools

commonly used by the microfinance industry were either completely positivist, focusing solely on monetary poverty, or completely constructivist, focusing solely on interpretations of poverty. Except for the CGAP-PAT, which is not readily available for the use of MFIs, none of the tools combine constructivist and positivist methods in the understanding of multidimensional poverty. The Poverty Stoplight intends to fill this gap as it presents itself as a participatory tool that can empower poor clients, through self-diagnosis, to understand the intensity and the characteristics of their own poverty. This, in turn, allows them to develop a customized family plan (*Mapa de Vida*) to address their most urgent concerns. With a visual survey, and through a process of self-awareness and self-reporting, the Poverty Stoplight intends to generate information that is both useful for the household and for the MFI. The aim of this dissertation is to contribute to academic literature by analyzing the practical benefits and difficulties that measuring multidimensional poverty through a combination of epistemological paradigms entails by analyzing a specific implementation of these trends: the Poverty Stoplight metric.

My results suggest, in terms of poverty measurement, that the Poverty Stoplight metric, in its current form, needs to be refined to become a more robust alternative to the existing poverty measurement tools; the main issues to address are its generalizability and internal consistency reliability problems. The data I collected and analyzed provide evidence that the metric component of the Poverty Stoplight has limited robustness. As the Poverty Stoplight is both a metric and a coaching methodology, Fundación Paraguaya will have to balance the competing objectives of these two components if it decides to improve the metric.

Although the Poverty Stoplight proved to have limited robustness, in the context of the existing tools used by MFIs, it is still the only hybrid tool that attempts to combine positivist and constructivist approaches to understand multidimensional poverty. This dissertation has served to reveal some of the challenges that may arise when trying to accomplish this goal, but that does not mean that the effort should be abandoned. If the microfinance industry is truly going to attempt to guard itself against mission drift, it is important that the tools it uses to measure poverty take into account the full complexity of the concept of poverty. The Poverty Stoplight, although not perfect, is a step in this direction for the microfinance industry.

Fundación Paraguaya will have to make many choices, both about institutional goals and about poverty measurement methods, in order to make the Poverty Stoplight a valid poverty measurement tool for the microfinance industry. It is my hope that this dissertation will provide insight into how to continue developing a poverty measurement tool that addresses multidimensional poverty in a practical and low-cost way both for poor families and MFIs.

6 Appendix

6.1 Appendix 1: Description of 50 Indicators by Dimension

Appendix 1: Description of 50 Indicators by Dimension with Illustrations Representing Not Poor (Green), Poor (Yellow) and Extreme Poor (Red) and Footnotes indicating their source

Indicator: 1. Income Above the Poverty Line	**Dimension: Income & Employment**
Justification: The family needs to generate sufficient income to cover their needs.	
Definition: The General Directorate of Statistics, Surveys and Census defines the poor population as the group of people living in households whose wellbeing (expressed through income) is lower than the cost of a basic consumption basket (all goods and services meeting the minimum requirements for human survival). The poverty line is usually constructed by first estimating the cost of a basic food basket with sufficient calories and protein to meet nutritional requirements, and next the cost of basic non-food basket is added. The monthly cost per person of the food basket is called extreme poverty line and that of the total basket is called the total poverty line. Fundación Paraguaya uses the figures defined by the General Directorate of Statistics and Census and adds inflation for each non-updated year, given that the publication of said figures has a delay. For 2013 the following income figures for each family member have been used: General Poverty: Metropolitan Area: Gs. 607,855 ($ 132), Urban Rest: Gs. 435,067 ($ 94); and Rural Area: Gs. 375,801 ($81). Extreme Poverty: Metropolitan Area: Gs. 364,241 ($79), Urban Rest: Gs. 279,524 ($60); and Rural Area: Gs. 258,654 ($56). *** 1US$ = 4,600 Gs.**	
LEVEL 1. Family income is below the extreme poverty line.	LEVEL 2. Family income is below the general poverty line and above the extreme poverty line.	LEVEL 3. Family income is above the poverty line.
		
Source: - Human Development Index (HDI).” UNDP: United Nations Development Program, n.d. http://hdr.undp.org/en/content/human-development-index-hdi. - “Principales Resultados de Pobreza Y Distribución Del Ingreso: Encuesta Permanente de Hogares.” Dirección General de Estadística, Encuestas y Censos, 2013. http://www.dgeec.gov.py/Publicaciones/Biblioteca/eph_2013/Boletin%20de%20pobreza%202013.pdf.		

Indicator: 2. Stable Income	**Dimension: Income & Employment**

Justification: The stability of income is measured because to have stable wellbeing, family income should not vary substantially from month to month. In the case of farmers their income depends on the production cycle and said income should provide wellbeing during the entire cycle, hence stability is measured according to the seasonality of their main activity.

Definition: Family income which does not vary significantly from month to month is considered stable. Occasional variations of income, such as the thirteenth month bonus, are not included. In the case of farmers whose seasonal income is their main source of income, the variation will be measured in relation to the production cycle of the main activity.

LEVEL 1. Family income varies more than 30% from month to month. In the case of farmers, the last two cycle of their main activity shall be considered.	LEVEL 2. Family income varies more than 15% and up to 30% from month to month. In the case of farmers, the last two cycle of their main activity shall be considered.	LEVEL 3. Family income does not vary more than 15% month to month for 6 months. In the case of farmers, the last two cycles of their main activity shall be considered.
		

Source:
- "The Chronic Poverty Report 2004-05." Chronic Poverty Research Centre, 2004-5. http://www.chronicpovertynetwork.org/resources/2015/7/17/chronic-poverty-report-2004-2005.
- "Paraguay." *Progress Out of Poverty*. http://www.progressoutofpoverty.org/country/paraguay.

Indicator: 3. Credit	**Dimension: Income & Employment**

Justification: Access to credit facilitates production growth of the family.

Definition: The family has access to formal non-usurious productive credit under market conditions.

LEVEL 1. The family has no access to any informal or formal credit or access.	LEVEL 2. One family member has access to informal credit only.	LEVEL 3. At least one family member has access to formal productive credit under market conditions. us credit.
		

Source:
- Dowla, A. (2006). In credit we trust: Building social capital by Grameen Bank in Bangladesh. *The Journal of Socio-Economics*, 35(1), 102-122, 2006
- "Poverty Indicators - 10 Indicators." Grameen Bank, n.d. http://www.grameen.com/index.php?option=com_content&task=view&id=23&Itemid=126.

Indicator: 4. Family Savings	**Dimension: Income & Employment**	
Justification: Savings allow the family to cope with contingencies of life and/or to plan the purchase of goods or services.		
Definition: Part of the income that is not spent, but is saved in cash for future needs.		
LEVEL 1. The family has never or almost never saved.	LEVEL 2. The family has been saving for less than six months and/or has saved occasionally.	LEVEL 3. The family has savings and a "savings culture" expressed in this practice maintained at least in the last six months.
		

Source:
- "Ficha para la Identificación y Selección de Potenciales Beneficiarios". (2014). Secretaría Técnica de Planificación. República del Paraguay
- "Poverty Indicators - 10 Indicators." *Grameen Bank*, n.d. http://www.grameen.com/index.php?option=com_content&task=view&id=23&Itemid=126.

Indicator: 5. Diversified Source of Income	**Dimension: Income & Employment**	
Justification: The diversification of sources of income is important to reduce the dependence of the family on a single person family and/or business or job.		
Definition: The family has more than one source of income in the household. Sources are considered different when they are generated by different people contributing to the family unit and/or by other businesses or jobs carried out by one same person. The diversity of sources including remittances, revenues, leases and others.		
LEVEL 1. The family has only one source of income.	LEVEL 2. There are at least two sources of income from one same family member.	LEVEL 3. There are at least two sources of income from different family members.
		

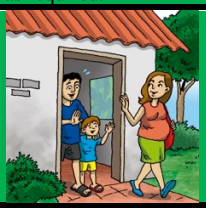
Source:
- Barja, Gover, and Björn-Sören Gigler. "The Concept of Information Poverty and How to Measure It in the Latin American Context." DIGITAL POVERTY: Latin American and Caribbean Perspectives. International Development Research Centre (IDRC), 2007. http://www.idrc.ca/EN/Resources/Publications/openebooks/342-3/index.html#ch1tab3.
- "Paraguay." *Progress Out of Poverty*. Accessed October 15, 2015. http://www.progressoutofpoverty.org/country/paraguay.

Indicator: 6. Documentation: Identity Card	**Dimension: Income & Employment**	
Justification: The Identity Card is "citizenship card" that allows performing any kind of procedure in the field of the formal economy.		
Definition: Identity Card: Identification document issued by the State, which can be used for legal purposes of identification of the person for almost any purpose and it is required to access financial services, voting, and social services provided by the State.		
LEVEL 1. At least one family member who is of age does not have an identity card.	LEVEL 2. All family members of age have a valid identity card, although the document of one or more has expired.	LEVEL 3. All family members of age have a valid identity card.
		
Source: - "Capítulo 3, De La Nacionalidad Y de La Ciudadanía, Articulo 146." Constitución Nacional Paraguay, 1992. http://www.oas.org/juridico/spanish/par_res3.htm. - "Ficha para la Identificación y Selección de Potenciales Beneficiarios". (2014). Secretaría Técnica de Planificación. República del Paraguay		

Indicator: 7. Access to Drinking Water	**Dimension: Health & Environment**	
Justification: Drinking water is indispensable for the health of the family and easy and continuous access to it are essential elements of a decent life.		
Definition: The family has constant access to drinking water that can be consumed by people and animals without risk of disease because its source contains no hazardous substances for health or has been treated for human consumption.		
LEVEL 1. The water the family drinks is not safe, or they have to walk more than 100 meters from their house to get it.	LEVEL 2. The family has access to drinking water, but: (a) it is not constant and they do not have water most of the day, or, (b) they do not have a water tap, or (c) drinking water is located at least 100 meters outside the family plot of land.	LEVEL 3. The family has constantly access–during most of the day–to drinking water within the family plot of land. There is a tap with running water.
		
Source: - Human Development Index (HDI)." *UNDP: United Nations Development Program*, n.d. http://hdr.undp.org/en/content/human-development-index-hdi. - Millenium Development Goals. *United Nations.* http://www.un.org/millenniumgoals/		

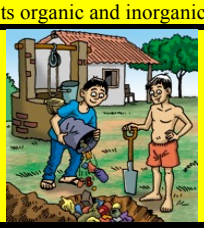
Indicator: 8. Nearby Health Post	**Dimension: Health & Environment**	
Justification: Quick access to health services is required to receive appropriate response to emergencies.		
Definition: The family has (physical and economic) access to an active health center less than an hour away (in transport that is available to the family) from the family house and provides basic health services: emergencies, sale of medications and general medicine.		
LEVEL 1. The nearest health centers providing basic services are more than 1 hour away from the family home and are not within their economic reach.	LEVEL 2. The family has affordable access to a Health Center but it is located more than an hour away from their home or the Health Center is less than an hour away but they cannot afford to pay it.	LEVEL 3. The family has physical and economic access to a health center less than an hour from their home.
		
Source: - "Ficha para la Identificación y Selección de Potenciales Beneficiarios". (2014). Secretaría Técnica de Planificación. República del Paraguay - "The Right to Health." World Health Organization. Accessed October 14, 2015. http://www.who.int/mediacentre/factsheets/fs323/en/.		

Indicator: 9. Nutritious Food	**Dimension: Health & Environment**	
Justification: Human beings require a diverse and combined food in order to develop and live healthily.		
Definition: Food composed of energy and non-energy nutrients that humans need to stay healthy. The Body Mass Index (BMI) is the indicator used since it properly reflects levels of nutrition of the family.		
More than one family member presents BMI values classified as severely underweight or obese.	At least one family member presents BMI values classified as severely underweight or obese.	All family members are within the BMI **Normal** range according to the WHO BMI table.
When to obtain BMI data, information on food consumption of the family is gathered following the definitions below.		
LEVEL 1. Family members do not have regular 3 meals a day and/or their regular diet does not include at least 6 of the above components listed for Level 3.	LEVEL 2. The family did not include all components listed in Level 3 in their diet and/or not all members had 3 meals a day.	LEVEL 3. The family, (a) During the last week consumed sufficient amount for all its members of: 1. Beef, chicken or fish 2. Milk and/or derivatives 3. Mixed vegetables 4. Egg 5. Assorted fruit 6. Rice and noodles 7. Potato, manioc or sweet potato 8. Beans, peas or other legume 9. Corn, peanuts or other cereal, and (b) All family members had at least 3 meals a day: breakfast, lunch and supper.
		
Source: -"Mean Body Mass Index (BMI)." World Health Organization. Accessed October 14, 2015. http://www.who.int/gho/ncd/risk_factors/bmi_text/en/. - Millenium Development Goals. United Nations. http://www.un.org/millenniumgoals/		

Indicator: 10. Personal Hygiene and Sexual Health	**Dimension: Health & Environment**	
Justification: A healthy family needs to live in a clean house, have hygienic habits and take care of their sexual health.		
Definition: The family has hygiene practices and takes appropriate care of their sexual and reproductive health		
LEVEL 1. The family and/or house clearly show lack of hygiene. Family members have no knowledge of family planning principles nor do they have gynecological or prenatal checkups as required.	LEVEL 2. The family does not have all the hygienic habits described for Level 3 and/or not all its members comply with them and/or adults in the family do not know or do not apply family planning principles, and/or do not perform the gynecological and prenatal checkups as required.	LEVEL 3. Family members bathe and brush their teeth every day, wash their hands whenever they have used the bathroom and before eating and preparing food, (b) the family home looks clean and tidy, (c) adults in the family have family planning knowledge and apply it, and (d) they have gynecological and prenatal checkups as required.
		
Source: - "The Chronic Poverty Report 2004-05." Chronic Poverty Research Centre, 2004-5. http://www.chronicpovertynetwork.org/resources/2015/7/17/chronic-poverty-report-2004-2005 - "Gender and Human Rights." World Health Organization. Accessed October 14, 2015. http://www.who.int/reproductivehealth/topics/gender_rights/sexual_health/en/.		

Indicator: 11. Healthy Teeth and Eyesight	**Dimension: Health & Environment**	
Justification: Health and productivity of a family require that their members have healthy teeth and eyesight.		
Definition: The family has healthy teeth and eyesight.		
LEVEL 1: The family does not treat their teeth and/or eyesight problems.	LEVEL 2: At least one member of the family has teeth or eyesight problems that are not being treated.	LEVEL 3: The family has no teeth or eyesight problems or, if they do, they are being properly treated.
		
Source: - "Blindness: Vision 2020 - The Global Initiative for the Elimination of Avoidable Blindness." World Health Organization. Accessed October 14, 2015. http://www.who.int/mediacentre/factsheets/fs213/en/. - "The Right to Health." World Health Organization. Accessed October 14, 2015. http://www.who.int/mediacentre/factsheets/fs323/en/.		

Indicator: 12. Vaccines	**Dimension: Health & Environment**	
Justification: Disease prevention via application of mandatory vaccines avoids health problems and saves the family money.		
Definition: Organic principle or virus that protects people from more serious diseases that can be fatal and cause irreversible consequences. Compulsory vaccines in Paraguay for children from 0 to 12 years old are DPT (diphtheria, tetanus, whooping cough); BCG Tuberculosis; Polio; Haemophilus influenzae type B; Hepatitis B; Measles, Mumps, Rubella; Tetanus, Diphtheria; and Yellow Fever.		
LEVEL 1: No family member is vaccinated.	LEVEL 2: Family members are partially vaccinated against major diseases: they are not vaccinated against all diseases or not every member of the family is vaccinated.	LEVEL 3: Family members are vaccinated against the most serious diseases and those which are considered compulsory.
		
Source: - "Ficha para la Identificación y Selección de Potenciales Beneficiarios". (2014). Secretaría Técnica de Planificación. República del Paraguay - Millenium Development Goals. *United Nations*. http://www.un.org/millenniumgoals/		

Indicator: 13. Garbage Disposal	**Dimension: Health & Environment**	
Justification: The family must dispose of their garbage appropriately, not only to care for their health but to collaborate with the environment of their community and for the preservation of nature in general.		
Definition: The family disposes of their garbage appropriately either (a) placing it where established for its collection and canalization into garbage dumps, landfills or another places prepared for such purpose, or (b) appropriately disposing of the garbage in their own house.		
LEVEL 1: The family disposes of their garbage inadequately causing contamination and health problems: they burn it, throw it on their premises in the open air and/or near houses/water sources or crops. The family throws their garbage in a hole, a stream, plot of land or street.	LEVEL 2: There is no public or private garbage collection system, or the family does not use one if available, and/or buries their garbage in a covered hole that is more than 50 m. away from a water source, crops or housing, and/or do not separate its organic and inorganic waste.	LEVEL 3: The family disposes of their waste adequately until the time of its collection and final disposal in a garbage dump or disposes of their waste by burying organic waste in a hole at least 50 m. away from a water source, crops or housing and recycling inorganic waste.
		
Source: - "Ficha para la Identificación y Selección de Potenciales Beneficiarios". (2014). Secretaría Técnica de Planificación. República del Paraguay - "Minimum Standards in Shelter, Settlement and Non-Food Items." *The Sphere Project: Humanitarian Charter and Minimum Standards in Humanitarian Response*, n.d. http://www.sphereproject.org/.		

Indicator: 14. Unpolluted Environment	**Dimension: Health & Environment**
Justification: The family must live in a healthy environment without unpleasant odors, insects or contamination of any kind.	
Definition: The environment around the family is healthy; i.e. it is not continuously contaminated by inappropriate odors coming from industries, cattle production or other sources, nor by flies, mosquitoes and other insects, nor by mining or urban industrial waste in the ground, nor by pesticides or other agrochemical substances, nor by the poor elimination or absence of garbage treatment.	
LEVEL 1: The family lives in an environment that is not healthy, as described in the definition.	LEVEL 2: The family lives in a generally healthy environment, but which occasionally presents some of the problems described in the definition.	LEVEL 3: The family lives in a healthy environment that does not endanger their health or the environment.
		

Source:
- "Ficha para la Identificación y Selección de Potenciales Beneficiarios". (2014). Secretaría Técnica de Planificación. República del Paraguay
- Millenium Development Goals. *United Nations.* http://www.un.org/millenniumgoals/

Indicator: 15. Insurance	**Dimension: Health & Environment**
Justification: The family has access to insurance allowing them to be covered against "foreseeable contingencies".	
Definition: The family has access to insurance covering at least two aspects of their life. These can be life, health, burial insurance, unemployment insurance, vehicle insurance and insurance of other assets, etc.	
LEVEL 1: The family does not have access to any kind of insurance.	LEVEL 2: The family has access to at least one insurance.	LEVEL 3: The family has access at least to two insurances.
		

Source:
- "The Chronic Poverty Report 2004-05." Chronic Poverty Research Centre, 2004-5. http://www.chronicpovertynetwork.org/resources/2015/7/17/chronic-poverty-report-2004-2005
- "Ficha para la Identificación y Selección de Potenciales Beneficiarios". (2014). Secretaría Técnica de Planificación. República del Paraguay

Indicator: 16. Safe Home		**Dimension: Housing & Infrastructure**
Justification: The family needs to live in a home providing physical safety.		
Definition: A house is considered safe if (a) the ceiling of the house is sufficiently resistant to protect the home of the outdoors, (b) the outer windows and doors have resistant locks, and (c) has a floor of fired material.		
LEVEL 1: The house does not have any of the safety components described for Level 3.	LEVEL 2: The house does not have several of the safety components described for Level 3.	LEVEL 3: The house: (a) has tile roof, zinc sheet or reinforced concrete roof, (b) Solid wood walls, cement or fired material, (c) external windows and doors of solid wood or metal and all close securely using e.g. padlocks, locks, resistant bolts or other similar, and has floor of fired material: bricks, tiles, cement, ceramic or similar.
		
Source: - Alkire, Sabina, and Maria Emma Santos. "Measuring Acute Poverty in the Developing World: Robustness and Scope of the Multidimensional Poverty Index." Oxford Poverty & Human Development Initiative (OPHI), (2013). http://www.ophi.org.uk/wp-content/uploads/ophi-wp-59.pdf		

Indicator: 17. Sanitary Latrines and Sewage		**Dimension: Housing & Infrastructure**
Justification: The family needs to dispose of their excreta appropriately to take care of the health of its members and collaborate with the well-being of the community and the environment.		
Definition: Clean structure that provides privacy to the person and good evacuation system (sewer or cesspit).		
LEVEL 1: The family has no bathroom: only a hole, pit outside the house. Or has a latrine that lacks sanitary latrine and modern bathroom, and if it does, it does not meet several of the requirements listed for Level 3.	LEVEL 2: The family has a sanitary latrine or modern bathroom that does not meet the requirements listed for Level 3.	LEVEL 3: The family has a modern bathroom with (a) toilet (WC) (b) cistern inside (c) ensures privacy, (d) has a good flushing system, and e) is kept clean.
		
Source: - "Paraguay." *Progress Out of Poverty*. Accessed October 15, 2015. http://www.progressoutofpoverty.org/country/paraguay. - "Poverty Indicators - 10 Indicators." Grameen Bank, n.d. http://www.grameen.com/index.php?option=com_content&task=view&id=23&Itemid=126.		

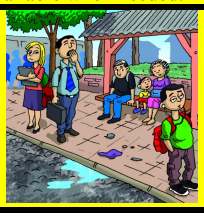
Indicator: 18. Electricity	**Dimension: Housing & Infrastructure**	
Justification: Access to electricity is a modern day requirement because it enables the preservation of food, as well as access to information and greater comfort.		
Definition: Access to constant electricity in the house.		
LEVEL 1: The family does not have access to electricity.	LEVEL 2: The family has access to electricity, but access is clandestine and/or insufficient (not constant).	LEVEL 3: The family has constant and non-clandestine access to electricity.
		
Source: - "Ficha para la Identificación y Selección de Potenciales Beneficiarios". (2014). Secretaría Técnica de Planificación. República del Paraguay - "Minimum Standards in Shelter, Settlement and Non-Food Items." *The Sphere Project: Humanitarian Charter and Minimum Standards in Humanitarian Response*, n.d. http://www.sphereproject.org/.		

Indicator: 19. Refrigerator and Other Household Appliances	**Dimension: Housing & Infrastructure**	
Justification: Mainly the fridge (because it preserves food), but in general household appliances are necessary elements of comfort in modern life.		
Definition: Any appliance, tool or machine used in the home, the energy source of which is electricity: washing machine, washing machine, cooking stove, refrigerator, blender, etc.		
LEVEL 1: The family has no refrigerator.	LEVEL 2: The family has at least a refrigerator.	LEVEL 3: The family has refrigerator and other household appliances.
		
Source: - Alkire, Sabina, and Maria Emma Santos. "Measuring Acute Poverty in the Developing World: Robustness and Scope of the Multidimensional Poverty Index." Oxford Poverty & Human Development Initiative (OPHI),(2013). http://www.ophi.org.uk/wp-content/uploads/ophi-wp-59.pdf - - "Ficha para la Identificación y Selección de Potenciales Beneficiarios". (2014). Secretaría Técnica de Planificación. República del Paraguay		

Indicator: 20. Separate Bedrooms	Dimension: Housing & Infrastructure	
Justification: Separate bedrooms enable the privacy required by adults, as well as the prevention of cases of intra-family child abuse.		
Definition: Adequate housing provides sufficient space, safety and privacy to every household member, avoiding overcrowding and coexistence in the same bedroom of: (a) an adult, (b) adolescents (> 12 to 18 years) and (c) children.		
LEVEL 1: The three groups mentioned in the definition share the bedroom.	LEVEL 2: Some of the three groups mentioned in the definition share the bedroom.	LEVEL 3: The three groups mentioned in the definition sleep in separated bedrooms.
		
Source: - "Poverty Indicators - 10 Indicators." Grameen Bank, n.d. http://www.grameen.com/index.php?option=com_content&task=view&id=23&Itemid=126. - Rath Jr, F. H., & Okum, M. E. (1995). Parents and children sleeping together: cosleeping prevalence and concerns. American Journal of Orthopsychiatry,65(3), 411. Retrieved from: http://psycnet.apa.org/journals/ort/65/3/411/		

Indicator: 21. Elevated and Ventilated Cook Stove	Dimension: Housing & Infrastructure	
Justification: Cooking stove above the ground preserves food from contamination of the ground and animals roaming around, and ventilation prevents members of the family from breathing the smoke generated.		
Definition: The place to cook food has: (a) cook stove above the ground (80 cm) so that the food is not cooked on the floor, (b) sufficient ventilation so that smoke does not saturate the environment.		
LEVEL 1: The family does not have cook stove above the ground.	LEVEL 2: The family has cook stove above the ground, but not sufficiently ventilated or does not use it.	LEVEL 3: The family has cook stove above the ground and in a ventilated area, and uses it.
		
Source: - "The Chronic Poverty Report 2004-05." Chronic Poverty Research Centre, 2004-5. http://www.chronicpovertynetwork.org/resources/2015/7/17/chronic-poverty-report-2004-2005 - "Paraguay." *Progress Out of Poverty*. Accessed October 15, 2015. http://www.progressoutofpoverty.org/country/paraguay.		

Indicator: 22. Comfort of the Home	Dimension: Housing & Infrastructure	
Justification: Chairs, tables and beds ensure minimum comfort in two important moments of family life: food and rest. Similarly, tables and chairs facilitate the studying of children and youth, and fans and air conditioners or good ventilation of the dwelling mitigate the summer heat.		
Definition: The home has: (a) chairs, tables and cutlery in sufficient quantity for all members, (b) in sufficient number of beds for all (1 per adult or couple), (c) fans or air conditioners.		
LEVEL 1: The family lacks two or more of the elements described in the definition (they do not have at all or do not have in sufficient quantity).	LEVEL 2: The family lacks one of the elements described in the definition (they do not have at all or not in sufficient quantity).	LEVEL 3: The family has the three elements described in the definition.
		
Source: - "Ficha para la Identificación y Selección de Potenciales Beneficiarios". (2014). Secretaría Técnica de Planificación. República del Paraguay - "Minimum Standards in Shelter, Settlement and Non-Food Items." *The Sphere Project: Humanitarian Charter and Minimum Standards in Humanitarian Response*, n.d. http://www.sphereproject.org/.		

Indicator: 23. Regular Means of Transportation	Dimension: Housing & Infrastructure	
Justification: Access to means of transport is essential for the connection of the family with services, markets and supply centers.		
Definition: The family has regular access to their own means of transport (car, motorcycle, bicycle, cart pulled by horse or ox) or collective means of transport (bus, motorcycle-taxi, taxi, available at least every two hours)).		
LEVEL 3: The family has their own means of transport (car, motorcycle, bicycle or cart) available when they need it and/or access to buses providing regular service.	LEVEL 2: The family has access to relatively frequent buses (that pass by at least every two hours) but they are not always available when needed.	LEVEL 1: The family has no means of transport of their own or public transport in their area is irregular (they have to wait more than two hours).
		
Source: - Barja, Gover, and Björn-Sören Gigler. "The Concept of Information Poverty and How to Measure It in the Latin American Context." DIGITAL POVERTY: Latin American and Caribbean Perspectives. International Development Research Centre (IDRC), 2007. - "Paraguay." *Progress Out of Poverty*. Accessed October 15, 2015. http://www.progressoutofpoverty.org/country/paraguay.		

Indicator: 24. All-Weather Access Road	**Dimension: Housing & Infrastructure**
Justification: All-weather access roads are essential for the connection of the family to services, markets and supply centers.	
Definition: The access road to the family home can be traveled on by motorized means of transport ("regular" vehicles, without requiring four-wheel drive) regardless of the weather.	
LEVEL 1: The way that connects the familiar home is a dirt road and becomes hard to use with the slightest bad weather.	LEVEL 2: The road that connects the family home is a dirt road or its gravel is in bad state and it is hard to use in times of strong or continual rainfall.
	
Source: - Barja, Gover, and Björn-Sören Gigler. "The Concept of Information Poverty and How to Measure It in the Latin American Context." DIGITAL POVERTY: Latin American and Caribbean Perspectives. International Development Research Centre (IDRC), 2007. - "Paraguay." *Progress Out of Poverty*. Accessed October 15, 2015. http://www.progressoutofpoverty.org/country/paraguay.	

LEVEL 3: The road that connects the family home to the nearest urban center is asphalted, cobbled, paved or gravel, and is accessible all the time even in rainy periods.


Indicator: 25. Fixed Line or Cellular Telephone	**Dimension: Housing & Infrastructure**
Justification: Telephony service easily and rapidly connects the family to the world.	
Definition: Having telephone service via fixed or mobile line.	
LEVEL 1: The family does not have telephony service.	LEVEL 2: The family has fixed or cellular telephony but it is not constantly available.
	
Source: - "The Chronic Poverty Report 2004-05." Chronic Poverty Research Centre, 2004-2005. http://www.chronicpovertynetwork.org/resources/2015/7/17/chronic-poverty-report-2004-2005 - "Ficha para la Identificación y Selección de Potenciales Beneficiarios". (2014). Secretaría Técnica de Planificación. República del Paraguay	

LEVEL 3: The family has constantly available fixed or cellular telephony.

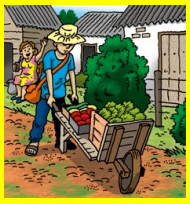

Indicator: 26. Security	**Dimension: Housing & Infrastructure**	
Justification: The family's security is fundamental part of their wellbeing.		
Definition: It refers to acts of physical violence or against their property suffered by the family in their neighborhood.		
LEVEL 1: The family suffered more than one act of violence in their neighborhood or against their property in the past 6 months.	LEVEL 2: Some member of the family suffered an act of violence in their neighborhood or against their property in the past 6 months or these are usual events in their neighborhood.	LEVEL 3: No member of the family has suffered acts of violence in their neighborhood or against their property in the last 6 months; nor are such events usual in their neighborhood.
		
Source: - Human Development Index (HDI).” *UNDP: United Nations Development Program*, n.d. http://hdr.undp.org/en/content/human-development-index-hdi. - “Minimum Standards in Shelter, Settlement and Non-Food Items.” *The Sphere Project: Humanitarian Charter and Minimum Standards in Humanitarian Response*, n.d. http://www.sphereproject.org/.		

Indicator: 27. Sufficient and Appropriate Clothing	**Dimension: Housing & Infrastructure**	
Justification: The family must have clothing to protect its members from the weather.		
Definition: Sufficient quantity of clothing to change daily and shoes suited to the climate: light for summer and warm for winter.		
LEVEL 1: The family lacks proper clothing and shoes in sufficient quantity.	LEVEL 2: Family members have season-appropriate clothing and shoes, but the quantity is insufficient.	LEVEL 3: All members of the family have sufficient season-appropriate clothing and shoes.
		
Source: - “Minimum Standards in Shelter, Settlement and Non-Food Items.” *The Sphere Project: Humanitarian Charter and Minimum Standards in Humanitarian Response*, n.d. http://www.sphereproject.org/. - “Poverty Indicators - 10 Indicators.” Grameen Bank, n.d. http://www.grameen.com/index.php?option=com_content&task=view&id=23&Itemid=126.		

Indicator: 28. Know How to Read and Write		Dimension: Education & Culture
Definition: Members of age of the family know how to read and write in Spanish and can understand texts (simple and more elaborate) and express their ideas in writing in a way that is understandable to others. For example, are able to read and understand press articles and training materials, and can write paragraphs of their business plan, lists, etc.		
Justification: Knowing how to read and write allows the family to communicate better with the sector of Paraguayan society providing most economic opportunities, and it also gives the family the ability to understand the news, training materials and collaborate with the education of their children, and enhance their personal development, cultural enrichment and social integration.		
LEVEL 1: At least one adult member of the family cannot read and/or write in Spanish.	LEVEL 2: Adult members are able to read simple texts in Spanish but have difficulty understanding them and cannot write paragraphs that others can understand.	LEVEL 3: All adult members of the family are able to read, write and understand Spanish.
		
Source: - "The Chronic Poverty Report 2004-05." Chronic Poverty Research Centre, 2004-2005. http://www.chronicpovertynetwork.org/resources/2015/7/17/chronic-poverty-report-2004-2005 - Millenium Development Goals. *United Nations*. http://www.un.org/millenniumgoals/		

Indicator: 29. Children with Schooling up to 12th Grade	Dimension:Education & Culture	
Justification: Education up to middle schooling is the minimum a young person requires to perform basically in modern economy.		
Definition: School-age members of the family (up to 18 years of age) must conclude their Middle Education.		
LEVEL 1: More than one family member does not go to school or has not completed 12th Grade.	LEVEL 2: Not all the members of the family under 18 years of age go to school or have completed 12th Grade.	LEVEL 3: All members of the family under 18 years of age go to school or have completed 12th Grade.
		
Source: - "Poverty Indicators - 10 Indicators." Grameen Bank, n.d .http://www.grameen.com/index.php?option=com_content&task=view&id=23&Itemid=126. - Human Development Index (HDI)." *UNDP: United Nations Development Program*, n.d. http://hdr.undp.org/en/content/human-development-index-hdi.		

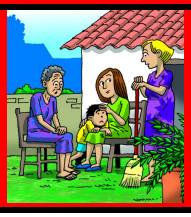
Indicator: 30. Expertise and Skills to Generate Income	Dimension: Education & Culture	
Justification: Expertise and skills enabling income-generation are required to leave poverty behind.		
Definition: The family has expertise and skills to: generate income, such as generating new businesses, appropriately managing their assets, developing new products, marketing their products, getting a job, reducing costs and diversifying their suppliers.		
LEVEL 1: The family does not have the capacity to generate new income and has never done so.	LEVEL 2: At least one family member has the basic capacity to generate income and has occasionally experienced new strategies.	LEVEL 3: At least one family member is able has recognized capacity and has experienced new strategies to constantly generate income.
		
Source: - Drucker, Peter. Innovation and Entrepreneurship. New York: Harper Collins, 1993.		

Indicator: 31. Capacity to Plan and Budget	Dimension: Education & Culture	
Justification: Planning and budgeting are basic skills required for good management of cash inflows and outflows of the business and the family.		
Definition: The family is able to plan and budget their economic future in the short, medium and long term in writing, follows its plans.		
LEVEL 1: The family does not Business Plan or budget or does not use them.	LEVEL 2: The family has a Business Plan and a budget in writing, but does not use them regularly.	LEVEL 3: The family has a Business Plan and a monthly budget in writing. Both permanently govern the family economy.
		
Source: - Drucker, Peter. Innovation and Entrepreneurship. New York: Harper Collins, 1993.		

Indicator: 32. Communication & Social Capital	Dimension: Education & Culture

Justification: Access to social networks is a feature of the middle class, which uses them to develop in all areas.

Definition: The family has a broad social network that includes several areas and people of different social levels, thanks to their ability to communicate with others.

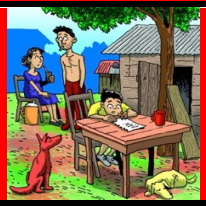
LEVEL 1: Family members do not have other groups other than their family.	LEVEL 2: At least one family member relates to the immediate surroundings, but does not have other social networks.	LE LEVEL 3: The family has a broad social network. They are part of several groups and have many contacts that they turn to in order to generate business opportunities and improve their quality of life.
		

Source:
- Bandura, Albert. *Self-Efficacy: The Exercise of Control*. 1st edition. Worth Publishers, 1997.
- Grenny, Joseph, David Maxfield, Ron McMillan, Al Switzler, and Kerry Patterson. Influencer : The Power to Change Anything. McGraw-Hill, 2008.

Indicator: 33. School Supplies and Books	Dimension: Education & Culture

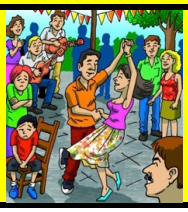
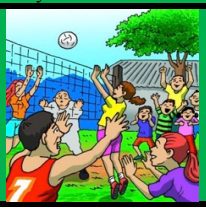
Justification: It is impossible to study appropriately without school supplies and books.

Definition: School-age family members have all the necessary supplies to perform appropriately at school: pencils, ballpoints, rulers, pencil sharpener, eraser, exercise books, colored pencils, crayons, markers, paintbrushes, scissors, glue and reading books and school handbooks recommended by the teacher.

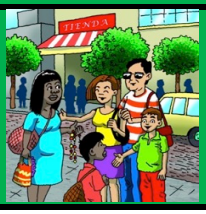
LEVEL 1: School-aged children of the family do not have the required school supplies.	LEVEL 2: School-aged children of the family have most of the school supplies required, but not all of them.	LEVEL 3: School-aged children of the family have all the necessary school supplies and books required for good performance of their school work.
		

Source:
- "The Chronic Poverty Report 2004-05." Chronic Poverty Research Centre, 2004-5. http://www.chronicpovertynetwork.org/resources/2015/7/17/chronic-poverty-report-2004-2005
- "Poverty Indicators - 10 Indicators." Grameen Bank, n.d.http://www.grameen.com/index.php?option=com_content&task=view&id=23&Itemid=126.

Indicator: 34. Access to information (Radio and TV)	**Dimension: Education & Culture**	
Justification: Being informed allows the family to be part of society, participate actively in the social networks to which they belong and have information available for their education, entertainment and business.		
Definition: The family has radio or TV that they use to see the news (national and international), as well as educational and recreational programs.		
LEVEL 1: The family has no radio or television or is not abreast of the news.	LEVEL 2: The family has television and/or radio in their home, but they are not very aware of the latest national and international news. They use the radio and/or TV mostly for recreation.	LEVEL 3: The family has television and/or radio in their home to access a variety of programs: news, political debates and educational programs. The family is aware of the most recent national and international events, not only of sports events.
		
Source: - Alkire, Sabina, and Maria Emma Santos. "Measuring Acute Poverty in the Developing World: Robustness and Scope of the Multidimensional Poverty Index." *Oxford Poverty & Human Development Initiative (OPHI),*(2013). http://www.ophi.org.uk/wp-content/uploads/ophi-wp-59.pdf - "Ficha para la Identificación y Selección de Potenciales Beneficiarios". (2014). Secretaría Técnica de Planificación. República del Paraguay		

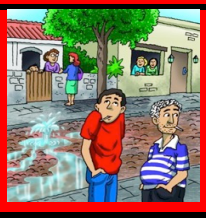
Indicator: 35. Entertainment and Recreation	**Dimension: Education & Culture**	
Justification: A healthy and productive life requires spaces for fun.		
Definition: The family has spaces for entertainment or distraction to relax and get away for a while from work and worries.		
LEVEL 1: Most family members do not have entertainment activities, or have them only sporadically.	LEVEL 2: Most family members have very few weekly entertainment activities.	LEVEL 1: All family members have several entertainment activities, which are at least weekly.
		
Source: - Barja, Gover, and Björn-Sören Gigler. "The Concept of Information Poverty and How to Measure It in the Latin American Context." DIGITAL POVERTY: Latin American and Caribbean Perspectives. International Development Research Centre (IDRC), 2007. http://www.idrc.ca/EN/Resources/Publications/openebooks/342-3/index.html#ch1tab3.		

Indicator: 36. Values Cultural Traditions and Historical Heritage	Dimension: Education & Culture	
Justification: Cultural traditions and historical heritage enable cultural identity and sense of belonging to the society in which a person lives.		
Definition: Cultural traditions: All that a generation inherits from previous ones and, appreciative of its value, passes it on to the next generations. The following are considered traditional: values, beliefs, customs and forms of artistic expression characteristic of Paraguay and/or the community to which the head of household belongs, especially those transmitted orally. Historical Heritage: It is the set of assets, both material and intangible, accumulated over time. These assets may be artistic, historical, archaeological, documentary, bibliographical, scientific or technical.		
LEVEL 1: The family does not recognize or show interest in cultural traditions and historical heritage.	LEVEL 2: The family does not recognize at least 3 cultural traditions and/or historical heritage, nor are proud of them, even if they practice them occasionally or regularly.	LEVEL 3: The family recognizes at least 3 cultural traditions and/or belonging to historical heritage, are proud of them and are part of their way of life
		
Source: - Wilber, Ken. Integral Psychology: Consciousness, Spirit, Psychology, Therapy. Boston: Shambala, 2000.		

Indicator: 37. Respects Other Cultures	Dimension: Education & Culture	
Justification: In a globalized world, respect for differences is fundamental for the family to integrate into society.		
Definition: The family tolerates and values cultural differences. They treat persons who do not share the same ideas, religion, lifestyle, language, race, sexual orientation, or with different capacities, on equal standing.		
LEVEL 3: All the family respects the diversity of persons. LEVEL 1: Most family members do not respect the diversity of persons.	LEVEL 2: Most family members respects the diversity of persons.	LEVEL 3: All the family respects the diversity of persons.
		
Source: - "The Chronic Poverty Report 2004-05." Chronic Poverty Research Centre, 2004-5. http://www.chronicpovertynetwork.org/resources/2015/7/17/chronic-poverty-report-2004-2005 - Millenium Development Goals. United Nations. http://www.un.org/millenniumgoals/		

Indicator: 38. Awareness of Human Rights (for Children, the Disabled, Women, and the Elderly)		**Dimension: Education & Culture**
Justification: The family must know and respect the rights of their weakest members.		
Definition: They are rights inherent to the person and proclaimed sacred, inalienable, imprescriptible, and beyond the scope of any political power. They are intended to protect some of the most vulnerable populations: women, children, elderly and disabled. Child labor or the exploitation of children is one of the most frequent violations.		
LEVEL 1: The children of the household are exploited and the rights of the elderly and/or disabled are not respected.	LEVEL 2: Most family members have a general idea of the existence of such rights exist, but cannot say which they are. However, the children of the household are not exploited and the elderly and the disabled are respected.	LEVEL 3: All family members are aware of the rights of children, women, the elderly and disabled persons. They respect these rights and acts to make others respect theirs.
		
Source: - "The Chronic Poverty Report 2004-05." Chronic Poverty Research Centre, 2004-5. http://www.chronicpovertynetwork.org/resources/2015/7/17/chronic-poverty-report-2004-2005 - Millenium Development Goals. United Nations. http://www.un.org/millenniumgoals/		

Indicator: 39. Are Part of a Self-Help Group	**Dimension: Organization & Participation**
Justification: Being part of a group enables the joining of forces in pursuit of a common goal.	
Definition: Family members form a group of persons who share a problem or common need, where they can express themselves and feel supported. (Women's Committee, Lions' Club, neighbors' commission, religious group, parents committee, professional association, sports club, other).	
LEVEL 1: No family member permanently belongs to a group.	LEVEL 2: One of more family members permanently belong to a group.	LEVEL 3: One or more family members permanently belong to two or more groups.
		
Source: - Bandura, Albert. Self-Efficacy: The Exercise of Control. 1st edition. Worth Publishers, 1997. - Grenny, Joseph, David Maxfield, Ron McMillan, Al Switzler, and Kerry Patterson. Influencer : The Power to Change Anything. McGraw-Hill, 2008.		

Indicator: 40. Influence on the Public Sector	Dimension: Organization & Participation	
Justification: It is necessary for the family to have influence on the public sector as many services causing poverty can only be provided by the State.		
Definition: The family has the capacity to organize themselves appropriately to request authorities to solve problems relating to their community.		
LEVEL 1: No family member has ever petitioned the authorities to solve a problem in their community.	LEVEL 2: One or more family members have petitioned the public sector occasionally to solve a problem of the community and never succeeded.	LEVEL 3: One or more family members petition the public sector on a regular basis whenever there is a problem in the community and has successfully resolved it in at least one occasion .
		
Source: - "The Chronic Poverty Report 2004-05." Chronic Poverty Research Centre, 2004-5. http://www.chronicpovertynetwork.org/resources/2015/7/17/chronic-poverty-report-2004-2005 - Bandura, Albert. *Self-Efficacy: The Exercise of Control*. 1st edition. Worth Publishers, 1997.		

Indicator: 41. Problem and Conflict-Solving Ability	Dimension: Organization & Participation	
Justification: Having the ability to solve problems and conflicts allows them to be addressed so that projects are able to move forward.		
Definition: The family is able to address increasingly complex problems and conflicts without avoiding or delegating the responsibility for their solution.		
LEVEL 1: The family does not admit there is a problem. They might say that the problems are due to bad luck. When confronted with conflicts, they evade the responsibility. They expect others to solve the problem.	LEVEL 2: The family recognizes when there are problems. On occasions they are able to address and/or solve some of them, but other times they blame others or the system, without seeing the influence they could have.	LEVEL 3: The family recognizes when problems and conflicts arise and adopt an assertive behavior: they solve all the problems and conflicts that arise. They address them positively and do not avoid them. the responsibility. They expect others to solve the problem.
		
Source: - Bandura, Albert. *Self-Efficacy: The Exercise of Control*. 1st edition. Worth Publishers, 1997. - Grenny, Joseph, David Maxfield, Ron McMillan, Al Switzler, and Kerry Patterson. Influencer : The Power to Change Anything. McGraw-Hill,		

Indicator: 42. Are Registered Voters and Vote in Elections	**Dimension: Organization & Participation**	
Justification: Voting is a form of active citizenship.		
Definition: Adults of the family are registered voters and usually vote in general and municipal elections.		
LEVEL 1: Not all family members are registered voters.	LEVEL 2: All family members are registered voters and sometimes vote in elections.	LEVEL 3: All family members are registered voters and usually vote in elections.
		
Source: - "The Chronic Poverty Report 2004-05." Chronic Poverty Research Centre, 2004-5. http://www.chronicpovertynetwork.org/resources/2015/7/17/chronic-poverty-report-2004-2005 - "Ficha para la Identificación y Selección de Potenciales Beneficiarios". (2014). Secretaría Técnica de Planificación. República del Paraguay		

Indicator: 43. Self-Confidence (Self-Esteem)	**Dimension: Self-Awareness & Motivation**	
Justification: Trusting their own strength makes the family willing to consider themselves competent to address the challenges of life.		
Definition: The family trust themselves. Their confidence is reflected externally and internally, in the relationship with their social groups, rules of society, or in their targets and personal standards.		
LEVEL 1: The family finds it difficult to relate to others, they might feel confused or threatened by the demands or perspectives of others persons known or unknown to them. They usually will keep their opinion to themselves out of fear of exposure.	LEVEL 2: The family feels confident and sure of themselves in surroundings and with persons known to them, but very rarely with new people. They feel more secure in surroundings known to them. Their self-esteem or self-confidence varies, depending on the situation and surroundings. On occasions they might feel embarrassed or ridiculed.	LEVEL 3: The family is able to feel pride of what they are and do. They trust themselves and their abilities, and do not allow doubts to affect them. They do not tend to feel ashamed.
		
Source: - Bandura, Albert. Self-Efficacy: The Exercise of Control. 1st edition. Worth Publishers, 1997. - Grenny, Joseph, David Maxfield, Ron McMillan, Al Switzler, and Kerry Patterson. Influencer : The Power to Change Anything. McGraw-Hill, 2008. - Wilber, Ken. Integral Psychology: Consciousness, Spirit, Psychology, Therapy. Boston: Shambala, 2000.		

Indicator: 44. Awareness of their Needs (*Mapa de Vida*)	**Dimension: Self-Awareness & Motivation**	
Justification: Being aware of their needs enables the family to see "what is missing" in their life and set their targets.		
Definition: The family is aware their needs go beyond the basic needs of food, housing and others. Therefore, they have short, medium and long term goals.		
LEVEL 1: The family only is aware of their basic needs for food, housing and immediate surroundings. Although they are not content, they might feel protected the way things are. They do not imagine living differently.	LEVEL 2: The family has the capacity to reflect on their present situation, and imagine how it could be different but do not have concrete targets or only have short term targets..	LEVEL 3: The family has the capacity to reflect and understand they present situation, and imagine how it could be different. They have concrete targets for the short, medium and long term and know how to reach them. ight feel protected the way things are. They do not imagine living differently.
		
Source: - Bandura, Albert. Self-Efficacy: The Exercise of Control. 1st edition. Worth Publishers, 1997. - Grenny, Joseph, David Maxfield, Ron McMillan, Al Switzler, and Kerry Patterson. Influencer : The Power to Change Anything. McGraw-Hill, 2008. - Wilber, Ken. Integral Psychology: Consciousness, Spirit, Psychology, Therapy. Boston: Shambala, 2000.		

Indicator: 45. Moral Conscience	**Dimension: Self-Awareness & Motivation**	
Justification: The level of development of a person is greater to the extent in which they have higher "moral conscience", i.e.to the extent which they consider more groups in their decision-making.		
Definition: The ability to make appropriate decisions, respecting people, the family and the community.		
LEVEL 1: The family only seeks to their own benefit when making a decision.	LEVEL 2: The family makes decisions according to the rules accepted in their immediate surroundings. They act to please and earn the respect of this group.	LEVEL 3: The family stands firm in making appropriate decisions for themselves and for the groups to which they belong and relate. a decision.
		
Source: - Wilber, Ken. Integral Psychology: Consciousness, Spirit, Psychology, Therapy. Boston: Shambala, 2000.		

Indicator: 46. Emotional-Affective Capacity	**Dimension: Self-Awareness & Motivation**	
Justification: Recognition of the emotions affecting the person leads to better self-control and a more enriching personal and social life.		
Definition: "The spectrum of emotions": Awareness of their emotions and those of others, ability to relate to others, experiencing a wide range of emotions, are aware, control and manage the relationship with thoughts, words and actions. Are aware of their strengths and weaknesses, and motivate themselves to achieve targets.		
LEVEL 1: The family almost only responds to impulses, are dominated by their emotions, act without thinking of the consequences to themselves and others.	LEVEL 2: The family can sometimes dentify their emotions or those of others, and control their reactions. Under stress or when facing a problem, they might close-up emotionally or act impulsively.	LEVEL 3: The family can identify their emotions and those of others. They have a desire to change them, and feel comfortable expressing them to the groups to which they belong. They are able to control their actions within a wide range of emotions. the consequences to themselves and others.
		
Source: - Wilber, Ken. Integral Psychology: Consciousness, Spirit, Psychology, Therapy. Boston: Shambala, 2000.		

Indicator: 47. Aesthetic Self-Expression, Art and Beauty	**Dimension: Self-Awareness & Motivation**	
Justification: When persons value themselves physically (are not ashamed of their appearance), their self-esteem increases.		
Strategy for solution: Same as indicator 44.		
Definition: Persons value themselves physically and as a person: are not ashamed of their physical appearance and way of being. They have their own concepts and criteria of beauty and art and try to apply them to themselves.		
LEVEL 1: Most family members do not have good perception of themselves. They have no concepts or personal criteria of beauty or art: there are no objects or persons in their surroundings that impress their aesthetic sense favorably: they do not particularly like to dress up and look good; nor is it a gesture which they value in others.	LEVEL 2: Some family members have limited criteria of beauty and art. They admire and/or value people who apply them in their way of dressing and appearance but do not dare to express their own style. They do not have good perception of themselves and feel ashamed when dressed differently or looking good.	LEVEL 3: All family members have a good perception of themselves or at least value themselves physically (are not ashamed of their physical appearance). They have their own concepts and criteria of beauty and art and try to apply them in their the way of dressing and general appearance. They like to dress up and look good. It is also a habit they value in others. thetic sense favorably: they do not particularly like to dress up and look good; nor is it a gesture which they value in others.
		
Source: - Wilber, Ken. Integral Psychology: Consciousness, Spirit, Psychology, Therapy. Boston: Shambala, 2000.		

Indicator: 48. Family Violence	**Dimension: Self-Awareness & Motivation**	
Justification: This is a human right of women, fundamental for a good life and development.		
Definition: Any kind of violence against women or other vulnerable members. It can be physical (physical violence, sexual abuse, isolation), psychological (emotional abuse: jeering, ridiculing, humiliating) or economic (not allowing women to work or administrate their own money, steal their money).		
LEVEL 1: There is family violence in the household, and no specific actions to avoid and eliminate it are being taken.	LEVEL 2: In the family there is some kind of violence for which there are specific actions that have been taken to avoid and eliminate it (complaints, psychological support, etc.)	LEVEL 3: There is not violence of any kind in the family
		
Source: - "The Chronic Poverty Report 2004-05." Chronic Poverty Research Centre, 2004-5. http://www.chronicpovertynetwork.org/resources/2015/7/17/chronic-poverty-report-2004-2005 - Millenium Development Goals. United Nations. http://www.un.org/millenniumgoals/		

Indicator: 49. Entrepreneurship	**Dimension: Self-Awarenes & Motivation**	
Justification: Entrepreneurship is a quality that every human being should be endowed with.		
Definition: The person proactively - not reactively - seeks to solve the situations they are faced with. Learns from mistakes and keeps trying to make their idea or dream a reality. Irradiates energy and spreads their enthusiasm to achieve goals and generate commitment with those who surround them acting as a "leader" in their group.		
LEVEL 1: Adult family members do not have entreprenurial spirit or skilks, do not dare to undertake anything new nor wish to change, they are conformists.	LEVEL 2: Some adult family members are entrepreneurs in certain aspects of their life, but on occasions abandon their projects.	LEVEL 3: Adult family members are entrepreneurs in all situations affecting them (personal, family, work, social). conformists.
		
Source: - Drucker, Peter. Innovation and Entrepreneurship. New York: Harper Collins, 1993.		

Indicator: 50. Autonomy and Decision-Making Capabilities	**Dimension: Self-Awareness & Motivation**	
Justification: The capacity to make decisions on matters directly affecting them is a necessary characteristic in any sphere of life.		
Definition: The person in general controls their day-to-day decisions. They participate in the decision-making of the household and are able to make decisions on various aspects of their life (personal and family budget, work, health problems, their education and that of their children, religious practice, participation in community events, their vote in elections).		
LEVEL 1: Only one adult member in the family is in charge of: a) Making decisions for the family in all areas that affect them. b) Make decisions independently in the areas that affect them directly and personally. c) Does not allow other family members to be autonomous or participate in the family decision making process.	LEVEL 2: Not all adult family members are able/allowed to: a) Actively participate in decision making process depending their role in the family. b) Make decisions independently in the areas that affect them directly and personally.	LEVEL 3: All adult family members: a) Actively participate in decision making process depending their role in the family. b) Make decisions independently in the areas that affect them directly and personally.
		
Source: - Bandura, Albert. Self-Efficacy: The Exercise of Control. 1st edition. Worth Publishers, 1997. - "The Chronic Poverty Report 2004-05." Chronic Poverty Research Centre, 2004-5. http://www.chronicpovertynetwork.org/resources/2015/7/17/chronic-poverty-report-2004-2005 - Grenny, Joseph, David Maxfield, Ron McMillan, Al Switzler, and Kerry Patterson. Influencer : The Power to Change Anything. McGraw-Hill, 2008. - Millenium Development Goals. United Nations. http://www.un.org/millenniumgoals/		

6.2 **Appendix 2: List of Indicators with Problematic Definitions**

Table 5.5: List of Indicators with Problematic Definitions	
Indicator	Problematic Issue – Clients and Non-Clients
Respect other Cultures	Definition of culture is taken in a narrow way, e.g. they respect people from other nationalities but not homosexuals
Self-Help Groups	The meaning of self-help group is misunderstood. Sometimes families believe that their family is a self-help group.
Insurance	A man thought that only public medical insurance counted as medical insurance. He did not immediately understand that the indicator was about any kind of insurance.
Vaccinations	Some believed getting checked at the local health post is enough to be green, regardless of whether they got vaccinated or not.
Affective and Emotional Capacity	Some did not understand what this meant. The title of the indicator is difficult to understand.
Nearby Health Post	Sometimes it is reported that there is a health post near the client's house, but the client also reports that it is empty.
Diversified Sources of Income	Clients don't understand this indicator. *Asesoras* reported having to take extra time to explain it.
Savings	Some clients reported that they "save" by purchasing things (or livestock). In the event of an emergency they would sell it again.
Separate Bedrooms	There was much confusion surrounding this indicator. What if children are of different genders but of the same age? What if they are of the same gender but of considerably different ages? What if babies sleep with the parents?
Safety	The "green" level of this indicator states that no member of the family or person "surrounding" the household has been a victim of violence in the past 6 months. *Asesoras* have difficulties defining when someone is member of the family (if an uncle was mugged is that yellow?) and what "surrounding" means (if a neighbor was robbed, is that yellow?).
Capacity to Generate Income	The indicator uses the word "dexterity" (*destreza*), and this was confusing to some non-clients.

6.3 Appendix 3: Continua and Dichotomies in Approaches to Poverty Measurement

Appendix 4: Continua and Dichotomies in Approaches to Poverty Measurement[173]		
Poverty Concepts	Unidimensional ←→ multi-dimensional	Whether poverty is seen as measurable by one variable (usually consumption shortfall) or requires an appreciation of more dimensions
	Objective ←→ subjective	Whether poverty is seen as universally, objectively measurable or whether there will always be a subjective value judgment involved
	Relative ←→ absolute	Relative poverty represents the deprived state of one section of the population in comparison to another section. Absolute poverty represents a level of income which does not permit a household or individual to obtain a minimum agreed level of wellbeing.
Methods	Dynamic ←→ static	A dynamic concept distinguishes the 'transitory poor' (those falling into poverty due to temporary adversity) from the chronically poor; a static concept does not
	Direct ←→ indirect	Whether measurement captures actual satisfaction of needs (direct) or [captures] resources commands to meet its basic needs, i.e. the potential satisfaction of needs (indirect)
	Identificatory ←→aggregative	'who are the poor?' versus 'What is the overall level of poverty?' Aggregation often implies representativity of the sample and common units of measurement across all cases examined
	Economistic ←→ non-economistic	Economistic methods gather data (usually income/consumption levels) across a representative sample of the population and derive predictions and statistical inferences across the whole population on that basis; non-economistic methods do not.
	Extractive ←→ Empowering	Whether methods seek only to gather data for analysis elsewhere, or to facilitate the empowerment of participants
	Rapid←→ In-depth	Whether researcher's interaction with the researched is rapid and relatively superficial, or is a long process aiming at in-depth understanding
	Contextual ←→ Non-contextual	Extent to which method attempts to understand human behavior within the social, cultural, economic and political environment of a locality
Data	Objective ←→ subjective	Whether the datum is a piece of information which can be objectively verified and compared to established benchmarks, or a subjective perception on opinion.
	Micro ←→ Macro	A micro approach (usually community or village level) emphasizes patterns on a larger (usually national) level
	Qualitative ←→ Quantitative	Whether findings are expressed in non-numerical forms or in numbers, from which empirical generalizations are often made.

[173] McGee and Brock, "From Poverty Assessment to Policy Change: Processes, Actors and Data."

6.4 **Appendix 4: PWR Interview Guidelines**

	Appendix 5: PWR Interview Guidelines
	The purpose of the Participatory Wealth Ranking is for the community members, who know the most about other community members that surround them, to provide a ranking of the wealth of each household in the community. In order to do this, 30 people will be invited to a community event. These people will be separated into different tables and the following activities will be performed at most 3 times. **Outline of activities** a. Warm-up interview for rapport building b. Wealth Ranking c. Analysis of results After each round of activities the tables will be re-formed, randomly altering the people that make them up, in order for different combinations of people to be in different tables in each round. 2-6 tables will be set up, with 5-15 members in each. There will always be an equal number of people in each table.
Objectives	**Questions**
Warm-up interview for rapport building	If first round • State purpose of activity • Explain how the activity will work • Discuss confidentiality and sign consent forms • Open the floor for any questions If second/third round • Explain why multiple rounds are performed • Open the floor for any questions
Wealth Ranking	Before the event, the last names of each household will be written on slips of paper by the research team. The names of the community households will come from information Fundación Paraguaya already had about the selected community beforehand, but community members will be encouraged to add names if they believe a household last name is missing. The participants of each table will be asked to rank the household names according to wealth in the following way: • They will be asked to divide the names into piles, each pile representing one wealth level: pile 1 for the poorest, pile 2 for the second-poorest, and so on. They can use however many piles they'd like, but it should be at least three and not more than 10. • Once the rankings are completed, table members will be asked if any household was missing from the list provided to participants. In order for names mentioned in one table to be available in another table, research assistants moderating each table will shortly exchange names proposed in their respective tables. After all names are consolidated, research assistants will return to their tables in order for the participants to rank the last household names. • Rankings will not be processed in the moment. Research assistants will collect the responses, and move on to re-form the tables for the next round of wealth ranking.
Analysis of results	After the ranking is done, each family gets their wealth score according to the following formula: • 100/(number of piles) * (rank number of the pile). • For example, if a group produced 5 piles, every household in the poorest pile would

	get 100/5* 1= 20 points; every household in the middle pile would get 100/5*3 = 60 points; and every household in the richest pile would get 100/5*5= 100 points. • In a last step, the wealth score for each family is calculated by averaging their scores across the results of all the tables.
Short break	Short break
Conclusion	After the three rounds of rankings, the results will be calculated for each of the families, and they will be presented to the community members as a whole.
	Say Thank You and Finish.

6.5 **Appendix 5: Experts on Poverty Interview Guidelines**

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Appendix 6: Experts on Poverty Interview Guidelines	
Warm up — Greetings and introduction — Explanation of interview process, purpose and consent form signatures	
Objectives	**Questions**
Perceptions on poverty	**Starter: To begin, I would like to talk about poverty:** 1. What do you think poverty means? a. If you had to describe a stereotypical poor person, what would he or she look like? (Press for attitudes, characteristics, habits, etc.) b. What causes poverty? What things or characteristics make some people poor and some people not-poor? c. How are the lives of poor people different from the lives of people who are not poor? 2. Can poverty be eliminated in Paraguay? How? a. Whose job is it to eliminate poverty? b. What can an individual do to escape poverty for himself/herself?
Poverty Stoplight	**Starter: Now I would like to talk about the Poverty Stoplight:** 1. Have you ever heard about the "Poverty Spotlight" visual survey? a. What did you hear about it? b. Who told you about it? c. Did it sound interesting to you or not? Why or why not? 2. When you hear the name "Poverty Stoplight," what are the first words that come to mind? What does it make you think of? 3. Looking at the dimensions that the Poverty Spotlight visual survey covers (Income and Employment, Health and Environment, Housing and Infrastructure, Education and Culture, Organization and Preparation, and Self Awareness and Motivation) do you think all these dimensions are relevant to the idea of poverty? a. Are any of these dimensions more relevant than others or are they all equally relevant to the idea of poverty? Why? b. In your opinion, are any dimensions missing? Are any dimensions superfluous? 4. Now I would like to take a deeper look into the indicators inside each of these dimensions. Let's begin with (show notecard. Rotate order). According to the Poverty Stoplight, these are the indicators that make up the dimension (Name of dimension). In your opinion, is this correct? Is there a missing indicator to this dimension? Is there a superfluous indicator to this dimension? a. Repeat process for all dimensions and try to talk about the relevance/irrelevance of each indicator. b. Classify each indicator by "Essential," "Non-essential but useful," "not necessary." 5. Each client is asked to place himself on one of three "ranks" for each indicator: Red, Yellow and Green. Are three options per indicator enough, too few or too many? 6. The answers to the Poverty Stoplight are self-reported. Do you think this is something positive or something negative? Why?

	7. Does the Poverty Stoplight accurately measure the poverty of a person or not? Why or why not? 8. The Poverty Stoplight does not aggregate its result into an index or "grade" and prefers to have several dashboard indicators instead. What do you think about the lack of aggregation of the tool? Is it necessary for someone to be given an overall index or "grade" for poverty, or is it preferable to have the separate indicators that aren't summed up into a "grade." Why?
Compare and contrast: Poverty Spotlight to other poverty measurement tools	**Starter: Now I would like to talk about the Poverty Stoplight in relation to other poverty measurement tools for the microfinance industry:** 1. What other poverty measurement tools have you heard of for the microfinance industry? 2. What is positive about this tool? 3. What is negative about this tool? 4. Ask to compare and contrast each with the Poverty Stoplight. 5. If you had to choose between this tool and the Poverty Stoplight, which one would you choose? Why? If not mentioned spontaneously, repeat the questions of this section for (rotate order): • Grameen Bank Progres out of Poverty Index (PPI) • USAID Poverty Assessment Tool (PAT) • Cashpor House Index • Participatory Wealth Ranking • FINCA Client Assessment Tool (FCAT) • World Bank CGAP Poverty Assessment Tool (CGAP-PAT) • Analysis of Microcredit Summit Poverty Measures
	Say Thank You and Finish.

6.6 **Appendix 6: Loan Officers Interview and Focus Groups Guidelines**

	Appendix 7: Loan Officers Interviews and Focus Groups Guidelines
	Warm up —Greetings and introduction —Explanation of interview process, purpose and consent form signatures.
Objectives	**Questions**
Perceptions on poverty	**Starter: To begin, I would like to talk about poverty:** 3. What do you think poverty means? a. If you had to describe a stereotypical poor person, what would he or she look like? (Press for attitudes, characteristics, habits, etc.) b. What causes poverty? What things or characteristics make some people poor and some people not-poor? c. How are the lives of poor people different from the lives of people who are not poor? 4. Can poverty be eliminated in Paraguay? How? a. Whose job is it to eliminate poverty? b. What can an individual do to escape poverty for himself/herself? 5. What do the clients usually think poverty means? a. How do clients perceive poverty before they interact with the Poverty Stoplight? b. How do their perceptions change after taking the Poverty Stoplight visual survey?
Poverty Stoplight	**Starter: Now I would like to talk about the Poverty Stoplight:** 6. Why do people take the Poverty Stoplight visual survey in the first place? a. How does the process work? If I was a new client, how would taking the visual survey work for me? b. Are the clients generally open to the idea of responding to visual survey or not? What are some of their fears? What do you usually do or say to calm these fears? 7. Thinking about the Poverty Stoplight and its application process, are there any problems with the visual survey or the application process in general? 8. Thinking about the Poverty Stoplight and its application process, are there any benefits to performing the visual survey and the application process in general? 9. On average, how long does the visual survey take? Do clients ever seem impatient during the application or are they generally fine with the duration? a. Does the length of the visual survey interfere with your other tasks or not? b. How much time of your day is spent on tasks that are related to the Poverty Stoplight? (Interviewing, data processing, data storing, data updating, client contacting, etc.) c. Do you think responding to the visual survey is a useful way to spend your time, or is it just a formality that is required? 10. Which questions/indicators do you think are the most important/least important? Why? a. Should some questions/indicators be eliminated? Which ones? Why? b. Should some questions/indicators be added? Which ones? Why? 11. Do clients answer all the questions/indicators or do you help find out the answers to some questions? How do you help them? a. Do clients usually understand all the questions or are there questions they

	have more difficulties with? Which ones do they have the most amount of difficulty with? b. What happens if a client does not understand a question? How do you ensure they fill out an answer? c. What do you think about the Poverty Stoplight being performed on a tablet? Does the tablet make your job easier or more difficult? d. How does the tablet affect your safety while performing the Poverty Stoplight? (ask for concrete examples) e. Does the tablet make the visual survey easier or more difficult for the clients? f. Do clients ever feel uncomfortable using the tablets to respond to the visual survey? g. What do people think about the colors red, yellow and green? Are people afraid of choosing any option, or are they pragmatic when choosing? Why? h. Are three-option answers too many, too few or enough for each question? i. (show cartoons and live pictures) Recently the Poverty Stoplight made all pictures cartoons. Which is easier for the clients to understand? Why?
Poverty Stoplight Results and Interpretation	**<u>Starter:</u> Now I wanted to ask you about the results of the Poverty Stoplight:** 6. How are the results usually presented to the clients? What exactly is given to them? 7. Do clients understand the results of the Poverty Stoplight? Is there anything about the results they usually struggle with? 8. Are clients naturally interested in the results after taking the Poverty Stoplight, or is it your job to make them be interested in the results? 9. Do clients feel positively or negatively about the results? Do clients feel empowered by knowing how they are poor, or are they frustrated by being defined as poor by the tool? 10. Do clients use the results of the Poverty Stoplight? How do they use the results? 11. Does the Poverty Stoplight accurately measure the poverty of a person or not? Why or why not? a. What do you think about the lack of aggregation of the tool? b. Is it necessary for someone to be given an overall index or "grade" for poverty, or is it preferable to have the separate indicators that aren't summed up into a "grade." Why?
	Say Thank You and Finish.

6.7 **Appendix 7: Clients Interview and Focus Group Guidelines**

	Appendix 8: Clients Interview and Focus Group Guidelines
	Warm up —Greetings and introduction —Explanation of interview process, purpose and consent form signatures.
Objectives	**Questions**
Perceptions on poverty	**<u>Starter:</u> To begin, I would like to talk about poverty:** 12. What do you think poverty means? a. If you had to describe a stereotypical poor person, what would he or she be like? (Press for attitudes, characteristics, habits, etc.) b. What causes poverty? What things or characteristics make some people poor and some people not-poor? c. How are the lives of poor people different from the lives of people who are not poor? 13. Can poverty be eliminated in Paraguay? How? a. Whose job is it to eliminate poverty? b. What can an individual do to escape poverty for himself/herself?
Poverty Stoplight	**<u>Starter:</u> Now I would like to talk about the Poverty Stoplight:** 14. When you hear the name "Poverty Stoplight," what are the first words that come to mind? What does it make you think of? 15. What led you to take the Poverty Stoplight visual survey? 16. What was the application of the Poverty Stoplight visual survey like for you? c. How long did it take? Was it too long, too short or just right? d. Do you think the Poverty Stoplight visual survey was a worthwhile procedure or was it just a formality to get over with? 17. Was the questionnaire difficult to understand or easy to understand? Why? a. What was your experience with the loan officer? Did he/she properly explain the process and the purpose of the visual survey? b. What did you think about the Poverty Stoplight being performed on a tablet? Do you think the tablet visual survey is positive or negative? c. Which questions/indicators do you think were the most important/least important? Why? 18. Where there any questions/indicators that made you uncomfortable or uneasy? a. (if yes) Which questions/indicators made you uncomfortable? b. (if yes) What about these questions/indicators made you uncomfortable? c. (if yes) Can something be done to make the questions/indicators less uncomfortable? (Different setting, privacy, etc.) 19. Show image of visual survey layout (one question/indicator) a. What do you think of the colors Red, Yellow and Green? What do they represent? Do people want to choose one over another? b. Are three options enough, too many or too few? c. What do you think of the pictures? Do the pictures make things easier or more difficult? (Show groups of 3 pictures without tags and ask them to rank them. ROTATE.) Which picture represents very poor, poor, not poor? d. (show cartoons and live pictures) Recently the Poverty Stoplight made all pictures cartoons. Which do you prefer? Why? 20. Does the Poverty Stoplight work to identify poverty or not? Why?

	21. How many reds or yellows are necessary for someone to be considered poor?
Results and effects of the Poverty Stoplight	**<u>Starter:</u> Now I would like to talk about the results of the Poverty Stoplight:** 22. When you received the results of the Poverty Stoplight for the first time, what was the first thing that came to your mind? a. How did you feel about results? (push for positive and negative feelings about results) b. Were the results easy to understand or were they difficult to understand? Did someone help you understand them? c. How did you use the Poverty Stoplight results? d. Was there a change in the way you viewed poverty before and after taking the Poverty Stoplight visual survey? How was it before, and how was it after? 23. Has anything in your daily lives changed since you filled out the Poverty Stoplight, be it positive or negative? What? 24. Did the Poverty Stoplight have an effect, be it positive or negative, in your neighborhood? What positive things resulted from it? What negative things resulted from it? 25. Would you recommend taking the Poverty Stoplight to someone else? To who? Why? 26. Taking everything the group said here today, would you say that the Poverty Stoplight is something positive or something negative for the country in general? Why?
	<u>Say Thank You and Finish.</u>

6.8 **Appendix 8: Staff Members Interview Guidelines**

	Appendix 9: Staff Members Interview Guidelines
	Warm up — Greetings and introduction — Explanation of interview process, purpose and consent form signatures.
Objectives	**Questions**
Perceptions on poverty *(Short. Focus on other sections)*	**Starter: To begin, I would like to talk about poverty:** 27. What do you think poverty means? a. If you had to describe a stereotypical poor person, what would he or she look like? (Press for attitudes, characteristics, habits, etc.) b. What causes poverty? What things or characteristics make some people poor and some people not-poor? c. How are the lives of poor people different from the lives of people who are not poor? 28. Can poverty be eliminated in Paraguay? How? a. Whose job is it to eliminate poverty? b. What can an individual do to escape poverty for himself/herself?
Poverty Stoplight	**Starter: Now I would like to talk about the Poverty Stoplight:** 29. Why do people take the Poverty Stoplight visual survey in the first place? e. What is the process of taking the visual survey like? f. If I were a client, why would I take the Poverty Stoplight, how would the process go? 30. Other than the clients, who else is the Poverty Stoplight useful for? What benefits can the Poverty Stoplight bring to unaffiliated institutions? a. What are some examples of other organizations, institutions or businesses that use the Poverty Stoplight? b. What do they use it for? c. How do they use it? How do they implement it? d. Why is the tool useful for them? 31. What are all the costs of using the Poverty Stoplight? Including interviewing, tools required, organizing/managing/updating data, contacting subjects etc.? a. What kind of specialization do loan officers/interviewers require to be able to perform the visual surveys? b. What resources are needed? (computer, internet, software, etc.) c. How long does the visual survey take? d. When visual surveys are performed by other institutions, how is the quality controlled/ensured? 32. What are the biggest advantages of the Poverty Stoplight for Fundación Paraguaya? 33. What are the biggest challenges/problems with the tool? 34. Does the Poverty Stoplight accurately measure the poverty of a person or not? Why or why not? 35. The Poverty Stoplight does not aggregate its result into an index or "grade" and prefers to have several dashboard indicators instead. What do you think about the lack of aggregation of the tool? Is it necessary for someone to be given an overall index or "grade" for poverty, or is it preferable to have the separate indicators that aren't summed up into a "grade." Why?

Poverty Stoplight and changes in perspectives about poverty	**<u>Starter:</u> Now I would like to talk about the Poverty Stoplight in relation to other poverty measurement tools in the microfinance industry:** 36. What other poverty measurement tools have you heard of? c. What is positive about this tool? d. What is negative about this tool? e. Ask to compare and contrast each with the Poverty Stoplight. f. Administratively, how does this measurement compare to the Poverty Stoplight? i. Is it shorter or longer? ii. Is it cheaper or more expensive? iii. Can it be integrated to daily activities? g. Administratively, how do the benefits of this tool compare to the Poverty Stoplight? i. How would an unaffiliated institution or business use this tool in comparison to how they would use the Poverty Stoplight? ii. Are the different tools more attractive to different types of institutions or businesses? If not mentioned spontaneously, repeat the questions of this section for each(rotate order): • Grameen Bank Progres out of Poverty Index (PPI) • USAID Poverty Assessment Tool (PAT) • Cashpor House Index • Participatory Wealth Ranking • FINCA Client Assessment Tool (FCAT) • World Bank CGAP Poverty Assessment Tool (CGAP-PAT) • Analysis of Microcredit Summit Poverty Measures
	<u>Say Thank You and Finish.</u>

6.9 **Appendix 9: Non-Client Interview Guidelines**

	Appendix 10: Non-Client Interview Guidelines
	Greetings and introduction Explanation of interview process, purpose and consent form signatures.
Objectives	**Questions**
Perceptions on poverty	**<u>Starter:</u> To begin, I would like to talk about poverty:** 37. What do you think poverty means? a. If you had to describe a stereotypical poor person, what would he or she look like? (Press for attitudes, characteristics, habits, etc.) b. What causes poverty? What things or characteristics make some people poor and some people not-poor? c. How are the lives of poor people different from the lives of people who are not poor? 38. Can poverty be eliminated in Paraguay? How? a. Whose job is it to eliminate poverty? b. What can an individual do to escape poverty for himself/herself?
Poverty Stoplight Introduction and Perception	**<u>Starter:</u> Now I would like to talk about the Poverty Stoplight:** 39. When you hear the name "Poverty Stoplight," what are the first words that come to mind? What does it make you think of? 40. Have you ever heard about the Poverty Stoplight? a. What did you hear about it? b. Who told you about it? c. Did it sound interesting to you? Why or why not? For those who haven't heard about it, the Poverty Stoplight is a visual survey that can help people identify a handful of specific areas in which they might be poor, and works with them on strategies on how to address the problems in these areas. It measures six dimensions: Income and Employment, Health and Environment, Housing and Infrastructure, Education and Culture, Organization and Participation, and Self-Awareness and Motivation. Through measuring these six dimensions the Poverty Stoplight creates a plan for people, laying out what measures they should take in order to be able to escape poverty. (visual aids) 41. Learning more about the Poverty Spotlight just now, what do you think about it in general? a. Is it something positive or something negative? Why? b. Would you like to participate in this program? Why or why not? 42. Which questions/dimensions do you think are the most important/least important? Why? a. Are certain indicators or dimensions superfluous? b. Are certain indicators or dimensions missing? Would you add something? 43. Do any of these questions/indicators seem like they would make someone uncomfortable? Why or why not? a. (if yes)Which questions/indicators made you uncomfortable? b. (if yes) What about these questions/indicators made you uncomfortable? c. (if yes) Can something be done to make the questions/indicators less uncomfortable? (Different setting, privacy, etc.) 44. Show image of question layout a. What do you think of the colors Red, Yellow and Green? What do they represent? b. Are three options enough, too many or too few? c. What do you think of the pictures? Do the pictures make things easier or

	more difficult? (Show groups of 3 pictures without tags and ask them to rank them. ROTATE.) Which picture represents very poor, poor, not poor? d. (show cartoons and live pictures) Recently the Poverty Stoplight made all pictures cartoons. Which do you prefer? Why?
Poverty Stoplight perceived effects	**<u>Starter:</u> Now that you have seen the Poverty Stoplight model:** 45. Does this visual survey adequately measure whether a person is poor or not? Why or why not? 46. Is this program capable of eliminating poverty? Why or why not? 47. Has your perception about what it means to be poor changed or has it remained the same? How did your perspective change or why did it remain the same? 48. Can this visual survey help an individual person escape poverty or not? 49. Taking everything that was said in this group today, do you in general feel that the Poverty Stoplight is something positive or something negative? Why?
	<u>Say Thank You and Finish.</u>

6.10 Appendix 10: Consent Form for Visual Survey Application

Tulane University Human Research Protection Office
Social/Behavioral IRB Consent Form for Participation in a Research Study
The Poverty Stoplight: Time for a New Metric in Microfinance?

Principal Investigator: Martin Burt
Study Title: The Poverty Stoplight: Time for a New Metric in Microfinance?
Performance Site: Paraguay

The following informed consent is required by Tulane University for any research study conducted by investigators at the University. This study has been approved by the University's Institutional Review Board for Human Subjects.

Introduction
You are invited to participate in a research study to evaluate a metric and coaching methodology called the Poverty Stoplight. Its objectives are to help Fundación Paraguaya microfinance clients operating in village banks to identify and overcome poverty across 6 dimensions and 50 indicators and to provide the microfinance industry with a more effective and efficient metric.

You are being asked to participate because you are:
1) A Fundación Paraguaya client
   or
2) A community member referred by a Fundación Paraguaya client

No research activity is to be conducted until you have had an opportunity to review this consent form, ask any questions you may have, and sign this document.

Disclosure of Potential Conflict of Interest
The Principal Investigator in this research study is also the Executive Director of Fundación Paraguaya, the nongovernmental organization which developed Poverty Stoplight, a survey or questionnaire to measure poverty and help people in poverty improve their situation. The purpose of this research study is to evaluate the efficacy of Poverty Stoplight. The validation of Poverty Stoplight as an effective methodology (or proof that the survey provides correct information) could benefit Fundación Paraguaya and therefore its Executive Director.

Can I stop being in the study and what are my rights?
You do not have to be in this study if you do not want to. If you agree to be in the study, but later change your mind, you may drop out at any time. There are no penalties or consequences of any kind if you decide that you do not want to participate. You also do not have to answer any question that you do not want to answer; you can skip any question you like.

Why is this study being done?
The purpose of this research study is to investigate whether the Poverty Stoplight could be an effective and efficient metric for the microfinance community. The research will test whether the Poverty Stoplight correctly identifies and helps people overcome poverty across 6 dimensions and 50 indicators for clients involved in village banks.

What are the study procedures? What will I be asked to do?

The research will take place in various communities, Fundación Paraguaya offices, and private household locations throughout Paraguay. If you agree to take part in this study you will be asked to complete the Poverty Stoplight visual survey. If you are already a Fundación Paraguaya client, you will be asked to fill the survey out a second time in the near future. If you are not a Fundación Paraguaya client, this means filling out the same visual survey for the first time. In either case, the process will take about 30 minutes and will be completed at your home at a time that is convenient for you. The survey consists of 50 questions, each one being an indicator for poverty. For each of these indicators, you will be asked to identify which of the three answer options best describes your personal situation. The questions cover the six dimensions: income and employment, health and environment, housing and infrastructure, education and culture, organization and participation, and interiority and motivation. There will be 325 Fundación Paraguaya clients and 50 non-clients participating in this part of the study. Our research project also includes other study activities, namely, interviews and focus groups. We may invite you to participate in one of them if you are interested in doing so.

What are the risks or inconveniences of the study?
We believe there are no known risks associated with this research study. However, some questions touch on personal issues that may make you feel uncomfortable. You may refuse to answer any question, or discontinue participation at any time. In case of need for psychological or social services, the interviewer can refer you to appropriate community services. An additional possible inconvenience may be the time it takes to complete the study. Also consider a breach of confidentiality.

What are the benefits of the study?
You may not directly benefit from this research; however, we hope that your participation in the study may help Fundación Paraguaya to improve the ways in which it helps clients operating in village banks to identify and overcome poverty across 6 dimensions and 50 indicators. This could be beneficial for the wider microfinance industry, too, as it can provide many organizations with a more effective and efficient metric. Fundación Paraguaya believes that the Poverty Stoplight tool can empower hundreds of thousands of people around the world to identify their individual form of poverty and give them the necessary tools to overcome it.

Will I receive payment for participation?
We understand you are using valuable work time to help us. Therefore, we would like to compensate you for your participation. You may choose if you would like to receive cash or a small gift.

If you would like to receive **cash**, you will be compensated for your time at 150%of the national minimum wage. The national hourly minimum wage is Gs. 7,600, thus you will receive Gs. 4,370 for your time commitment of 30 minutes. You will be reimbursed in cash at the end of the research activity. If you decide to withdraw prematurely, you will receive two thirds of the agreed amount (if you withdraw more than halfway through the activity) or one third of the agreed amount (if you withdraw less than halfway through the activity).

If you would like to receive a **gift**, you may choose one from various options that the research team will offer you. The gift will be given at the end of the activity. If you decide to withdraw prematurely, you will receive the gift when you leave.

Are there costs to participate?
There are no costs to you to participate in this study. But if you are required to travel, the research team will reimburse you in cash for bus tickets, parking, or whatever other cost you may incur to participate.

How will my personal information be protected?
The following procedures will be used to protect the confidentiality of your data. The researchers will keep all study records (including any codes to your data) locked in a secure location. Research records will be labeled with a unique code. All electronic files (e.g., database, spreadsheet, etc.) containing identifiable information

will be password protected. Any computer hosting such files will also have password protection to prevent access by unauthorized users. Only the members of the research staff will have access to the passwords.

While personally identifiable information will be collected to match data records, these identifiers will not be shared with the research team. Instead, data is collected via the standard tablet visual survey instrument and identified by a code linking the data to the previous record of the family (if applicable). If you are not a client of Fundación Paraguaya, no personally identifiable information about you will be collected, but your data will be identified through an anonymous code. Hence, the research team will only work with anonymized data.

Data that will be shared with others will be coded as described above to help protect your identity. At the conclusion of this study, the researcher may publish his findings. Information will be presented in summary format and you will not be identified in any publications or presentations. Any master key, audio recording, and other data described in this paragraph will be maintained in accordance with the security provisions of this paragraph until destroyed by the researcher. All fieldworkers will be trained in the need for total confidentiality of all information collected.

You should also know that the Tulane University Human Research Protection Office, Social/Behavioral Institutional Review Board (IRB) and/or the Office of Research Compliance may inspect study records as part of its auditing program, but these reviews will only focus on the researchers and not on your responses or involvement. The IRB is a group of people who review research studies to protect the rights and welfare of research participants.

Who do I contact if I have questions about the study?
Take as much time as you like before you make a decision to participate in this study. We will be happy to answer any question you have about this study. If you have further questions about this study, want to voice concerns or complaints about the research or if you have a research-related problem, you may contact the principal investigator (Martin Burt, 021-609-277). If you would like to discuss your rights as a research participant, discuss problems, concerns, and questions; obtain information; or offer input with an informed individual who is unaffiliated with the specific research, you may contact the Tulane University Human Research Protection Office at +1-504-988-2665 or irbmain@tulane.edu.

Documentation of Consent:

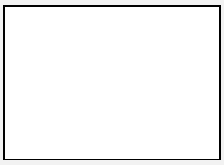
I have read this form and decided that I will participate in the research project described above. Its general purposes, the particulars of involvement and possible risks and inconveniences have been explained to my satisfaction. I understand that I can withdraw at any time. My signature also indicates that I have been offered a copy of this consent form.

_____	_____	_____
Subject's Signature	Name	Date

_____	_____
Person Obtaining Consent's Signature and Name	Date

****Fill out only in case that the subject cannot read or write****

I am unable to read but this consent document has been read and explained to me by_____ (name of reader). I volunteer to participate in this research.



_____	_____	_____
Subject's Name	Subject's Thumbprint	Date

_____	_____	_____
Reader's Signature	Name	Date

_____	_____
Person Obtaining Consent's Signature and Name	Date

****Fill out only in case that the subject cannot read or write****

6.11 Appendix 11: Index Tree of Grounded and Pre-Determined Codes

Grounded Codes

1. **Institutions**: The header for the group of codes referencing institutional structures identified and discussed
    - 1.1 **Government**: All references to any formal government institution were assigned this code.
    - 1.2 **Civil Society**: Mentions of civil society or non-governmental organizations were assigned this code.
    - 1.3 **Fundación Paraguaya**: Used to code mentions of Fundación Paraguaya.
    - 1.4 **Individuals**: This code was assigned to mentions of individuals.
    - 1.5 **Family**: All references to family groups were assigned this code.
    - 1.6 **Business**: Institutions identified as formal businesses were assigned this code.

2. **Poverty:** Used to code discussions pertaining to definitions used when discussing poverty.
    - 2.1 **A lot of work but little pay**: Used to code specific mentions of how the poor work hard but do not receive enough monetary compensation.
    - 2.2 **Being poor is expensive**: Codes mention that due to different types of exclusion living in poverty makes certain things more expensive.
    - 2.3 **Being "stuck":** Refers to the way many poor people are "stuck" in their current situation and unable to progress or improve.
    - 2.4 **Conformity**: Used to code mentions of poor people being conformist.
    - 2.5 **Clothing**: Codes mention poor people not having enough clothes.
    - 2.6 **Employment/Unemployment**: Code for mentions of employment and unemployment.
    - 2.7 **Education**: This code marks any references to education.
    - 2.8 **Food**: Used to code mentions of food.
    - 2.9 **Gender**: Used to code mentions of the influence gender has on poverty, specifically being female.
    - 2.10 **Give children more opportunities**: Used to code mentions of subjects of wanting to overcome party to give children more opportunities.
    - 2.11 **Health**: Code for mentions of health and healthcare.
    - 2.12 **Housing**: Code for mentions of housing.
    - 2.13 **Hygiene**: Used to code mentions of hygiene:
    - 2.14 **Income**: This code was used to mark references to income and economic security and well-being.
    - 2.15 **Motivation**: Code for mentions of motivation.
    - 2.16 **Opportunities**: Used to code mentions of opportunities.
    - 2.17 **Rights**: Codes mentioning rights or lack of rights (e.g. handicapped, elderly, women)

2.18 **Rural**: Codes mentions of living in rural areas, or agricultural productivity, affecting the experience of poverty.
2.19 **Self-Esteem/Self-Efficacy**: Used to code mentions of self-esteem and self-efficacy.
2.20 **Skills**: Code mentions of skills.
2.21 **Shortage/Scarcity**: This code was used to reference mentions of different shortages and scarcities that people who live in poverty are affected by.
2.22 **Social Capital**: Used to mark mentions to the reference of social capital in relation to the research.
2.23 **Vices**: Used to code mentions of vices such as alcohol, drugs, gambling, etc.

3 Poverty Stoplight Methodology: The header for the group of codes referencing the Poverty Stoplight Methodology.
3.1 **Impact**: Used to code discussions pertaining to the perceived impact of the Poverty Stoplight.
3.1.1 **Gaining Awareness**: Used to code mentions of clients gaining awareness during the Poverty Stoplight application.
3.1.2 **Motivating**: Code for mentions of how the Poverty Stoplight is motivating
3.1.3 **Yes, it is possible to eliminate poverty**: Used to code discussion mentions of the possibility of poverty being eliminated.
3.1.4 **No, it is not possible to eliminate poverty**: Used to code discussion mentions of the possibility of poverty not being able to be eliminated.
3.1.5 **I changed**: Used to code subject's stories of change due to the Poverty Stoplight.

4 Visual Survey: The header for the group of codes referencing the Poverty Stoplight Visual Survey.
4.1 **Tablet: U**sed to code mentions of the tablet for the visual survey.
4.1.1 **Image is unclear, hard to understand**: Used to code instances of when the image was unclear or hard to understand in the visual survey.
4.2 **Dimensions and Indicators**: Used to code mentions of the dimensions and indicators in the Poverty Stoplight visual survey.
4.2.1 **Problems with definition**: Used to code mentions of problems with the definitions in the visual survey.
4.2.2 **Multiple interpretations**: Used to code mentions of multiple interpretations with the indicators or definitions in the visual survey.

4.2.3 **"Shocking" Terms**: Used to code occurrences of subjects mentioning feeling shocked by a term used in the visual survey.

4.2.4 **More important**: Codes mentions of subjects' ranking of the indicators within each indicator, by most important.

4.2.5 **Less important**: Codes mentions of subjects' ranking of the indicators within each indicator, by least important.

4.2.6 **Definitions**: Codes mention discussions pertaining to the indicator definitions.

4.3 ***Asesoras:*** Codes mentioning Fundación Paraguaya loan officers, or *Asesoras*.

4.3.1 **Explains in own words**: Used to code mentions of the *Asesora* explaining indicators and definitions using her own words.

4.4 **Reporting*:*** Codes mentioning reporting during the Poverty Stoplight visual survey.

4.4.1 **Violence against women**: Used to code mentions of reporting issues of violence against women.

4.4.2 **Guarani**: Codes mentions of use of the Guarani language during reporting process.

4.4.3 **Not interested in participating**: Used to code mentions of Fundación Paraguaya clients not interested in participating in the Poverty Stoplight program.

4.4.4 **Poverty Stoplight is positive**: Used to code mentions of the Poverty Stoplight as positive.

4.4.5 **Poverty Stoplight is negative**: Used to code mentions of the Poverty Stoplight as negative.

5 Information Use: The header for the group of codes referencing information use.

5.1 **General:** Used to code general aspects of information use.

5.1.1 **Decentralization / Deconsolidation**: Codes mention information that is decentralized or deconsolidated.

5.1.2 **Aggregate / Descending**: Codes mention information that is aggregate or descending.

5.1.3 **Identifiable / Ascending**: Codes mention information that is identifiable or ascending.

5.1.4 **Outdated**: Codes mention information that is outdated.

5.1.5 **Sensitive Information**: Codes mention sensitive information.

5.1.6 **Geography**: Used to code mentions of geography in terms of information.

5.1.7 **Objective**: Used to code mentions of objective information.

5.1.8 **Comparison**: Codes mention information that is used for comparison:

5.2 **Tools**: Used to code discussions pertaining to different tools used to diagnose or measure poverty

- 5.2.1 **Civil Registry**: Use to code mentions of the Civil Registry as a tool to diagnose or measure poverty.
- 5.2.2 **Control Panel**: Use to code mentions of the Control Panel as a tool to diagnose or measure poverty.
- 5.2.3 **Housing Survey / Census**: Use to code mentions of the Housing Survey or Census as a tool to diagnose or measure poverty.
- 5.2.4 **Industry information**: Use to code mentions of Industry Information as a tool to diagnose or measure poverty.
- 5.2.5 **None**: Use to code mentions of no information being used as a tool to diagnose or measure poverty.
- 5.2.6 **Poverty Stoplight**: Use to code mentions of the Poverty Stoplight as a tool to diagnose or measure poverty.
- 5.2.7 **Social Report**: Use to code mentions of the Social Report as a tool to diagnose or measure poverty.
- 5.2.8 **Qualitative**: Use to code mentions of qualitative information as a tool to diagnose or measure poverty.

5.3 **Measurements / Indicators:** The header for the group of codes referencing measurements and indicators.

- 5.3.1 **Education**: Used to code discussions pertaining to education as a measurement or indicator.
- 5.3.2 **Family relationships**: Used to code discussions pertaining to family relationships as a measurement or indicator.
- 5.3.3 **Government Policies**: Used to code discussions pertaining to government policies as a measurement or indicator.
- 5.3.4 **Health**: Used to code discussions pertaining to health as a measurement or indicator.
- 5.3.5 **Housing**: Used to code discussions pertaining to housing as a measurement or indicator.
- 5.3.6 **Income / Employment**: Used to code discussions pertaining to income or employment as a measurement or indicator.
- 5.3.7 **Land Ownership**: Used to code discussions pertaining to land ownership as a measurement or indicator.
- 5.3.8 **Monitoring Government Policies**: Used to code discussions pertaining to monitoring government policies as a measurement or indicator.
- 5.3.9 **Nourishment**: Used to code discussions pertaining to nourishment as a measurement or indicator.
- 5.3.10 **Number of persons in one home**: Used to code discussions pertaining to number of persons in one home as a measurement or indicator.

5.4 **Advantages**: The header for the group of codes referencing advantages in certain information uses.
    5.4.1 **Direct Interaction**: Codes mention the advantages of direct interaction.
    5.4.2 **Consolidation**: Codes mention the advantages of consolidation.

Pre-Determined Codes

1. **Institutions:** The header for the group of codes referencing institutional structures identified and discussed

2. **Poverty:** Used to code discussions pertaining to definitions used when discussing poverty.

3. **Poverty Stoplight Methodology:** The header for the group of codes referencing the Poverty Stoplight Methodology.
    3.1 **Operational:** Used to code discussions pertaining to the day-to-day operations of the Poverty Stoplight.
        3.1.1 **Cost**: Used to code mentions of costs associated with the Poverty Stoplight implementation.
        3.1.2 **Client Selection**: Used to code mentions of client selection.
    3.2 **Impact**: Used to code discussions pertaining to the perceived impact of the Poverty Stoplight.
        3.2.1 **Legitimacy/Impact perception**: Codes mentions of legitimacy or impact perception of the Poverty Stoplight

4. **Visual Survey**: The header for the group of codes referencing the Poverty Stoplight Visual Survey.
    4.1 **Tablet**: Used to code mentions of the Tablet during the Visual Survey process.
        4.1.1 **Colors**: Codes mentions of colors in the visual survey.
        4.1.2 **Images**: Codes mentions of images in the visual survey.
    4.2 **Dimensions and Indicators**: The header for the group of codes referencing dimensions and indicators of the visual survey.
        4.2.1 **Accepts indicator**: Used to code mentions of subjects accepting or understanding indicators.
        4.2.2 **Definitions**: Used to code discussions of the definitions of specific indicators.
    4.3 ***Asesoras**:* Codes mentioning Fundación Paraguaya loan officers, or *Asesoras*.
    4.4 **Reporting**: Codes mentioning reporting during the Poverty Stoplight visual survey.

4.4.1 **Time / How long**: Codes mention time or how long the Poverty Stoplight visual survey took.
4.4.2 **First impression**: Codes mention the subjects' first impression of the Poverty Stoplight visual survey.
4.4.3 **Threshold**: Codes mention the subjects' opinion of the multidimensional poverty line.

4.5 Life Map: Codes mention of the Poverty Stoplight "Life Map"

5 **Information Use:** The header for the group of codes referencing information use.

5.1 **General**: Used to code general aspects of information use.
5.2 **Tools**: Used to code discussions pertaining to different tools used to diagnose or measure poverty
5.3 **Measurements / Indicators**: The header for the group of codes referencing measurements and indicators.

6.12 Appendix 12: Systematic Content Analysis using Dedoose Software

I used Dedoose software in order to manage the large amounts of qualitative data that resulted from focus groups and interviews. Documents were assigned "descriptors" which allowed the classification of interview transcriptions according to subject (client, non-client, *asesora*, poverty expert and Fundación Paraguaya Staff), city (Asunción, San Lorenzo, Luque, Santaní, Lambaré, Itá), and mode (focus group, interview, participatory wealth ranking). Once the process of coding was completed, codes were analyzed by observing the intersection of different codes with each other; these intersections were also be filtered through different document descriptors. Analysis of these code intersections was not mechanical and it did not replace in-depth reading and analysis of the transcripts. In fact, in order to code documents all transcriptions had to be read several times. This process helped to discern organize who said what, and in what part of the interview process they were when they said it.

As mentioned before, focus groups and interviews were semi-structured because this research dissertation needed to answer four research questions. Pre-established codes were derived from the interview guidelines used, and grounded codes resulted from the responses that interviewees gave or from unanticipated topics that freely emerged from interviewer-interviewee interactions. To illustrate, a large part of the qualitative aspect of this dissertation was concerned with understanding what poverty meant for clients, non-clients, *asesoras* and poverty experts. In this case, a pre-established code "poverty" was created. As all focus groups and interviews started by asking about the different stakeholders' definition of poverty, this pre-established code was usually used for a large portion of the beginning of each transcript. In a second round, this poverty section was re-read, and grounded codes were created in order to represent what clients meant when they defined poverty. This same procedure was carried out not only for the concept of poverty but also for many different aspects of this research dissertation—for example, the Poverty Stoplight, its implementation process, for informational needs of poverty experts, etc.

Coding was useful both as a process and as an outcome. As a process it was useful because in order to properly code a document each interview transcript had to be read very carefully. This in turn strengthened the author's grasp on the meaning of the interactions between interviewers and interviewees. As an outcome, coding was useful because resulting codes could be analyzed by observing their interaction with coded concepts.

In relation to the poverty example mentioned above, code intersections and document descriptors allowed the author to see not only what respondents were saying about poverty but to understand who was saying what. Crossings between subject (pre-established poverty code), descriptions (grounded codes), and subject (client, non-client,

etc.), greatly complimented the reading of the transcripts in order to make the qualitative analysis as rich and as accurate as possible.

6.13 Appendix 13: Code Intersections

Qualitative data was analyzed after coding documents and generating tables of code intersections which showed the number of text units that shared specific codes. The table below shows the most mentioned code intersections corresponding to the code "definitions of poverty":

Intersections for Definitions of Poverty vs. Selected Codes

Code	Intersections with Definitions of Poverty
Unemployment/Work	127
Formal Education	121
Solution: Individual discipline	108
Solution: the State	105
Conformism/"Stuck"	102
Job Training	65
Income	64
Nutrition	60
Shortages, or "Carencia"	58
Lack of Opportunities	56
Housing	49
Self-Esteem/ Self-Efficacy	40
Clothing	39
Health	38
Vices	30

It is important to note the table above does not give us indication of the content at the intersections. It only shows their frequency, providing only partial understanding of the meaning of each code.

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BIOGRAPHY

Martin Burt is a doctoral candidate at the Payson Graduate Program in Global Development at Tulane University. He holds a Master's degree in Science, Technology and Public Policy from The George Washington University and a Bachelor's degree in Public Administration and Inter American Studies from The University of the Pacific. He is founder (1985) and Executive Director of Fundación Paraguaya, Paraguay's largest NGO, co-founder (2005) and Board Member of Teach A Man To Fish in the UK, and co-founder (2013) and president of Entrepreneurship & Education, a Tanzanian NGO. He is Professor of Entrepreneurship at the American University of Nigeria and Visiting Professor of Social Entrepreneurship at Worcester Polytechnic Institute; he previously taught at the University of the Pacific and Universidad Católica de Asunción. He is recipient of numerous awards for his work in development, education, and social entrepreneurship. He introduced the first microfinance and youth financial literacy programs into Paraguay and developed Paraguay's first financially self-sufficient agricultural schools. He was elected twice President of Paraguayan-American Chamber of Commerce. He is co-founder of Paraguay's two largest environmental NGO's: Bertoni and Mbaracayú (1987). He was also founder of Paraguay's Export and Foreign Investment Agency (Pro-Paraguay-1992). His published books include: *APEX: Plan de Acción de la Alianza Público-Privada para la Eliminación de la Pobreza Extrema en el Paraguay* (2012); *La Escuela Agricola Autosuficiente* (2009); *Ciudadanía* (2001); *Paraguay: Laws and Economy* (1985); and *Poemas Cartas de Lluvia* (1978). Formerly he was elected Mayor of Asunción (1996-2001) and served as Vice Minister of Commerce (1991-1993) and Chief of Staff to the President of Paraguay (2012-2013). Martin Burt was born in 1957 in Asunción, Paraguay. He is married to Dorothy Wolf and has three children: Daniel, Thomas, and Marie-Claire.