Adapting the Sexual Relationship Power Scale for HIV/AIDS Research in Malawi

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Abstract

In sub-Saharan Africa, gender inequality and power imbalances continue to place individuals at increased risk for HIV/AIDS. Prevention programs in Malawi are starting to incorporate relationship power into couple-based interventions; however, no local measure of power exists to evaluate intervention effectiveness. This study developed a new measure of sexual relationship power for Malawi by building upon the Sexual Relationship Power Scale (SRPS) developed by Pulerwitz and colleagues (2000). Semi-structured interviews (n=34) were conducted separately, but simultaneously, with married and dating couples in order to understand the social context of relationship power. Qualitative data were analyzed to create a preliminary pool of scale items, which were then pilot tested using a convenience sample of 254 individuals. Factor analysis supported four sub-scales: autonomy, communication, love and trust, and relationship dominance. Moderate internal consistency and construct validity were demonstrated. The sexual relationship power scale shows promising utility for future HIV/AIDS research in Malawi.

Keywords: Gender; Power; Couples; HIV/AIDS; Africa

Introduction

Times are dangerous in sub-Saharan Africa as the HIV/AIDS epidemic continues to spread through the region infecting close to 22 million individuals with the virus (UNAIDS, 2008). Malawi remains one of the countries most heavily affected by the HIV/AIDS epidemic with prevalence rates among the highest in the world. An estimated 12% of all adults are living with the virus in Malawi (National Statistical Office & ORC Macro, 2005; UNAIDS, 2004) the majority of whom unknowingly became infected through sexual intercourse with their partners (National AIDS Commission (NAC), 2004). Serious relationships, where a high level of intimacy and trust is established, may be more risky than casual or sporadic sexual relations. In sub-Saharan Africa, a woman's risk of contracting HIV increases when she gets married (Bongaarts, 2007; Glynn et al., 2003). Various explanations could account for this phenomenon. The primary reason is that risk reduction strategies such as condom use, that are increasingly accepted outside of marriage, are considered unacceptable within it (Chimbiri, 2007). Furthermore, gender-based norms make it more acceptable for men to seek extramarital partners leaving women at increased risk for HIV through their partners' behaviors (Gilbert & Walker, 2002; Heise & Elias, 1995). Longitudinal studies have demonstrated that women are more likely to become infected by their husbands, while men are more likely to become infected through their extramarital affairs (deZoysa et al., 1996; Heise & Elias, 1995; King et al., 1993; McKenna et al., 1997).

Gender and power factors are considered key variables involved in the transmission of HIV to women (Ghosh & Kalipeni, 2005; Kathewera-Banda et al., 2005; Lindgren et al., 2005) and partially explain why women now comprise around 60% of all HIV infections in sub-Saharan Africa (UNAIDS, 2008). Although gender dynamics vary across sub-Saharan Africa,

women tend to have less power in society and within their relationships. The theory of gender and power proposes that these inequities arise from three overlapping social structures which interact to generate different exposures and risk factors for HIV/AIDS: the sexual division of labor, the sexual division of power, and social norms related to gender (Connell, 1987; Wingood & DiClemente, 2008). Through the sexual division of labor, men have more access to wealth and opportunities and consequently, women become dependent upon their partners in order to meet their financial and social needs (Poulin, 2007; Swidler & Watkins, 2006). This imbalance of power may constrain a woman's ability to negotiate condom use or limit her partner's other sexual relationships. Studies in South Africa have shown that women with lower sexual relationship power are less likely to take protective measures for HIV and more likely to be at increased risk for HIV infection (Dunkle et al., 2004a; Pettifor et al., 2004) Social norms surrounding gender and sexual behavior add another dimension to risk for HIV. For example, in order to meet the ideal qualities of a wife, women may avoid topics that create too much conflict in the household (Watkins et al., 1997) and may be less willing to bring up controversial subjects like condom use or extramarital affairs with their partners.

Even though the majority of the literature argues that women have comparatively less power in their relationships, women's power may be overlooked because of the subtle, and perhaps covert, ways it is expressed within the context of culture. Goffman's distinction between front stage and backstage behavior in his seminal piece *The Presentation of Self in Everyday Life* (1959) provides theoretical insight into the conflicting role of women as quiet, submissive wives who actively fight for what is rightfully theirs. From a western perspective, it may appear that women passively condone their partner's extramarital affairs, however, in reality, they may be using "backstage" techniques to maintain control over their lives. Dramaturgical theory

(Goffman, 1959) argues that one's identity is not stagnant, but rather fluid and constantly changing as one interacts within the larger social structure. This theory suggests that women are not confined to the social constructions of appropriate spousal behavior, but instead adapt to the ever-changing landscape of the HIV epidemic and the new challenges it presents.

Recent studies in Malawi on women and risk for HIV argue that women do have the agency necessary to navigate the HIV epidemic and are not simply helpless victims of gender inequality (Schatz, 2005; Tawfik & Watkins, 2007). For example, spouses use subtle and gender-specific communication strategies to encourage fidelity in their marriages (Watkins et al., 1997; Zulu & Chepngeno, 2003). Other researchers argue that women invoke their social resources to protect themselves from HIV/AIDS including bringing in marriage mediators, confronting his mistresses directly, and leaving a partner who does not reform (Schatz, 2005; Watkins, 2004). Therefore, these adaptive strategies may constitute a situated form of sexual relationship power where women are able to execute their agency in order to terminate the extramarital relationships that place them at risk for HIV infection.

Since relationship power varies depending upon the setting, no universal measure of relationship power exists to study the consequences of power on health. Despite this methodological challenge, recent attempts to quantify sexual relationship power have advanced the fields of reproductive and public health by providing a basis for which other researchers can build upon. Pulerwitz and colleagues (2000) developed the Sexual Relationship Power Scale (SRPS), a theoretically based, rigorously tested measure of power for intimate relationships. The authors conceptualized relationship power as "the relative ability of one partner to act independently, to dominate decision-making, to engage in behavior against the other person's wishes, and to control a partner's actions" (Blanc, 2001). The SRPS demonstrated good internal

reliability (coefficient alpha=0.84 for English version, 0.88 for Spanish version), and predictive and construct validity, yet several shortcomings remain in this work. First, the scale did not collect data on men's sexual relationship power, making it impossible to study relative power and shared power within couples. Second, the SRPS was developed and validated using focus groups of Latina women in the U.S. and its applicability to gender relations in Africa is limited. Other researchers have adapted the SRPS to populations in South Africa (Harrison et al., 2006; Jewkes et al., 2002; Pettifor et al., 2004), however, regional differences make it difficult to apply a single definition of power across populations, even those that share common African characteristics.

This paper describes the process of developing, testing, and validating a new measure of sexual relationship power for the Malawi context by expanding upon existing measures of power developed elsewhere (Harrison et al., 2006; Pettifor et al., 2004; Pulerwitz et al., 2000). However, this study goes beyond other measures of power in several important ways. First, men's perspectives are incorporated into the measure so that future researchers can use the scale to examine power within and between couple members. Second, this study considers both positive and negative dimensions of sexual power. Short-sided relationship power definitions involving only the negative aspects of couple dynamics such as control, dependence/autonomy, and decision-making dominance may miss the other important ways power is expressed including the ability to communicate with one's partner and the level of love and trust in the relationship. A measure of sexual relationship power for Malawi will provide novel opportunities to inform and evaluate health interventions that target sexual relationships: the intimate setting where many new HIV infections occur.

Data and Methods

Study Setting

The study was conducted in the Balaka district of southern Malawi. Like other rural districts in Malawi, the area is rural and poor with minimal opportunities for steady employment. Southern Malawi has the highest rates of HIV infection in Malawi, with an estimated 17.6% of its reproductive age population is infected (National Statistical Office & ORC Macro, 2005). Balaka follows the matrilineal marriage traditions where men typically move to their wives' villages after marriage (Peters, 1997). In this region of Malawi, women are generally in control of the land and are thought to have more economic and domestic power than women in other areas of the country. However, widespread poverty, low education levels, and a lack of development in the rural areas pose challenges to women expressing their autonomy in society. One exception is the relatively high divorces rates, with over 50% of marriages ending soon after the marriage begins (Reniers, 2003).

Methodology Overview

This study consisted of a sequential mixed methods design carried out in two phases: a qualitative phase followed by a quantitative phase. In the qualitative phase, semi-structured interviews were conducted separately, but simultaneously, with romantic partners in order to understand several hypothesized dimensions of relationship power: decision-making, control, communication, trust, love, sexual behavior, and gender and spousal roles. Qualitative data were coded and analyzed to create a preliminary pool of scale items on power. In the quantitative phase, a preliminary measure of sexual relationship power was pilot tested among non-coupled men and women in the Balaka district. Finally, an exploratory factor analysis with oblique rotation was used to create a final measure of relationship power that divided the construct of power into separate domains. Internal reliability checks were performed by computing

Cronbach's alpha for the power scale and its component subscales. Face and construct validity was assessed by soliciting sexual health experts' opinions on a set of preliminary scale items and by performing the Cuzick non-parametric test for trend to compare the power scale scores with the sexual behavior and socioeconomic factors related to relationship power.

Qualitative Phase

Sample

Purposive sampling was used to select three distinct geographical areas in order to obtain a diverse set of relationship experiences among participants: 1) Balaka *boma* or the villages surrounding Balaka town; 2) a trading center village; and 3) an isolated rural village. After selecting six villages as the final catchment area, a random sample of dating and married women (n=90) aged 18 to 25 were selected from each village using age, sex, marital status data from a recently collected demographic household listing of the Balaka district. Sexual partners were recruited through the random sample of women. The demographic household listing was collected as part of *Tsogolo La Thanzi* (TLT), a longitudinal study investigating reproduction and AIDS among young adults in Malawi[1]. If the target sample member could not be found or the sample member was ineligible during the time of recruitment, the interviewer would move onto an alternate sample member listed for that particular individual.

Data Collection

Training. Prior to data collection, Malawian research assistants hired for this study attended a two-day training session conducted by the principal investigator on topics such as

[1] Tsogolo la Thanzi is a research project designed by Jenny Trinitapoli and Sara Yeatman, and funded by grant (R01-HD058366, PI Trinitapoli) from the National Institute of Child Health and Human Development. Persons interested in obtaining data files TLT should contact Tsogolo la Thanzi, Population Research Institute, Penn State University, 200 Oswald Tower, University Park, PA 16803.

qualitative research, interviewing techniques such as probing and listening, the interview guide, consent for participation, ethical issues, and transcription and translation. Research assistants were trained to conduct flexible and unobtrusive interviews, so that fuller responses were elicited and new themes could emerge spontaneously. Research assistants were also re-trained on qualitative interviewing throughout the data collection process using completed transcripts from previous interviews. During training, research assistants were also asked to provide feedback on confusing, unclear, and culturally irrelevant interview questions and their feedback was incorporated into the interview guide.

Interview guide. A couple interview guide was developed using previous literature on gender and sexual relationship power (Dunkle et al., 2004a; Mbweza et al., 2008; Pettifor et al., 2004; Pulerwitz et al., 2002; Pulerwitz et al., 2000; Swidler & Watkins, 2006). Loosely structured interviews elicited perceptions on topics such as relationship characteristics, gender roles, dependence/autonomy, control, decision-making, spousal communication, love, trust, and sexual behavior including condom use and multiple partnerships. For example, the following question was asked on decision-making: How do you and your partner decide on important things in your relationship? Probes were used to extract more detailed information from respondents about their relationship dynamics. Examples of probes included: What types of decisions do you have more say in, what types of things does your partner have more say in? Do you need to consult with your partner on certain types of decisions? Who decides when you have sex, use condoms, or the types of sex positions?

Qualitative interviews. In order to minimize social desirability bias and help respondents feel more comfortable with providing the sensitive information, two research assistants were matched by sex with the respondents. Research assistants were also hired based

on their age and fell within the age range of the sample population (female interviewer, age 21; male interviewer, age 25). While the couple interviews were conducted at the same time, partners were interviewed separately in a private location chosen by the respondent. The interviews lasted approximately 45-80 minutes. The interviews were audio taped with digital recorders. Each respondent received four hotel-sized washing soaps as a gift for participating in the study. Research assistants translated and transcribed their respective interviews from Chichewa to English immediately following the interview. The principal investigator reviewed the transcripts for clarity as they were completed and asked the research assistants to explain language that was unclear.

Simultaneous in-depth interviews were conducted with 34 females and their male partners (17 couples). Of the 34 respondents, 12 respondents were in dating relationships and the remaining respondents were married. The average age of males was 23 years whereas females were slightly younger with an average age of 21 years. Of the 17 couples, 8 resided in Balaka town villages, 5 resided in a rural village, and 4 resided in a trading center village.

Data Analysis

Data familiarization. Before coding and generating scale items, data were reviewed in several ways as the interviews were completed. After each interview, research assistants wrote a summary of the interview and debriefed the principal investigator on highlights of the interview. In the summaries, the research assistants also noted their overall impression of the respondent and discrepancies in the conversation that may indicate respondent bias. Interview transcripts were also reviewed as they were completed and detailed field notes were taken on forms of power within sexual relationships using information learned from the research assistants as well as the actual interview data. During the transcription reviews, notes were made in order to gain

clarification from the research assistants on language, events, and cultural practices or beliefs. Discussions with the research assistants in conjunction with reviewing, summarizing, and writing provided the framework for understanding relationship power in more depth.

Open coding. After data collection, transcription, and translation were completed, the interview transcripts were transferred into Atlas.ti 6.0 (Atlas.ti GmbH, Berlin, Germany) for analysis. The interviews were examined line-by-line or by group of lines for actions or events related to concepts of relationship power including gender roles, decision-making, communication, control, love and trust, dependence/autonomy, condom use, and fidelity. Scale items were created as codes for passages of text representing one or more dimensions of power. The following passage provides an example of how a new scale item was generated. In this quote, the wife discusses the level of influence her partner had over her decision to join a particular church.

> Interviewer: What made you change your church, your husband?
>
> Respondent: No, it wasn't him because my husband does not decide for me on which church to join, he doesn't even say anything. The thing was when I was praying at Roman Catholic, I was not praying enough, but at the fellowship we pray in a way that you feel that you are praying, that's what I followed in this church.

Typically, women will join their husband's religion if they belong to a different church or religion, however, as the interviews illuminate, this is not always the case. With this example, the scale item "If my partner wanted me to join his/her religion, I would do so" was generated to reflect the autonomy to choose religions as well as the control a partner has over their partner's decisions on faith and religion. Since many couples will be of the same religion at the time of their union, the hypothetical nature of the scale item allowed for the concordant couples to put

themselves in the situation of deciding to maintain or change religions. Throughout the coding process, some of the preliminary codes were maintained and re-used while others were revised or deleted.

Scale item refinement. Open coding of the interview data produced a list of possible scale items (n=79). In order to reduce the number of scale items to a manageable number, a quotation report was generated within the Atlas.ti software containing all coded scale items and the corresponding passages of interview text. The most important scale items were selected using different criteria such as the number of quotations for the scale item (salience) and the range of experiences for an item (variance). Experts in the region, academic scholars in sexual health as well as Malawian key informants, were also consulted for their opinion on measures of sexual relationship power and items were added, deleted, or reworded based on this feedback (resulting in 40 items). The set of items was translated from English to Chichewa and reverse translated by two separate individuals unfamiliar with the study in order to ensure sentence meaning was preserved. Items were worded positively (e.g., "My partner shows that they care about me.") and negatively (e.g., "My partner punishes me when he/she is really angry with me.").

Cognitive interviewing. Tanur (1992) proposed the cognitive interviewing approach to evaluating sources of error in survey questionnaires. Cognitive interviewing forces the research subject to "think-aloud" while answering each survey question and allows the researcher to evaluate comprehension, question intent and meaning, memory retrieval, decision making, and response processes (Tourangeau, 1984). Cognitive interviews were administered to a small convenience sample of female and male subjects (n=8) using the scale items generated above. The subjects were asked to explain their thought processes as they answered each survey question. Responses were audio recorded, translated from Chichewa to English, and reviewed for

problems in comprehension and translation. Problematic scale items were either clarified or deleted as deemed necessary, resulting in 31 scale items. Refer to **Appendix B** for a list of the 31 preliminary scale items.

Quantitative Phase

Sample

A convenience sample of men and women was drawn from the same six target villages used in the qualitative phase in order to pilot test the scale. Study participants were between the ages of 18 and 45 years and had a primary sexual partner. Research assistants started at the village chief's home, usually centrally located within villages, and approached every third compound to recruit respondents. Malawian villages are comprised of compounds or clusters of houses where an extended family lives together and shares common spaces. In order to avoid enrolling family members who share common characteristics into the study, compounds as opposed to households were chosen as the unit of recruitment. If respondents were not home, research assistants moved onto the next third compound. Once the end of a road was reached, research assistants went back to the chief's house and started down a different path going to every third compound.

Data Collection

Training. Prior to data collection, the research assistants were trained on survey administration. Additional explanations of the answer choice format (i.e., 4-point Likert scale) were provided with simple scenarios involving food, religion, and sports in order to ensure comprehension. Cognitive interviewing revealed that subjects had trouble distinguishing between real and hypothetical situations (e.g., "If things were really bad with my partner, I would leave the relationship.") and often answered hypothetical items as if they were real

situations. In order to avoid comprehension errors, the research assistants were trained on how to provide additional instruction for answering hypothetical questions. For example, research assistants provided an example of hypothetical situation and emphasized to respondents that these scenarios may never happen to them in the future. Research assistants also stressed the "if/when" words when reading these sentences to respondents.

The questionnaire. The final questionnaire contained five sections: 1) demographic information; 2) education and length of relationship; 3) hypothetical scale items; 4) non-hypothetical scale items; and 5) validation variables. Variables theoretically associated with sexual relationship power such as history of forced sex, physical abuse, condom use, relationship satisfaction (Dunkle et al., 2004a; Dunkle et al., 2004b; Pettifor et al., 2004; Pulerwitz et al., 2002; Wingood & DiClemente, 1998) were added to the questionnaire in order to test construct validity. Pulerwitz and colleagues (2000) previously demonstrated that these variables are significantly associated with relationship power and therefore the same questions were used in this study (refer to Pulerwitz et al., 2000 for wording), with the exception of condom use. Condom use in Malawi is relatively low (Chimbiri, 2007; Hearst & Chen, 2004) and therefore the condom use measure needed to be sensitive enough to detect multiple levels of use. Therefore, condom use was measured with the questions "Have you ever used condoms with your partner? If yes, how often did you use condoms?" (refer to **Table 1** for response options). Other demographic data were collected such as sex, age, village, marital status, education level, and length of relationship. In order to check for reliability and consistency, a general measure of power was also added where respondents were asked: "In your relationship, who would you say is generally in charge?"

Questionnaire administration. Scale items from the pilot scale (n=31) were transferred into a questionnaire format and administered to respondents who met the eligibility criteria. Research assistants orally administered the questionnaires in order to be inclusive of illiterate individuals and those with varying degrees of education. Research assistants were matched by sex with respondents in order to ease any tensions and help the respondent feel more comfortable providing sensitive information. Interviews took place in a quiet, private location usually near the respondent's primary residence. After completing the interview, each respondent received a bar of dishwashing soap and a bar of body soap as a token of appreciation. Before leaving the respondents, research assistants verified that each question was answered (unless specifically declined). Completed surveys were also checked at the end of each field day by the principal investigator for errors or missing data. If missing items were found, research assistants recalled the respondent's answer for interviews that they could remember. Fieldworkers have been shown to more accurately estimate missing data than data managers using complicated statistical imputation algorithms (Sana & Weinreb, 2008).

Data Analysis

Factor analysis was used to clarify the scale domains. Exploratory factor analysis is appropriate when you have obtained measures on a number of variables and want to identify the number and nature of the underlying factors that are responsible for the covariation in the data (Hatcher, 1994). In order to obtain reliable results, the minimal number of subjects providing usable data for the analysis should be the larger of 100 subjects or five times the number of variables being analyzed (Gorsuch, 1983; Hatcher, 1994). Therefore, thirty-one scale items required a minimum sample size of 155 in order to achieve adequate statistical power. Rotation was applied to rotate the initial factor solution and force variables to load more strongly on a

given factor, thus making it easier to interpret the data. Oblique rotation was used since factors were thought to be correlated with each other (which they were), thus yielding a more accurate representation of the data (Adock, 2006; Hatcher, 1994).

A small percentage of respondents had missing data for at least one scale item (n=30, or 11.8%). Rather than drop these respondents from the analysis, the mean value of the scale item was calculated from all other participants and replaced the missing values. Comparative factor analyses were conducted to generate factors before and after replacing missing values to ensure that the same results were achieved. Positively worded items were reverse scored. Age, length of relationship, and education level were transformed into categorical variables (refer to **Table 1** for categories) and binary variables for the construct validity tests (refer to **Table 5** footnotes for categories). The Cuzick non-parametric test for trend (an extension of the Wilcoxon rank-sum test) was used to compare the scale scores with the validation variables including education level, marital status, age, condom use, forced sex, and physical abuse, and relationship duration. Microsoft Excel 2004 for Mac (Microsoft Corporation, Seattle, WA) was used to manage and store all pilot survey data. STATA version 11 (Stata Corporation, College Station, TX) was used for all statistical analyses, including the factor analysis.

Results

Survey Sample

Selected characteristics of pilot survey participants (n=254) are presented in **Table 1**. Men (n=127) and women (n=127) ranged in age from 18 to 45 years with a mean age of 29 years. The majority of participants received a primary school education or less (69.3%), were married (85.4%), and resided in villages immediately surrounding Balaka town (68.5%). Relationship duration ranged from several months to over 20 years and respondents were widely

distributed among relationship duration categories. Approximately 80% of participants stated that they never used condoms or used them sporadically. The majority of participants were never forced to have sex (70.9%). As expected, women were more likely to report being forced to have sex as compared to men (32.3% of women as compared to 25.2%). Similarly, the majority of participants reported no history of physical abuse with their partner (84.7%). Surprisingly, men reported more physical abuse than women (16.5% of men as compared to 14.2% of women).

Factor Analysis

Scale items from the pilot survey were subjected to an exploratory factor analysis using squared multiple correlations as prior communality estimates. The principal factor method was used to extract the factors followed by a promax (oblique) rotation. A scree plot suggested four meaningful factors so only these factors were retained for further analysis. In addition, all items receiving a factor loading less than 0.30 were dropped. A second factor analysis was performed with the remaining 23 items. An additional 7 items were dropped from further analysis because they did not load on any of the four factors with a loading greater than 0.30. A final factor analysis was performed. Four items were found to load on the first factor, which was subsequently labeled "autonomy". Four items were found to load on the second factor, which was labeled "communication". Four items were found to load on the third factor, which was labeled "love and trust". Four items were found to load on the fourth factor, which was labeled "relationship dominance". Scale items and the corresponding rotated factor loadings are presented in **Table 2**. Refer to **Appendix A** for the final relationship power scale.

Two of the autonomy subscale items "Under no circumstances would I ever leave the relationship" and "If things were really bad with my partner, I would leave the relationship" were hypothesized to be measuring the ability to leave the relationship and were evaluated in the pilot

study with the expectation that one of the items would drop out of the analysis due to redundancy. However, both items loaded strongly on the autonomy subscale and contributed to its internal consistency. Although the items were moderately correlated (r=0.28), they appear to be measuring two different ideas. The first question presents a real scenario of extreme circumstances (and therefore less variation in responses) whereas the second question is hypothetical and may measure a more realistic probability of leaving one's partner. Both items were retained in the autonomy subscale.

Proportion of Variance, Scale Reliability, and Mean Factor Scores

The 16-item power scale accounted for the majority of variation in responses. The proportion of variance was determined to be 40%, 39%, 32%, and 32% for the autonomy, communication, love and trust, and relationship dominance factors, respectively (see **Table 2**). Reliability of the scale was determined by computing Cronbach's alpha for the entire power scale and for each of the four factors (Cronbach & Meehl, 1955). The overall power scale demonstrated moderate reliability of 0.58, which falls within the recommended range of 0.50 to 0.60 for early stages of research (Nunnally, 1967).[2] Scale reliability was also addressed by sex since future researchers may study men and women's responses to the scale items separately (see **Table 3**). Reliability of the overall scale was similar for men and women with coefficient alphas of 0.55 and 0.57, respectively. Reliability estimates were 0.59, 0.59, 0.57, and 0.54 for the autonomy, communication, love and trust, and relationship dominance subscales, respectively. See **Table 3** for reliability coefficients by sex and subscale.

Table 3 also presents the mean factor scores computed from a range of 1 (strongly agree) to 4 (strongly disagree) for each of the subscales. Mean factors scores were computed for the

[2] Nunnally and Bernstein later revised the minimum tolerable reliability estimate to 0.70 for basic research (1994).

entire sample and by sex. Higher mean factor scores (i.e., more likely to strongly disagree with scale items) are indicative of higher relationship power. Mean factor scores were higher for men for all subscales with the exception of communication, suggesting that women had higher relationship power in this domain as compared to men. See **Table 4** for frequency of responses for each scale item.

Construct Validity

Construct validity of sexual relationship power was examined by testing for associations between level of power (categorized as low, medium, and high; see **Appendix C** for scoring procedures) and several variables thought to be associated with power, including condom use, history of physical abuse and forced sex, education level, marital status, length of relationship, and age. A non-significant trend towards significance was found in the expected direction between the overall power scale and condom use ($p=0.07$). The power scale was directly associated with a higher education level ($p<0.01$). The power scale was not associated with marital status, age, physical abuse, forced sex, or length of relationship.

When construct validity was tested for each subscale, different patterns of statistical significance emerged. The four subscales were found to be significantly associated with at least one validation variable with the exception of history of forced sex. Individuals who reported higher levels of condom use (defined as using condoms most or all of the time) were more likely to have higher scores for autonomy ($p<0.05$) and love and trust ($p<0.05$). Individuals who reported a history of physical abuse were more likely to report lower power scores for communication ($p<0.05$) and relationship dominance ($p<0.01$). Autonomy was inversely associated with being married ($p<0.001$) and relationship duration ($p<0.01$), but positively associated with higher education levels ($p<0.01$). This suggests that single, more educated

individuals are less dependent upon their relationships as compared to their married counterparts. **Table 5** presents the distribution of relationship power (overall and by subscale) by each of the validation variables.

Discussion and Conclusions

This study developed and evaluated a new measure of sexual relationship power for Malawi by building upon the existing SRPS developed by Pulerwitz and colleagues (2000). While recognizing that gender-based power imbalances contribute to the spread of HIV/AIDS in sub-Saharan Africa, this study also acknowledged the tension between structure and agency evident in the multitude of ways power is expressed at the local level. The gendered strategies that Malawians use to avoid the disease, such as consulting marriage advisors regarding extramarital sex, leaving a partner who refuses to reform, and maintaining open partner communication, were incorporated into the relationship power scale. The adaptation of the SRPS to Malawi supported four different sub-scales encompassing both positive and negative dimensions of power: autonomy, communication, love and trust, and relationship dominance. A unique feature of the relationship power scale is its applicability to both married and dating individuals as well as both men and women. Separate factor analyses were conducted for both men and women and the same four themes emerged indicating a common set of social norms around power.

The sexual relationship power scale for the Malawi context is one of the first fully-validated power scales to integrate men's perspectives into a measure that can be used to study power within couples and between men and women. Frequently in sexual and reproductive health research, men are given inadequate attention and often ignored altogether despite the fact that sexual behavior and sexual risk for HIV/AIDS occurs within a dyad. Findings from recent

studies suggest that relationship power could be an important contextual variable that influences women and men's ability to affect safer sex behaviors (Harvey et al., 2003; Harvey et al., 2002; Pulerwitz et al., 2002; Wingood & DiClemente, 1998), however, the focus on women in existing power measures has restricted the empirical testing of this hypothesis. The Malawi scale provides novel opportunities to explore the role of sexual relationship power in sexual behavior at both the individual level (including men) and the couple level.

Cross-sectional data demonstrated significant correlations between relationship power and sexual risk behaviors for HIV (including condom use and physical abuse), supporting that the scale is correctly measuring the concept of relationship power. These findings, while new to the context of Malawi, have been supported in previous studies of relationship power and sexual risk behavior conducted in the U.S. and other African settings (Billy et al., 2009; Dunkle et al., 2004a; Pettifor et al., 2004; Pulerwitz et al., 2002). An important strength of the four-variable power scale developed for Malawi is the capability to study relationship power and behavior in more depth as compared to other one or two dimensional scales. For example, condom use was positively related to autonomy and love and trust. Autonomous individuals may be more effective at negotiating condom use with their partners because they are less economically and emotionally dependent upon the relationship and thus less worried about the negative consequences of bringing up condoms, such as partner dissolution. Likewise, couples with high levels of love and trust may feel more comfortable using condoms and less likely to associate their use with extramarital affairs. Finally, high scores on communication and relationship dominance were inversely associated with history of physical abuse. This suggests that the ability to communicate with one's partner and dominate the relationship (versus being dominated) may be protective against physical abuse.

As expected, men demonstrated higher levels of relationship power as compared to women in all power domains with the exception of communication. This finding is supported by previous qualitative research demonstrating that women actively persuade their partners to be faithful, communicate with their partners about the dangers of HIV/AIDS, and invoke the help of their elders, friends, and village leaders when their partners do not reform (Watkins et al., 1997; Zulu & Chepngeno, 2003). Not only is communication important in the negotiation of safer sex, but also can prevent the transmission of HIV from a positive partner to a negative partner when couples openly disclose their test results to each other.

Interestingly, higher scores in communication were associated with lower levels of condom use. This relationship conflicts with the positive associations found herein between condom use and other domains of relationship power. However, in Malawi, men are not the only group reluctant to use condoms. Women may not want to use condoms with their partners since condoms may signify that a partner is not committed and does not want to have children with them (Chimbiri, 2007; Tavory & Swidler, 2009). Consequently, women with higher levels of communication power may advocate against the use of condoms with their partners.

Certain limitations of this study are noteworthy. First, this research was conducted in the southern region of Malawi with a matrilineal/matrilocal marriage tradition (as opposed to the patrilineal/patrilocal north), which may limit the generalizability of these findings. While little research has been conducted on gender-based power and marriage systems, husbands are generally expected to have more power in patrilineal societies while wives are expected to have comparatively more influence and autonomy in matrilineal societies. It is possible that this study may have missed different aspects of power relevant to the patrilineal context, however, important expressions of power such as the ability to leave the relationship were accounted for in

the scale. Second, because this study was limited to individuals 18 years of age or older, unmarried couples were underrepresented in this study as compared to married couples. In Malawi, the average age at first marriage for women is 18.2 years (National Statistical Office & ORC Macro, 2000), which made it a challenge to find and recruit unmarried individuals into the study. Constructs of power may vary between married and dating couples and with less information on dating couple dynamics, important scale items may have been overlooked during the formative stages.

A final limitation of the scale is of note. Other power scales have generally demonstrated higher internal consistency reliability than the Malawian power scale (alpha was approximately 0.60). The SRPS, developed and evaluated among mostly Latina women in the U.S., showed a coefficient alpha of 0.86 for the overall scale (Pulerwitz et al., 2000). Jewkes et al. (2002) adapted the SRPS to South Africa and found an alpha of 0.81 for women. However, their scale showed similar results to the Malawian power scale when internal consistency reliability was calculated for men, with an alpha of 0.57. Pettifor and colleagues (2004) also developed an adapted version of the SRPS to South Africa and found moderate internal consistency among women (alpha=0.69), however, their population was less rural and more educated than the sample of rural Malawians used in this study. Future studies with larger sample sizes are needed to confirm the reliability of the scale, which theoretically would minimize the impact of random error on reliability estimates (Singleton & Straits, 2005). The convenience sample selected for the pilot test may have also affected the internal consistency of the Malawian scale. According to classical test theory, the limited variability of power experiences in a relatively homogeneous population may have reduced the reliability of the scale by affecting true score variance of the reliability estimate (Lord & Novick, 1968). Subsequent studies on relationship power in Malawi

should utilize a study population with more diverse experiences of relationship power, perhaps by sampling from both northern and southern regions of Malawi where land ownership (and presumably power) differs by gender.

The sexual relationship power scale shows promising utility for studying behavior around HIV/AIDS in Malawi, including multiple concurrent partnerships, condom use, and HIV testing use. In addition, information gained through better understandings of relationship power dynamics will build the evidence base, which is currently lacking, for couple-based health interventions. HIV prevention programs should consider the variety of ways power is expressed within the context of the serious relationships and encourage couples to love, trust, respect, and openly communicate with each other in order to continuously prevent HIV infection. With a new measure of sexual relationship power for the Malawi context, researchers will be able to better tailor HIV prevention programs towards couples' needs and evaluate the effectiveness of couple-based interventions.

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Appendix A: Final Scale on Sexual Relationship Power in Malawi

Each of the following items will be scored using a four-point Likert scale, where 1 = Strongly Agree, 2= Agree, 3 = Disagree, and 4 = Strongly Disagree. A positive sign refers to items that were reversed scored.

Autonomy Subscale:

1. Under no circumstances would I ever leave my partner.
2. If my partner were to leave me, I would be in serious trouble.
3. If things were really bad with my partner, I would leave the relationship. (+)
4. If my partner failed to meet my needs, I could easily find another partner. (+)

Communication Subscale:

5. My partner and I sit down and discuss important matters together. (+)
6. My partner shows that they care about me. (+)
7. If I suspect my partner is having an affair, I would talk with my partner.(+)
8. I would consult with my advisors (or friends) if my partner was behaving badly. (+)

Love and Trust Subscale:

9. When I need my partner's assistance, he/she is always there to help me. (+)
10. I initiate sex with my partner when I want to have sex. (+)
11. I am able to buy expensive items without my partner’s approval. (+)
12. I have my own money to buy things I want. (+)

Relationship Dominance:

13. My partner punishes me when he/she is really angry with me.

14. When I disagree with my partner's relatives, my partner chooses their side over mine.

15. My partner is probably having sex with someone else.

16. If my partner was really angry with me, he/she might beat me.

Appendix B: Pilot Scale on Sexual Relationship Power

Each of the following items will be scored using a four-point Likert scale, where 1 = Strongly Agree, 2= Agree, 3 = Disagree, and 4 = Strongly Disagree. A positive sign refers to items that were reversed scored.

1. My partner tells me whom I can be friends with. (+)
2. When my partner upsets me, he/she will usually apologize. (+)
3. My partner meets my sexual desires. (+)
4. I always need permission from my partner before I do something.
5. When my partner and I are chatting, I do not talk much.
6. My partner always wants to know where I am going.
7. I am persistent with my partner until I get my way. (+)
8. When I need my partner's assistance, he/she is always there to help me. (+)
9. My partner's relatives have more money than my relatives.
10. My partner has more control over whether or not we have sex.
11. I initiate sex with my partner when I want to have sex. (+)
12. I am able to buy expensive items without my partner's approval. (+)
13. I have my own money to buy things I want. (+)
14. My partner punishes me when he/she is really angry with me.
15. My partner and I sit down and discuss important matters together. (+)
16. My partner shows that they care about me. (+)
17. My partner has more control over whether or not we use condoms.

18. When I disagree with my partner's relatives, my partner chooses their side over mine.
19. My partner is probably having sex with someone else.
20. If my partner wanted me to join his/her religion, I would do so.
21. If my partner was having an affair, I would do something about it. (+)
22. If I suspect that my partner is having sex with someone else, I would talk with my partner. (+)
23. I would consult with my advisors (or friends) if my partner was behaving badly. (+)
24. Under no circumstances would I ever leave my partner.
25. If my partner was really angry with me, he/she might beat me.
26. I could convince my partner to use condoms even if he/she did not want to. (+)
27. I would be able to convince my partner to get tested for HIV even if he/she did not want to. (+)
28. I would get tested for HIV even if my partner refused to get tested. (+)
29. If things were really bad with my partner, I would leave the relationship. (+)
30. If my partner were to leave me, I would be in serious trouble.
31. If my partner failed to meet my needs, I could easily find another partner. (+)

Appendix C: Scoring Procedure for the Sexual Relationship Power Scale for Malawi

1. Low scores represent lower sexual relationship power and high scores represent higher sexual relationship power. Positively worded items (demonstrating higher power) indicated with a plus sign in **Appendix B** were reversed scored so that a low score represents low relationship power for all items.
2. Scores for all subscales were calculated separately and then combined into the overall sexual relationship power scale.
    a. Since each subscale consisted of four items, the minimum sum for each subscale was 4 and the maximum sum was 16.
    b. For each respondent, the mean subscale score was calculated by dividing the sum of the subscale items by the number of subscale items (4). The mean subscale score was calculated for each of the four subscales.
    c. The overall score was calculated by adding together the mean scores for each subscale and dividing the total by the number of subscales (4), using the following formula:

$$\frac{\text{Autonomy score} + \text{Communication score} + \text{Love and Trust score} + \text{Relationship Dominance score}}{4}$$

    d. The final score was rescaled to a range of 1-4, using the following formula:

$$\frac{\text{Overall score} - \text{Minimum of range}}{\text{Maximum of range} - \text{Minimum of range}} \times 3 + 1$$

3. For analyses using the overall power scale, the continuous overall score was trichotomized into three groups representing low, medium, and high power using the frequency distribution of the overall scores. [3]

4. For analyses using the subscales, the continuous mean subscale scores were trichotomized into three groups representing low, medium, and high power using the frequency distribution of the subscale mean scores. [3]

[3] Usually, it was not possible to group scores into three equal groups because the data were not always discrete (i.e., since each subscale consisted of only 4 scale items, duplicate mean scores were possible when dividing the sum by 4). Groups were kept as equal as possible given the distribution.

Table 1. Descriptive Characteristics of Pilot Survey Sample (n=254)

	Male		Female		Total[b]	
	N	%	N	%	N	%
Overall	127	50	127	50	254	100
Age group (years)						
18-20	14	11.0	24	18.9	38	15.0
21-24	25	19.7	34	26.8	59	23.2
25-30	32	25.2	36	28.4	68	26.8
31-35	25	19.7	15	11.8	40	15.8
36-40	11	8.7	11	8.7	22	8.7
41-45	20	15.8	7	5.5	27	10.6
Education level						
Never attended school	16	12.6	11	8.7	27	10.6
Primary school	62	48.8	87	68.5	149	58.7
Secondary school	28	22.1	28	22.0	56	22.1
Certificate (MSCE)[a]	11	8.7	0	0.0	11	4.3
Tertiary school (with MSCE)	10	7.9	1	0.8	11	4.3
Marital status						
Single	27	21.3	10	7.9	37	14.6
Married	100	78.7	117	92.1	217	85.4
Relationship duration (in years)						
Less than 1 year	12	9.5	4	3.2	16	6.3
1-4	34	26.8	42	33.1	76	29.9
5-10	47	37.0	43	33.9	90	35.4
11-20	15	11.8	29	22.8	44	17.3
>20	19	15.0	9	7.1	28	11.0
Geographic location						
Town center	87	68.5	87	68.5	174	68.5
Rural village	20	15.8	20	15.8	40	15.8
Trading center	20	15.8	20	15.8	40	15.8
Frequency of condom use (n=253)						
Never	44	34.7	54	42.5	98	38.6
At the beginning	14	11.0	34	26.8	48	18.9
Sometimes	33	26.0	22	17.3	55	21.7
Almost every time	15	11.8	8	6.3	23	9.1
Everytime	18	14.2	9	7.1	27	0.8
Don't remember	2	1.6	0	0.0	2	0.4
Forced to have sex (n=253)						
Yes	32	25.2	41	32.3	73	28.7
No	94	74.0	86	67.7	180	70.9
Physically abused						
Yes	20	15.8	18	14.2	38	15.0
No	107	84.3	109	85.8	216	85.0

[a]Malawian students sit for a comprehensive exam called the MSCE (Malawi School Certificate Examination) after completing their last year of secondary school.

[b]Missing values are not included in the data presented above. Parentheses indicate the total number used in the calculations. Totals may be slightly off due to rounding.

Table 2. Final Rotated Factor Pattern for Sexual Relationship Power Scale Items (n=254)

Item[a]	Factor 1: Autonomy	Factor 2: Communication	Factor 3: Love and Trust	Factor 4: Relationship Dominance
Would never leave	**0.48**[b]	-0.19	0.11	0.11
In trouble if partner left	**0.41**	0.02	-0.01	0.23
Would leave if really bad	**0.53**	0.06	-0.01	0.02
Could find another partner	**0.54**	0.08	0.17	-0.07
Discuss matters together	0.02	**0.39**	0.09	0.09
Partner cares about me	-0.19	**0.35**	0.25	0.31
Talk to partner about affair	0.04	**0.65**	0.00	-0.06
Consult advisors if problems	0.04	**0.61**	-0.20	-0.06
Helps me with needs	-0.17	-0.09	**0.43**	0.06
Able to initiate sex	0.15	0.06	**0.49**	0.03
Able to buy expensive items	0.15	-0.07	**0.53**	-0.06
Have own money	0.11	-0.10	**0.44**	-0.18
Partner punishes me	0.08	-0.04	-0.12	**0.58**
Partner chooses relatives side	-0.06	0.02	-0.06	**0.41**
Partner having an affair	-0.17	0.02	0.07	**0.36**
Partner might beat me	0.14	-0.12	-0.01	**0.53**
Proportion of variance	0.40	0.39	0.32	0.32

[a]Scale items have been summarized into shorter descriptions for readability. Refer to Appendix A for actual scale items.

[b]Factor loadings greater than 0.30 are in bold print.

Table 3. Means[a], Standard Deviations, and Coefficient Alpha Reliability Estimates for Factors (Subscales)

	Overall (n=254)			Men (n=127)			Women (n=127)		
Factor	Mean	95% CI	Alpha	Mean	95% CI	Alpha	Mean	95% CI	Alpha
Autonomy	2.22	2.13-2.32	0.59	2.55	2.43-2.68	0.57	1.90	1.78-2.00	0.43
Communication	3.57	3.51-3.63	0.59	3.46	3.39-3.54	0.49	3.68	3.59-3.76	0.66
Love and Trust	2.77	2.68-2.86	0.57	3.16	3.07-3.25	0.28	2.38	2.25-2.51	0.46
Relationship Dominance	2.82	2.73-2.91	0.54	3.03	2.92-3.14	0.47	2.61	2.47-2.75	0.54

[a]Mean refers to the mean value of the factor score. The factor score was computed by taking the sum of the row (where 1=Strongly Agree, 2=Agree, 3=Disagree, and 4=Strongly Disagree for each scale item) divided by the number of scale items answered for the row. Positively worded items were reverse coded prior to calculating the row value.

Table 4. Frequency of Responses for Final Power Scale Items (n=254)

Item[a]	Responses[b]							
	Strongly Agree (%)		Agree (%)		Disagree (%)		Strongly Disagree (%)	
	Men	Women	Men	Women	Men	Women	Men	Women
Would never leave	33.9	78.7	29.1	15.0	16.5	3.2	20.5	3.2
In trouble if partner left (n=253)	33.1	56.7	28.4	17.3	13.4	7.9	24.4	18.1
Would leave if really bad	43.3	35.4	35.4	26.8	9.5	8.7	11.8	29.1
Could find another partner (n=253)	24.4	12.6	33.9	9.5	16.5	12.6	24.4	65.4
Discuss matters together (n=253)	66.9	78.7	26.1	16.6	2.4	1.6	0.8	3.2
Partner cares about me	60.0	72.4	35.4	18.1	3.2	1.6	1.6	7.9
Talk to partner about affair	40.9	74.0	47.2	21.3	6.3	1.6	5.5	3.2
Consult advisors if problems	55.1	83.5	37.8	14.2	3.9	0.8	3.2	1.6
Helps me with needs	35.4	43.3	56.7	22.1	3.9	12.6	3.9	22.1
Able to initiate sex (n=253)	64.6	36.2	32.3	21.3	1.6	15.0	0.8	27.6
Able to buy expensive items	37.0	13.4	25.2	7.9	21.3	21.3	16.5	57.5
Have own money (n=253)	33.1	22.1	41.7	20.5	13.4	15.0	11.8	41.7
Partner punishes me	8.7	34.7	36.2	17.3	21.3	14.2	33.9	33.9
Partner chooses relatives side (n=251)	8.7	20.5	21.3	16.5	24.4	13.4	48.0	44.9
Partner having an affair	3.9	22.8	30.7	23.6	26.8	10.2	38.6	43.3
Partner might beat me (n=253)	7.1	37.0	20.5	25.2	11.8	7.9	59.8	29.9

[a]Scale items have been summarized into shorter descriptions for readability. Refer to Appendix A for actual scale items.

[b]Missing data are not included above. Parenthesis next to scale items with missing data indicate actual sample sizes. Percentage totals may be slightly off due to rounding and missing data.

Table 5. Relationship Power by Condom Use, History of Physical Abuse and Forced Sex, Education Level, Marital Status, Relationship Duration, and Age

	Condom Use[a] (%)	Physical Abuse (%)	Forced Sex (%)	Education[b] (%)	Married (%)	Relationship Duration[c] (%)	Age[d] (%)
Overall Power Scale							
Low (n=86)	24.0	46.2	42.5	23.1	36.4	31.9	32.5
Medium (n=-79)	32.0	23.1	28.8	32.1	29.0	37.9	28.7
High (n=89)	44.0~	30.8	28.8	44.9**	34.6	30.2	38.9
Autonomy Subscale							
Low (n=93)	20.0	30.8	34.3	24.4	40.1	44.0	34.4
Medium (n=89)	44.0	30.8	32.9	35.9	35.9	36.2	38.9
High (n=72)	36.0*	38.5	32.9	39.7**	24.0***	19.8**	26.8
Communication Subscale							
Low (n=73)	36.0	53.9	30.1	35.9	28.6	32.8	28.7
Medium (n=95)	42.0	18.0	37.0	42.3	35.9	32.8	40.1
High (n=86)	22.0*	28.2*	32.9	21.8**	35.5	34.5	31.2
Love and Trust Subscale							
Low (n=76)	22.0	28.2	34.3	29.5	30.4	22.4	22.9
Medium (n=77)	24.0	25.6	32.9	33.3	31.8	30.2	32.5
High (n=101)	54.0*	46.2	32.9	37.2	37.8	47.4**	44.6**
Dominance Subscale							
Low (n=68)	28.0	50.0	40.0	21.8	28.1	31.9	39.5
Medium (n=90)	30.0	23.7	38.4	35.9	31.8	31.9	20.4
High (n=96)	42.0	25.6**	24.7	42.3	40.1	36.2	40.1

Statistical significance: ~p < 0.10; *p < 0.05; **p < 0.01; ***p < 0.001; all p-values were based on the Cuzick non-parametric test for trend across groups (an extension of the Wilcoxon rank-sum test).

[a]Condom use was defined as using condoms most or all of the time when having sex.

[b]The educated group consisted of respondents with a least one year of secondary school education.

[c]Relationship durations compares respondents in a relationship for less than 8 years with those in a relationship for 8 years or longer.

[d]Age compares respondents less than 25 years with those 25 years or older.