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A Systematic Review of the Psychometric Properties of the Sexual Relationship Power Scale in HIV/AIDS Research

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Abstract

The Sexual Relationship Power Scale (SRPS) was developed over a decade ago to address the lack of reliable and valid measures of relationship power in social, behavioral and medical research. The SRPS and its two subscales (relationship control [RC], decision-making dominance [DMD]) have been used extensively in the field of HIV prevention and sexual risk behavior. We performed a systematic review of the psychometric properties of the SRPS and subscales as reported in the HIV/AIDS literature from 2000 to 2012. A total of 54 published articles were identified that reported reliability or construct validity estimates of the scales. Description of the psychometric properties of the SRPS and subscales are reported according to study population, and several cross-population trends were identified. In general, the SRPS and RC subscale exhibited sound psychometric properties across multiple study populations and research settings. By contrast, the DMD subscale had relatively weak psychometric properties, especially when used with specific populations and research settings. Factors that influenced the psychometric properties of the various scales and subscales included the study population, mean age of the sample, number of items retained in the scale, and modifications to the original scales. We conclude with recommendations for (a) the application and use of the SRPS and subscales, (b) reporting of psychometric properties of the scales in the literature, and (c) areas for future research.

Keywords

Sexual Relationship Power Scale; psychometrics; HIV; AIDS

INTRODUCTION

Gender power inequity has been an essential construct in theories of women's sexual health across a variety of fields, including medical anthropology, psychology, sociology, feminism, social work, nursing, and public health (Beckman, Harvey, Thorburn, Maher, & Burns, 2006; Dudgeon & Inhorn, 2004; Harper, Minnis, & Padian, 2003; Maman, Campbell, Sweat, & Gielen, 2000). Numerous studies have demonstrated that power inequality within sexual relationships is linked to poor reproductive and sexual health outcomes for women worldwide (Amaro, 1995; Blanc, 2001; Campbell et al., 2009; Connell, 1987). High-risk

sexual behavior and violence, which occur most often in the context of women's primary heterosexual relationships, are often related to self-perceived low relationship power (Campbell et al., 2009; Pulerwitz, Gortmaker, & DeJong, 2000). Power inequities and high-risk sexual behavior combined with greater physiological vulnerabilities contribute to high and ever increasing rates of HIV and other sexually transmitted infections (STIs) among women (Campbell et al., 2009; Higgins, Hoffman, & Dworkin, 2010), particularly women of color and those who are socioeconomically disadvantaged (Beckman et al., 2006; Wingood & DiClemente, 2000).

The World Health Organization (WHO) and Centers for Disease Control and Prevention (CDC) have prioritized research and interventions that address factors contributing to low relationship power that place women at risk for violence, HIV/ STI acquisition, and poor reproductive health outcomes (Sebelius, 2011; World Health Organization, 2009). However, methodological challenges related to the quantitative measurement of relationship power have hampered examination of its impact on health outcomes, including risk for HIV and other STIs (Blanc, 2001). Frequently, researchers evaluate the outcomes of assumed power differentials using proxy variables, such as the manifestation or threat of violence, partner age discordance, or emotional and economic dependence (Harper, Minnis, & Padian, 2003; Tschann, Adler, Millstein, Gurvey, & Ellen, 2002; Wekerle & Wolfe, 1999), without examining the power component itself (Foss, Vickerman, Heise, & Watts, 2003; Pulerwitz et al., 2000). Yet, such proxy measures do not fully capture the complexities of imbalances that may exist within sexual relationships.

The Sexual Relationship Power Scale (SRPS) is a 23-item scale developed by Pulerwitz, Gortmaker, and DeJong (2000) to address the need to measure relationship power among women in intimate and sexual relationships. The SRPS consists of two subscales measuring the constructs of relationship control (RC; 15 items) and decision-making dominance (DMD; 8 items). Since its development, the SRPS has been used in numerous studies exploring relationship power as a determinant of sexual risk within primary relationships, and there exists a substantial literature reporting the psychometric properties of the SPRS and subsequent modifications of the scale in various populations, cultural contexts, and research settings. Although the SRPS has been viewed as a useful tool for measuring relationship power in HIV prevention research (Blanc, 2001; Frye et al., 2007), a review of its psychometric properties has never been undertaken. In this systematic review, we describe the psychometric properties of the SRPS by study population and identify psychometric trends across populations in the HIV prevention literature from 2000 to 2012. Our aim is to help researchers better understand the strengths, limitations, and evidence-based application of this measure as well as identify future research directions to investigate the weaknesses in the construct and measurement of relationship power related to sexual risk.

Development of the Sexual Relationship Power Scale

The development of the SRPS was guided by the theories of gender and power (Connell, 1987) and social exchange (Emerson, 1972, 1981). The theory of gender and power postulates that structural factors at the societal and institutional levels operate to maintain a

division (inequity) of labor, power, and normative relations that result in women's substandard health outcomes (Connell, 1987). Social exchange theory holds that power derives from negotiated cost/reward trade-offs or exchanges embedded within the context of interpersonal relationships (Emerson, 1972, 1981). Based on these theories, in addition to a literature review of relationship power, and focus group discussions with Latina, African-American, and White women in the United States, Pulerwitz and colleagues (2000) developed the SRPS with 62 initial items in five domains: (a) decision-making dominance, (b) relationship control, (c) distribution of economic and emotional resources, (d) alternatives to the relationship, and (e) dependence on the relationship.

The 62-items were tested in a sample of 18–45 year old women from a community health clinic (N=388). The sample consisted primarily of Latina (89%) women with a high school degree or less (79%) who reported having a primary sexual partner (43% were married). Initial factor analysis provided empirical support for a conceptual distinction between two domains that were the foundation of two unique subscales: (1) relationship control (RC) and (2) decision-making dominance (DMD). The other postulated dimensions were discarded due to weak psychometrics. The two retained dimensions have also emerged in the conceptual definition of relationship power proposed by other investigators (Harper et al., 2003; Harvey & Bird, 2004; Ronfeldt, Kimerling, & Arias, 1998). The two subscales have distinct response sets. The RC subscale employs a 4-point Likert scale to measure level of agreement on item statements (Strongly Agree; Agree; Disagree; Strongly Disagree). An example RC item is: "Most of the time, we do what my partner wants to do." The DMD subscale was constructed to measure the balance of decision-making power (1=Your partner has more power; 2=Both of you have equal power; 3=You have more power) on each of the eight items, with higher scores indicating higher relationship power for the respondent. For example, one DMD item asks: "Who usually has more say about what you do together?" Detailed instructions for scoring the SPRS were included in the original article by Pulerwitz et al. (2000). The DMD was rescaled to a range of 1–4 to correspond to the RC score range. Subscale scores were totaled separately and divided by the number of non-missing items to calculate a mean individual score for the RC and DMD scales. Mean subscale scores were added together and divided by two to produce an overall SRPS score between 1–4. Pulerwitz recommended standardized scoring to enable cross-sample comparison (J Pulerwitz, personal communication, December 12, 2011). Alternatively, Pulerwitz, Amaro, DeJong, Gortmaker, & Rudd (2002) recommended trichotomizing scores into "high" (>2.82), "medium" (2.82 to 2.43), and "low" (<2.43) levels of power.

Pulerwitz and colleagues (2000) also developed a modified version (SRPSm) of the original scale to be used in studies involving outcomes related to condom use. In the modified version, four items related to condom use were removed (items 1, 2 and 8 in the RC subscale and item 22 in the DMD) in order to prevent tautologous correlations with condom use outcomes. The internal consistencies of the SRPSm and modified subscales (RCm and DMDm) were similar to the original scales (alphas: SRPS=0.84; RC=0.85; DMD=0.63; SRPSm=0.86; RCm=0.85; DMDm=0.57). Furthermore, the SRPSm was significantly associated with condom use and other variables hypothesized to be related to relationship power, thus supporting its construct validity (Pulerwitz, Amaro, De Jong, Gortmaker, & Rudd, 2002; Pulerwitz, Gortmaker, & DeJong, 2000).

METHOD

A systematic literature search was conducted using Medline and Psych Info databases for articles published from 2000 to 2012 for the terms “HIV” and “Sexual Relationship Power Scale.” Additionally, articles citing Pulerwitz et al. (2000, 2002) were identified using ISI Web of Science. The initial search identified 128 articles. Articles identified in the search were examined and included in the review if they (1) were published in peer-reviewed journals from 2000 to 2012, (2) were written in English, (3) used SRPS or a modified version in primary data collection and analysis, (4) reported psychometric properties (reliability or validity) for the SRPS or subscales, and (5) included HIV sexual risk (or related) outcome measures. Review and editorial articles were excluded. We identified 54 publications that matched our inclusion criteria, based on independent assessments by two reviewers. The following data were extracted: authors and references, study purpose and design, sample characteristics and recruitment setting, SRPS scale characteristics and modifications, reliability psychometrics, and validity psychometrics. Two reviewers independently reviewed articles for data extraction and disagreements were resolved by consensus.

Extracted data were tabulated in a standardized format (Table 1). Risk of bias was not assessed for the reviewed studies and extracted data were equally weighted in the synthesis, as quality factors (e.g., sample size) that would influence psychometric properties were part of this review. Cross-comparisons and synthesis were performed by population (based primarily on race/ethnicity and sex) to reveal patterns in the psychometric properties of the SRPS within and across groups. Quantitative analysis for cross-population trends in the psychometric properties was performed on the sample of studies using generalized estimating equation (GEE) modeling to identify correlates of scale internal consistency reliability and construct predictive validity. GEE was used to adjust for non-independence of data points due to cases in which multiple estimates of reliability and validity were nested within studies.

RESULTS

Study Characteristics

Across the included studies, the SRPS or subscales were administered to the following study populations: U.S. African American females (n=4), U.S. Latina females (n=4), U.S. multiple race/ethnicity females (n=21), South African females (n=10), other/international female samples (n=6), male samples (n=10), heterosexual couples (n=3). Of the seven studies that recruited both female and male participants, five reported psychometric results separately, whereas two did not. Few studies included a sample with a narrow age range: nearly half of the studies (48%) included participants 18 years of age or older, typically up to some specified maximum (e.g., 49 years); several studies (15%) recruited young adults (typically 18 to 29 years old); a substantial proportion of studies (37%) included adolescents, but the age limits for these samples varied widely from 14–18 years to 15–49 years, with the majority including both adolescents and adults in the same sample. The majority of studies (57%) were conducted in the U.S., with the remainder performed either in South Africa (24%) or other international settings (19%).

Administration, Scale Modifications, and Scoring

Of the 54 published studies included in this review, 21 reported use of the total SRPS (either the original, SRPSm or adapted version of the scale); 35 employed the RC subscale as a separate measure (original, RCm or adapted); and 18 used the DMD (original, DMDm or adapted). Nearly half of the studies reported the use of more than one scale or subscale.

Nearly 60% of the studies employed some adapted version of the SRPS or subscales. Adaptations to the scale and subscales included major (e.g., developing a different version of the scale), moderate (e.g., changing or deleting items), or minor revisions (e.g., item wording modifications). A major scale adaptation was the development of the South African version (Dunkle et al., 2004), which was used in 12 of the 54 studies reviewed. The South African version combined selected SRPS items with items from a different gender scale (Dunkle et al., 2007). Ten studies combined subsets of items from RC and DMD subscales to create a new scale (Amaro et al., 2007; Jones & Gulick, 2009; Kaufman, Shefer, Crawford, Simbayi, & Kalichman, 2008; Operario, Nemoto, Iwamoto, & Moore, 2011a, 2011b; Pettifor, Measham, Rees, & Padian, 2004; Younge, Salem, & Bybee, 2010). However, moderate types of adaptations, such as dropping items from the scale due to concerns about negative emotional reactions by participants (Ragsdale, Gore-Felton, Koopman, & Seal, 2009) or the irrelevance of certain items to specific populations (Ketchen, Armistead, & Cook, 2009), were found to be more common.

The SRPS scale was developed in both English and Spanish, but has also been translated into numerous other languages, including African language translations (i.e., Sotho, Zulu, Tswana, Xhosa, Pedi, Venda, Tsonga, Afrikaans, Setswana, siSwati, and Runyankole), Native Creole, Chinese, French, Hindi, Urdu, and Tamil. The original Spanish language version has been used in nine studies with Lantino/Hispanic participants (Bermudez, Castro, Gude, & Buela-Casal, 2010; Rocca, Doherty, Padian, Hubbard, & Minnis, 2010; Zukoski, Harvey, Oakley, & Branch, 2011). Most translations involved the use of back translations, pilot testing, and expert evaluation of cultural content validity (Dunkle et al., 2004; Kershaw et al., 2006; Ketchen et al., 2009).

Response sets were often modified from the original, such as expanding the Likert scale to include a neutral response or more responses (Beckman et al., 2006; Teitelman, Ratcliffe, Morales-Aleman, & Sullivan, 2008; Younge et al., 2010), dichotomizing responses (Parrado, Flippen, & McQuiston, 2005; Pettifor et al., 2004), or reflecting the Likert scores (Buelna, Ulloa, & Ulibarri, 2009; Filson, Ulloa, Runfola, & Hokoda, 2010). Scoring variations were reported in several articles, most often in light of non-normal sample distributions, response set modifications, and cultural contexts. Other scoring schemes were more complex. Gagnon (Gagnon, Merry, Bocking, Rosenberg, & Oxman-Martinez, 2010) scored subjects as having low power on the DMD if respondents selected “Your partner has more power” on three or more of the eight DMD items. Six studies used tertiles of low, medium, and high relationship power variables, although in one study this was done based on natural distribution cut-off points (Dunkle et al., 2004). The methods used for determining high-low cut-off points when creating categorical responses were inconsistent, sometimes based on the sample distribution (Salazar et al., 2011), other times on raw scores (Harris, Grant, Pitter, & Brodie, 2009), thus, at times creating small cells.

During the initial development of the SRPS, the scale was administered verbally as a way to include women of all literacy levels (Pulerwitz et al., 2000). The scale, as written, has a 90% reading ease level on the Flesch Reading Ease scale (Flesch, 1948) and a 4.6 grade reading level according to the Flesch-Kincaid assessment. Pulerwitz and colleagues (2000) used trained, bilingual researchers to conduct the survey, in English or Spanish, in a private area and participant responses were kept anonymous. Across reviewed studies, 61% of surveys were administered exclusively by trained interviewers, mostly face-to-face, although one study employed telephone interviewing and another used computer assisted personal interviewing (CAPI) techniques. Surveys were self-administered in 28% of studies, with the majority of these (n=9) using computer-assisted self-interviewing (ACASI/CASI) techniques. Some combination of interviewer- and self-administered survey methods were used in several studies. Two studies primarily used interviewer-administrator methods, but switched to ACASI for sensitive items on drug use or sexual behavior. Two studies gave participants the choice of interviewer- or self-administration of surveys. Rocca and colleagues (2010) randomly assigned either interviewer-administered or CASI of surveys and found no difference in SRPS scores between the two methods.

Most of the scales were administered at one time point for cross-sectional analysis. However, in a few studies, evaluation of power across time demonstrated sensitivity to intervention assignment (Amaro et al., 2007).

Psychometric Properties of the SRPS by Population

U.S. African American Females—Four studies reported psychometric properties of the SRPS on samples of U.S. African American females. Two studies involved adolescent or young adult samples spanning the ages of 14–21 years recruited from urban community health centers (Bralock & Koniak-Griffin, 2007; Salazar et al., 2011). The other two studies analyzed samples of adult females over age 18 (Harris et al., 2009; Younge et al., 2010). Each of the four studies reported reliability and validity data for different forms of the SRPS. Harris et al. (2009) used the original SRPSm in a study of adult women and reported Cronbach's alpha of 0.89; Bralock & Koniak-Griffin (2007) employed original RC and DMD subscales in a study involving 14–20 year olds and reported Cronbach's alphas similar to those originally reported by Pulerwitz and colleagues (Pulerwitz et al., 2000) : RC=0.89, DMD= 0.63. By contrast, studies that used modified versions of the scales with African American samples reported lower internal consistency reliability. Younge et al. (2010) created an 8-item SRPS combining unspecified items from both subscales together with a modified response set and reported an alpha of 0.64. Salazar et al. (2011) created a 12-item SRPS of unspecified items and reported an alpha of 0.80. As pointed out by Younge et al. (2010), reducing the number of SRPS items and modifying the response set may have resulted in suboptimal psychometric scale properties.

Despite suboptimal reliability, Younge et al. (2010) found that lower SRPS scores were associated with higher scores on a perceived HIV risk scale. Harris et al. (2009) found that lower/medium SRPSm scores were significantly associated with increased HIV risk behavior, although some caution in interpretation is warranted because the HIV risk measure was created as a composite of the four condom-related items from the SRPS, and was

therefore not an independent measure of sexual risk. Bralock & Koniak-Griffin (2007) used the unmodified SRPS and found no statistically significantly correlation between percentage condom use and relationship power; however, an association between SRPS and condom self-efficacy beliefs was reported.

U.S. Latina Females—Four studies reported the psychometric properties of the SRPS among Latina women in the U.S. One study was conducted with adult Mexican woman ages 18–49 years (Parrado et al., 2005), two involved samples of young Hispanic woman spanning ages 18–29 (Ragsdale et al., 2009; Zukoski et al., 2011), and the fourth involved Latina adolescents age 15–19 years (Rocca et al., 2010). Three of the studies offered participants a choice of either the English or Spanish versions of the survey; the other did not specify language version. Two studies employed original SRPS or subscale versions (although Ragsdale et al. removed item 15 from RC), and both reported Cronbach's alphas similar to those of Pulerwitz et al. (2000): SRPS=0.87; RC=0.88; DMD=0.63 (Ragsdale et al., 2009); RC= 0.90 (Zukoski et al., 2011). In contrast, Parrado et al. (2005) used the RC subscale with a binary (yes/no) response set and reported a slightly lower alpha: RC=0.80. In this study, exploratory factor analysis (EFA) of the original 15-item RC revealed three factors within the RC subscale: relationship control, sexual negotiation, and emotional consonance (Parrado et al., 2005). Internal validation of the scale adaptation was supported with pre-post tests and focus groups demonstrating better power to discriminate than the original RC. The relationship control construct was thus reduced to five items (3, 4, 7, 10, & 12) with an alpha of 0.65.

Evidence of construct validity is provided in three of the studies. Despite the lower alpha, Parrado et al. (2005) found that the 5-item RC subscale was significantly associated with numerous outcomes, including education, age, social support, and relationship variables. Ragsdale et al. (2009) found differences in SRPS scores according to ethnicity or immigration status, but not acculturation, and reported that low SRPS scores were associated with frequency of unprotected sex. In addition, Latina adolescents with low SRPS scores had an elevated risk of pregnancy (Rocca et al., 2010).

U.S. Multiple Race/Ethnicity Females—Twenty-one of the reviewed articles involved females from multiple racial/ethnic groups and did not report psychometric properties separately for each group. Samples were predominantly African American in eight of the studies (alpha ranges: SRPS 0.84–0.88, RC 0.78–0.90, DMD 0.63–0.78); predominantly White in seven (SRPS 0.86–0.93, RC 0.76–0.92, DMD 0.61–0.83); mostly Hispanic in two (SRPS 0.82–0.88, RC 0.81–0.90, DMD 0.57–0.63); and equally balanced in three (too few data points to calculate range). Across studies, the full SRPS and RC subscale exhibited consistently good reliability; the DMD subscale was less consistent (Figure 1). Studies reporting suboptimal DMD alphas (i.e., < 0.70; Nunnally & Bernstein, 1994) tended to have younger samples (mean age range 19 to 27 years), whereas studies reporting higher DMD alphas (>0.70) tended to have older samples (mean age range 35 to 39 years). Only two studies reported RC subscale alphas below 0.80 and these were the only studies to modify the original wording of the items (Beckman, et al., 2006; Tietelman et al., 2008).

Higher perceived relationship power by women (as measured by SRPS) was associated with perceived lower sexual pressure (Jones & Gulick, 2009), less prevalent dating violence (Buelna et al., 2009), less intimate partner violence (IPV) (Buelna et al., 2009; Filson et al., 2010; Pulerwitz et al., 2000), less frequent unprotected anal intercourse (Knudsen et al., 2008), consistent condom use (Amaro et al., 2007; Pulerwitz et al., 2000), and fewer treated STIs (Buelna et al., 2009). In addition, relationship power was a partial mediator of the association between IPV and depression (Filson et al., 2010) and between IPV and sexual risk (Buelna et al., 2009). In other findings, the SRPS showed no evidence of association with proxy microbicide use (Mosack, Weeks, Sylla, & Abbott, 2005), injurious dating violence (Buelna et al., 2009), STI positive tests (Buelna et al., 2009), or frequency of unprotected sex (Operario et al., 2011b).

Higher relationship control (RC subscale) in women was significantly associated with less intimate partner or dating violence (Campbell, Tross, Hu, Pavlicova, & Nunes, 2012; Pulerwitz et al., 2000; Roye, Tolman, & Snowden, 2012; Tietelman et al., 2008; Volpe, Hardie, & Cerulli, 2012), less sex work (Mosack et al., 2010), higher female condom use (Weeks et al., 2010), and less frequent unprotected vaginal sex (Knudsen et al., 2008; Mosack et al., 2010; Pulerwitz et al., 2000; Roye, Krauss, & Silverman, 2010). RC was not associated with preferred contraceptive method (Beckman et al., 2006), diaphragm use satisfaction (Beckman et al., 2006), or childhood sexual abuse (Mosack et al., 2010). In contrast to the original findings of Pulerwitz et al. (2000), several studies found no association between RC and condom use frequency (Campbell et al., 2009; Panchanadeswaran et al., 2010; Tietelman et al., 2008). In a study of primarily White women, Knudsen et al. (2008) found that higher RC scores were associated with less frequent unprotected anal intercourse, whereas Koblin et al. (2010) found no evidence of a significant association between RC and unprotected anal sex in a study of predominantly African American women.

Higher DMD for women was associated with lower frequency of unprotected sex in two studies (Campbell et al., 2009; Pulerwitz et al., 2000), but was not related to sexual risk behavior in two others (Knudsen et al., 2008; Panchanadeswaran et al., 2010). Further, Pulerwitz et al. (2000) found no evidence of an association between DMD and physical abuse or forced sex. Weeks et al. (2010) and Campbell et al. (2012) found that African American women tended to have higher DMD scores compared with White women.

South African Females—Ten articles reported the use of the SRPS in samples of South African woman, predominantly with young women ages 15–26 years (Dunkle et al., 2004; Jama Shai, Jewkes, Levin, Dunkle, & Nduna, 2010; Jewkes et al., 2006; Jewkes, Dunkle, Nduna, & Jama Shai, 2010; Ketchen, Armistead, & Cook, 2009; Nduna, Jewkes, Dunkle, Jama Shai, & Colman, 2010; Pettifor et al., 2004; Sayles et al., 2006). All studies were conducted in local South African languages. Five studies were conducted using data from a national intervention program (i.e., Stepping Stones: Dunkle et al., 2004; Jama Shai et al., 2010; Jewkes et al., 2006; Jewkes et al., 2010; Nduna et al., 2010). The South African version of the SRPS was originally based on 12 items from the RC subscale and expert knowledge of gender issues in South Africa (Dunkle et al., 2004). Tertiles were used as response categories. Dunkle et al. (2004) reported Cronbach's alpha of 0.84 for this

adaptation. Subsequent studies using the same survey have adopted slightly different formulations of the South African SRPS and response sets, but with lower alphas (Jewkes et al., 2006: 0.73; Nduna et al., 2010: 0.68). Only two studies have used modified versions of the SRPS with South African samples. Pettifor et al. (2004) created a 4-item SRPS with revised wording and a dichotomous response (agree/disagree), and reported an alpha of 0.69. Ketchen et al. (2009) employed 22 items from the original SRPS with some revision during translation and reported an alpha of 0.70.

In these samples of South African women, significant correlations were found between lower perceived relationship power and inconsistent condom use (Dunkle et al., 2004; Pettifor et al., 2004; Jama Shai et al., 2010), HIV positive status (Dunkle et al., 2004), HIV incidence (Jewkes et al., 2010), IPV (Dunkle et al., 2004; Jama Shai et al., 2010; Jewkes et al., 2006; Jewkes et al., 2010), and emotional stress during pregnancy (Groves et al., 2012). However, several studies found that relationship power was not associated with HIV positive status (Jewkes et al., 2006; Ketchen et al., 2009; Pettifor et al., 2004), or sexual concurrency (Steffenson, Pettifor, Seage, Rees, & Cleary, 2011).

International Female Samples/Other—Six studies that used the SRPS or subscales for HIV-related research were conducted with female populations in other international settings: China, Thailand, Haiti, Mexico, Botswana, Swaziland, and Uganda. These studies recruited mostly younger adult women, but included a range of participants from 15 to 49 years of age. Scale and subscale reliability estimates for these studies were largely consistent with prior research. One exception was the Ugandan study by Hatcher et al. (2012), who reported unusually high alphas (DMD=0.92, RC=0.95, SRPS=0.96). In this study, only one unspecified item was removed from the original SRPS, which was administered to 270 anti-retroviral therapy (ART) naïve HIV-positive women recruited from local health clinics. It is not clear why the scale and subscale internal reliabilities are so high in this particular population and setting.

Two studies reported the psychometric properties of the SRPS for female entertainment/ sex workers (Ulibarri et al., 2010; Yang & Xia, 2006). In a study of female sex workers from two Mexican/U.S. border cities (i.e., Tijuana and Ciudad Juarez), Ulibarri et al. (2010) found that lower RC scores were associated with greater odds of experiencing IPV. Yang and Xia (2006) recruited women from entertainment establishments (e.g., hair/beauty salons, bathing/massage centers and karaoke TV halls) in Shanghai, China and used a modified version of the SRPS, which included 12-items from the RC subscale scored on a 5-point Likert scale. Results indicate that relationship power was not significantly related to consistent condom use after adjusting for cognitive/affective factors.

A study of young impoverished Thai women found that low DMD, but not RC, was associated with unprotected sex (Powwattana, 2009). In a study of pregnant Haitian women receiving prenatal care, higher DMD scores for women were associated with intention to use condoms after pregnancy, but not with self-reported condom use or STIs in the prior year (Kershaw et al., 2006).

Males—Although the SRPS was designed to measure women's perceptions of relationship power, 10 studies included in the current review administered the scale to men. None of the 10 studies reported conducting formative work to evaluate the appropriateness of administering the SRPS to men, and with the exception of minor gender-appropriate wording changes all 10 studies used scale items as originally developed for women. Most of these studies utilized South African modified versions of the RC and DMD with adolescent and adult South African males (Dunkle et al., 2007; Jewkes et al., 2011; Kaufman et al., 2008; Nduna et al., 2010; Sayles et al., 2006; Steffenson et al., 2011). No adaptations of the South African scales were reported that were unique to male participants. Whereas the DMD subscale has not been utilized with South African females due to actual or perceived poor psychometric properties, one study administered the DMD to South African males and reported Cronbach's alpha of 0.91 (Kaufman et al., 2008). Magee (Magee, Small, Frederic, Joseph, & Kershaw, 2006) also found adequate internal consistency (alpha=0.71) of the DMD administered to a sample of adult Haitian men. Reliability estimates for the RC subscale for South African males have generally mirrored those for South African females, with one exception. Nduna et al. (2010) reported suboptimal reliability (alpha=0.54) for a 13-item version of the RC administered to sexually active young men in Eastern Cape Province. This low alpha might be due to modifications to the response set in which higher scores indicated more equitable relationship dynamics, rather than a measure of relationship power as originally designed. A study of young sexually active men from rural communities in the U.S. reported an alpha of 0.76 using the original RC subscale (Zukoski et al., 2011). Only a single study reported psychometric properties of the SRPS administered to men (Operario et al., 2011a). The study involved 174 male partners of transgendered women, used a "brief" unspecified version of the SRPS, and reported Cronbach's alpha of 0.87.

In a study of sexually-experienced African males aged 15–26 years, attitudes towards gender relations and relationship control were measured using the same 13-item South African scale developed for female respondents (Dunkle et al., 2007). Men reporting more equitable power in relationships were less likely to engage in transactional sex with partners. Kaufman et al. (2008) surveyed male participants from an urban primary health clinic in South Africa, using a modified version of the SRPS consisting of 10 items from the RC subscale (alpha = 0.89) and 6-items from the DMD subscale (alpha = 0.91). Results indicated that higher perceived RC and DMD were associated with masculine ideology and that negative attitudes toward women were associated with higher RC (but not DMD) scores. Sayles et al. (2006) and Steffenson et al. (2011) examined aspects of relationship power among sexually-active South African males aged 15 to 24 years and found that relationship power was not significantly associated with condom self-efficacy (Sayles et al., 2006) or self-reported partner concurrency (Steffenson et al., 2011).

Heterosexual Couples—Only three published studies report psychometric properties of the SRPS in HIV-related research involving couples, all of which were heterosexual couples. In a study of the sexual dysfunction of young rural Chinese couples, Lau and colleagues (2006) applied a Chinese language translation of the RC subscale to measure "the extent to which the husband controls the marital relationship" (p. 580). However, the RC was administered only to the women because the authors believed that the subscale had not

been validated for men. Cronbach's alpha for the RC was 0.82. Confirmatory factor analysis supported a one-factor solution. Lower RC scores were significantly associated with wife's report of higher sexual dysfunction and lower sexual satisfaction. Additionally, men whose wives scored lower on the RC scale were more likely to have a sexual dysfunction.

Gagnon et al. (2010) used the DMD subscale to explore determinants of gender disparities in decision-making power among South Asian migrants residing in Montreal, Canada. The sample consisted of 87 women and 44 men (of which 14 were couples) born in India, Sri Lanka, Pakistan or Bangladesh. The SRPS was translated into French, Hindi, Urdu and Tamil languages. Internal consistency reliability estimates were not provided because the DMD subscale was re-coded as a dichotomous variable. Overall, about 24% more men than women considered themselves to have high decision-making power. Among women, high decision-making power was associated with greater knowledge of STIs and higher self-perceived efficacy to ask a sexual partner to use a condom. The authors noted that no differences in responses were found within couples, but did not provide the results of this dyadic analysis, which may have been underpowered given that only 14 paired couples were included in the sample.

VanderDrift, Agnew, Harvey, & Warren (2012) administered an unspecified 8-item RC scale to both members of heterosexual couples from a multi-race sample recruited in East Los Angeles. Cronbach's alpha was 0.99 for the sample (alphas were not reported separately for males and females). Dyadic analysis showed that relationship power moderated the effect of condom use intentions on condom use behavior. Specifically, actual condom use within the couple was correlated with the condom use intentions of the partner with the highest relationship power.

Cross-Population Trends in the Psychometric Properties of the SRPS

A systematic comparison of reliability and validity statistics across the reviewed studies revealed several patterns.

Reliability—Among the 54 studies reviewed, 41 reported internal consistency reliability (most commonly Cronbach's alpha) for one or more study samples. These 41 studies reported a total of 63 alphas: 15 for SRPS, 31 for RC, and 17 for DMD. Less frequent use of the DMD compared with the RC might be related to its inferior reliability scores. Across all studies, the DMD subscale had substantially lower reliability scores compared to either the SRPS ($B = -0.26$, $p<0.001$) or RC subscale ($B = -0.17$, $p<0.01$) (Table 2). The DMD subscale performed especially poorly in studies with younger females. The mean age of the sample was significantly positively correlated with DMD subscale reliability ($r = 0.62$, $p<0.001$), even after adjusting for potential confounders (Figure 2). Of the studies involving U.S. female samples, low DMD alphas (<0.70) were reported for all five samples of adolescents or young adults, whereas all five studies with adult female samples reported adequate (≥0.70) DMD alphas. The DMD was not used in studies involving South African female samples—one study reported dropping the DMD subscale after finding inadequate psychometrics (Roye et al., 2010); but studies in other countries followed a similar pattern. International studies with young female samples all reported inadequate DMD scale

reliability, whereas the one study with an adult female sample (median age 34 years) reported an acceptable DMD alpha. These results indicate that the DMD subscale may not be reliable with younger female samples. Interestingly, the two studies that administered the DMD to male samples reported alphas above 0.70 regardless of mean age.

With few exceptions, the RC subscale performed adequately with regard to internal consistency reliability. Only a single study with U.S. females reported less than adequate RC subscale reliability. In this study, researchers administered the original 15-item RC subscale (with alpha=0.80) to a sample of Hispanic females in North Carolina, but after conducting a factor analysis (in which three sub-factors emerged) decided to construct a 5-item RC subscale (with alpha=0.65) for use in the analysis. Thus, the researchers traded reduced reliability for increased construct validity. Two other RC alphas below 0.70 came from a single South African study (Nduna et al., 2010), in which the response set was substantially altered such that higher scores represented more equitable relationships, rather than high or lower relationship power.

The full SRPS also performed adequately across studies. The one exception involved a study of unmarried sexual active African American females from Michigan (Younge et al., 2010), which reported an alpha of 0.64. In this study, the SRPS was composed of only eight items culled from both the RC and DMD and used a modified 5-interval response set assessing which member of the couple had more power.

Multivariable linear GEE regression revealed several significant correlates of internal consistency reliability of the SRPS and subscales across HIV-related studied (Table 2). First, alphas for exclusively male samples were significantly lower (B= −0.082, p=0.009) across studies, whereas alphas for studies involving dyads were significantly higher (B=0.22, p<0.001). Consistent with classical test theory, another independent predictor of scale reliability was the number of items composing the scale. On average, for each additional item added to a scale the alpha increased by nearly 0.01 (p=0.007). The analysis further revealed a significant moderation effect in which the relationship between item number and alpha was significantly stronger for the RC subscale compared to the SRPS (Figure 3). This finding might reflect the fact that the relationship between item number and alpha is non-linear, with decreased gain in alpha for scales beyond about 10–15 items (Nnadi-Okolo, 1990).

Overall, modifications to the original scale items or response sets had a negative impact on scale reliability (Table 2). Modifications to the response set, in particular, can have a substantial impact on scale psychometric properties. As noted, Nduna et al. (2010) modified the response to RC scale items such that high scores represented more equitable relationships and reported relatively low alphas (0.68 for women; 0.54 for men). Across studies, researchers who modified the original scale or subscales (items or responses) reported alphas that were on average 0.06 points lower compared to those who used the original scales (B=−0.059; 95% CI: −0.107, −0.012; p=0.014). However, the relationship between scale modification and alpha is moderated by the type of scale: modifications to the DMD subscale resulted in slightly higher alphas. A further property related to performing scale modifications is loss of predictability. As seen in Figure 4, studies using the original

unmodified scales display a narrower range of alphas (after adjusting for other covariates), indicating that factors such as target population, scale item number, and mean age can account for a higher proportion of the variance in reliability scores across studies, whereas studies using modified scales have less predictable alphas with broader ranges of residuals, including high and low outliers.

Validity—It is beyond the scope of this review to assess scale content validity, and few HIV-related studies have assessed criterion validity of the SRPS against alternative measures of relationship power. Hence, we will explore evidence of validity by examining construct predictive validity based on the theory that relationship power is associated with certain outcomes, particularly condom use and intimate partner violence. This task is complicated by the use of different measures of condom use and HIV risk across studies, the reliability and validity of which varies considerably. Nonetheless, several informative patterns related to construct validity emerged from our analysis.

Across reviewed studies, 32 analyses were performed that examined the association between SRPS (or subscale) scores and measures of condom use. The SRPSm (developed specifically for analyses with condom use outcomes) has not been applied consistently across studies involving condom use behavior. Only seven of the 32 analyses used the SRPSm (or modified subscale) when examining condom use outcomes; 14 analyses retained the condom-associated SRPS items with condom use outcomes; and 11 analyses used an adapted version of the scale or subscales and did not indicate if condom-items were removed.

Of the 32 analyses reporting condom use outcomes, 19 (59%) found that higher relationship power for females predicted greater condom use, at the 0.05 significance level. Cross-study analysis indicated that use of the DMD subscale displayed decreased odds of predicting condom use compared to either the SRPS (OR=0.29; 95% CI: 0.10, 0.83; p=0.02) or the RC subscale (OR=0.13; 95% CI: 0.10, 0.16; p<0.001). There was one exception to this rule: compared to either the SRPS (OR=0.94; 95% CI: 0.91, 0.98; p=0.007) or RC subscale (OR=0.93; 95% CI: 0.92, 0.95; p<0.001), the DMD subscale showed a significant negative relationship between mean sample age and ability to predict condom use behavior. In other words, relative to the SRPS and RC, the odds of finding a significant association between DMD and condom use increased with decreasing mean age of the study sample. Hence, for the DMD subscale, younger age of the sample appears to reduce reliability but improve validity. Not surprisingly, studies with larger samples had increased odds of finding a significant association between SRPS (and subscale) scores and condom use (OR=1.26; 95% CI: 0.98, 1.63; p=0.08).

Scale modification, number of items per scale, and Cronbach's alpha were not significantly associated with whether the SRPS or subscales predicted condom use across studies. It should be noted, however, that these factors might have an impact on validity in individual studies. For example, Roye et al. (2010) explored relationship predictors of sexual risk behavior and performed parallel analyses using two types of response sets for the RC subscale. When analyzed as a categorical variable, high relative to low RC was significantly associated with higher condom use and lower frequency of anal intercourse, but these

associations were not significant when the RC subscale was analyzed as a continuous variable.

Fourteen studies reported results that examined the association between SRPS or subscale scores and measures of IPV. Of these, 12 (86%) were found to be statistically significant at the 0.05 alpha level, with higher relationship power for women predicting less IPV. The two reports of no association with IPV both used the DMD subscale, whereas the 12 studies reporting a statistically significant association with IPV all used either the SRPS or RC subscale.

DISCUSSION

Since its conception, the SRPS and subscales have been used in numerous HIV/STI-related studies with a variety of populations. Numerous modifications and translations of the scales have been undertaken and used to test theoretical relationships encompassing a broad range of predictor and outcome variables. The following section highlights some of the central findings of our psychometric review of the SRPS literature from 2000 to 2012.

With few exceptions, the SRPS and RC subscale show good psychometric properties across numerous populations and research settings. The RC subscale is the most utilized measure of relationship power in the HIV/STI prevention literature. Our analysis indicates, however, that the reliability of the RC subscale can be particularly sensitive to reductions in the number of items used. Overall, studies that used the original versions of the SRPS and RC subscale displayed acceptable reliability and validity across numerous populations and settings. Thus, unless researchers have a substantive reason for revising scale content, there appears little justification for modifying items or response sets when using the SRPS or RC subscale. Indeed, even application of the SRPS and subscales to male respondents, without special adaptation or modification, appears to be valid and reliable. However, there is a need for more research to examine the how men interpret SRPS items and the conditions under which the original SRPS may not be appropriate for male respondents.

Case and cross-study analysis indicate that the DMD subscale exhibits relatively weak psychometric properties across most populations and settings. In particular, the subscale is associated with lower reliability compared to the SRPS and RC subscale, especially among younger female samples. This may be due to the younger developmental stage of intimate relationships in adolescents, where dyadic decision-making has different focal points. Roye et al. (2010) reported poor factorability (KMO=0.56) and the emergence of three separate sub-factors within the DMD, and numerous studies have removed items from the original 8-item subscale due to low factor-item correlation (Kaufman et al., 2008; Kershaw et al., 2006; Magee et al., 2006; Panchanadeswaran et al., 2010; Roye et al., 2012; Shannon et al., 2012; Weeks et al., 2010). The DMD also displays inconsistent construct validity. The weak psychometric properties of the original DMD may account for the observation that, unlike the SRPS and RC subscale, modifications to the DMD tend to increase rather than decrease reliability (Table 2). Researchers wanting to utilize the DMD subscale as a separate measure, should consider the validity of the subscale in the applied context, determine whether modifications are warranted for the target population, understand its psychometric

deficiencies, and validate the psychometric properties of the subscale prior to inferential analysis.

Under some circumstances, scale modifications may be required to improve scale validity. Indeed, the SRPS and RC subscale have proved to be extremely adaptable for use in a wide range of cultural settings. Major modifications such as the South African version of the SPRS and RC subscale provide one example, given the cultural differences that exist between South African populations and those for which the scale was original designed. Yet, it is clear that modifications to item wording (Beckman et al., 2006; Tietelman et al., 2008), removal of items (Parrado et al., 2005; Younge et al., 2010), and response set modifications (e.g., Nduna et al., 2010; Pettifor et al., 2004) have been found to reduce reliability across studies. Removal of items with low factor-item correlations might or might not increase reliability, depending on the number of items in the scale before and after removal, but may be necessary to improve construct validity. SRPS and subscale scoring was standardized in the original development of the scale with the purpose of facilitating comparisons of relationship power reported across samples (Pulerwitz et al., 2000). In general, adaptations in SRPS scoring, particularly scoring based on sample distribution, make it difficult to conduct comparisons of relationship power across populations.

The use of factor analysis to assess the reliability and construct validity of the SRPS and subscales for a particular sample is recommended. Confirming the uni-dimensionality of the scale or demonstrating the existence of sub-factors within the scale could lead to increased construct and predictive validity (e.g., Parrado et al., 2005). This approach requires a proper balance between reliability and validity due to item removal and other scale modifications. Lack of consideration of this balance may be partly responsible for the observation that less than two-thirds of the studies included in this review detected an association between relationship power and condom use. Indeed, this might be an overestimate given that some of these correlations may be due to the inclusion of condom use items within the power scales. Small sample sizes and limited power also likely played a role.

As discussed, analysis of risk of bias was beyond the scope of this paper, so limitations in this review include publication and reporting bias. Researchers may not have included the SPRS in analysis or in publication if the scale demonstrated weak psychometric properties. Nor did we systematically assess study quality. Nearly all of the studies employed a cross-sectional observational design and we did not observe a great deal of variation in methodological quality across studies. The primary design elements affecting study validity that varied across studies were sample size and number of items per scale, and we considered these elements in our interpretation of results. Another limitation was the lack of detail in publications on modifications made to scales and subscales. Finally, samples were limited, in particular, the SRPS and subscales were employed much less frequently with males and heterosexual couples, and no published studies were found to apply the SRPS to same-sex couples. Our review indicates that the utility of the SRPS may extend to these and other vulnerable populations at risk for HIV/STI acquisition.

Based on our findings, we make the following recommendations to researchers conducting HIV/STI research using the SRPS or subscales: (1) reliability and validity may vary across

different populations and age groups, and factor analysis should be performed to assess the psychometric properties of the SRPS and subscales for a particular research sample and setting; (2) the full complement of items in each scale (particularly the RC subscale) should be used for data collection, and removal of items should be based on the results of post-hoc item analysis; (3) the condom-modified versions (SRPSm, RCm, DMCm) should be used when models include condom use outcomes; (4) scale reliability should be reported separately for males and females; (5) the items included in the scales for analysis should be precisely specified; (6) modifications and adaptations of the scales should be described, including wording changes, altered response sets, and scoring details; and the underlying rationale for modifications should be provided; (7) application of the SRPS and subscales to male samples and to both members of couples is recommended to explore the dyadic nature of power imbalances, perceptions of power imbalances, and their effects on sexual risk behavior. Only a single study used dyadic data analysis to examine how the scale performed across couples or which score was able to discriminate across outcomes (VanderDrift et al., 2012). Future investigations using the SRPS and subscales should examine both heterosexual and same-sex couple-level data, as well as the correlations among partner reports. Dyadic data from couples, including same-sex couples, are likely to yield many interesting and informative comparisons in terms of perceptions of relationship power. Moreover, given that the SRPS has been primarily administered at a single time point, further studies should be designed to examine SRPS scores over time, rather than cross-sectionally. Factors that influence changes in relationship power need to be identified to inform effective risk reduction interventions. Furthermore, intervention studies need to examine their effect on increasing relationship power equity and subsequent changes in HIV-related outcomes.

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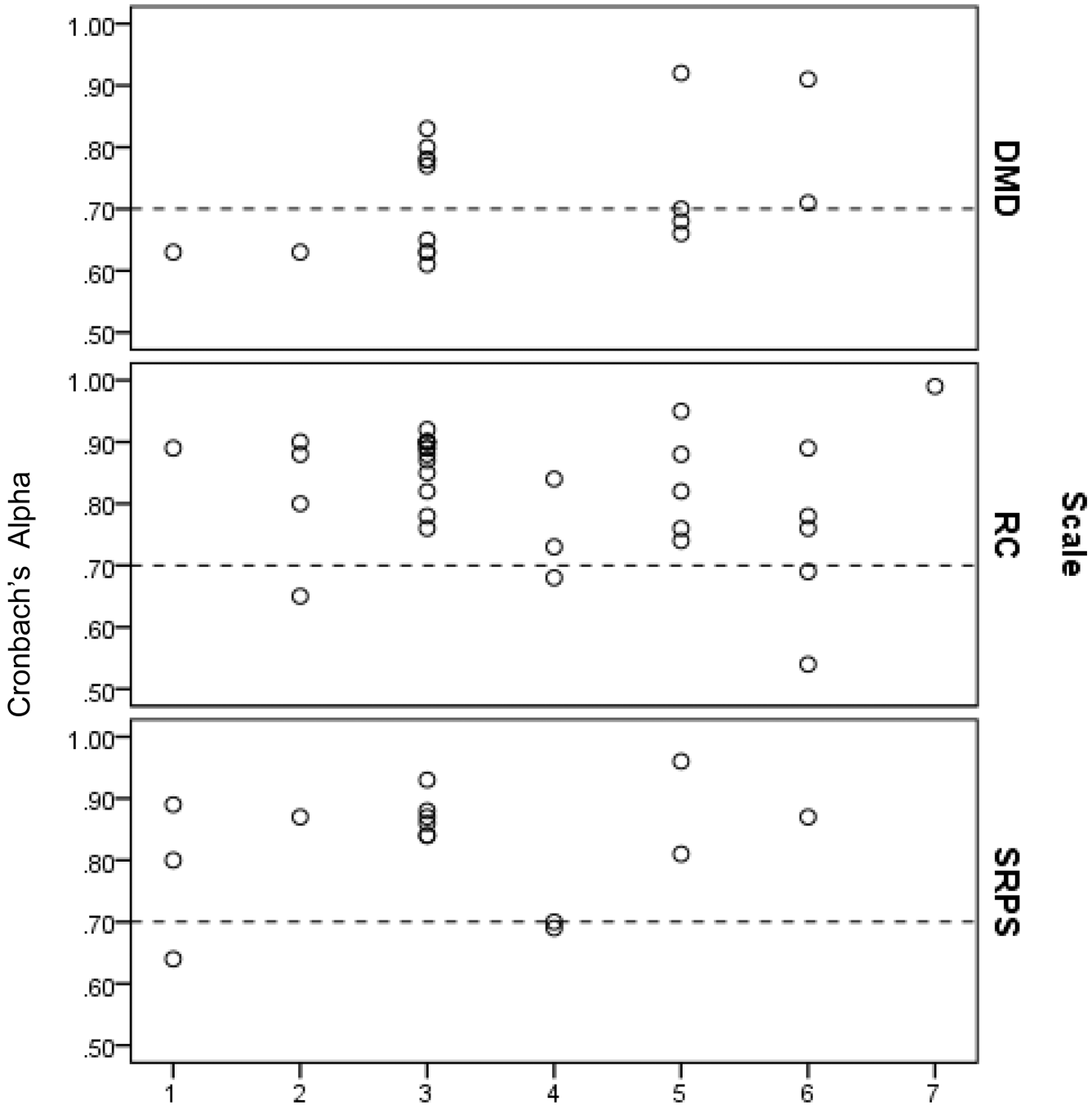

Figure 1.
Distribution of reported Cronbach's alpha by population and scale.

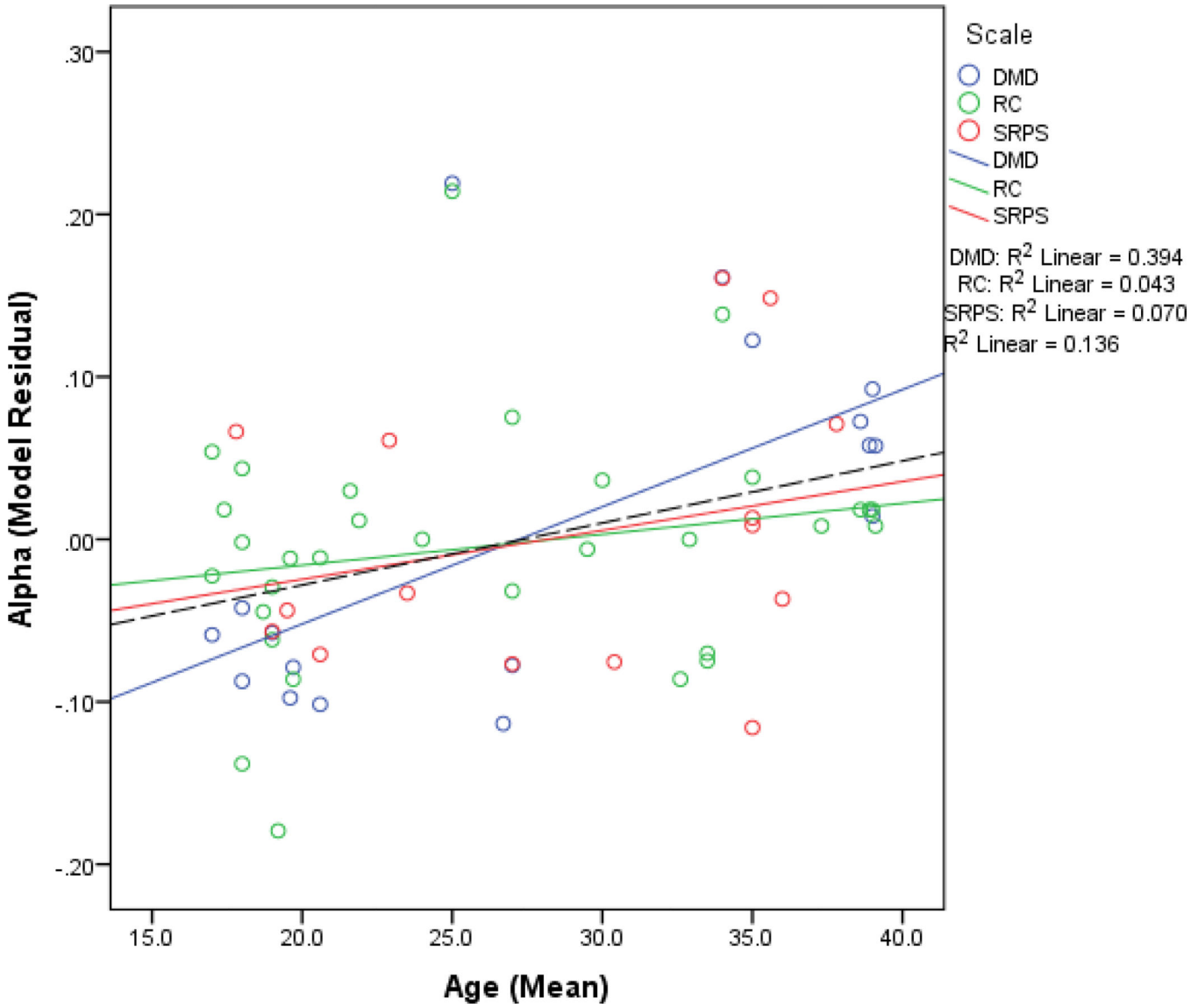

Figure 2.

Scatter plot of relationship between mean sample age and alpha, after adjusting for population type, number of items per scale, and scale modifications.

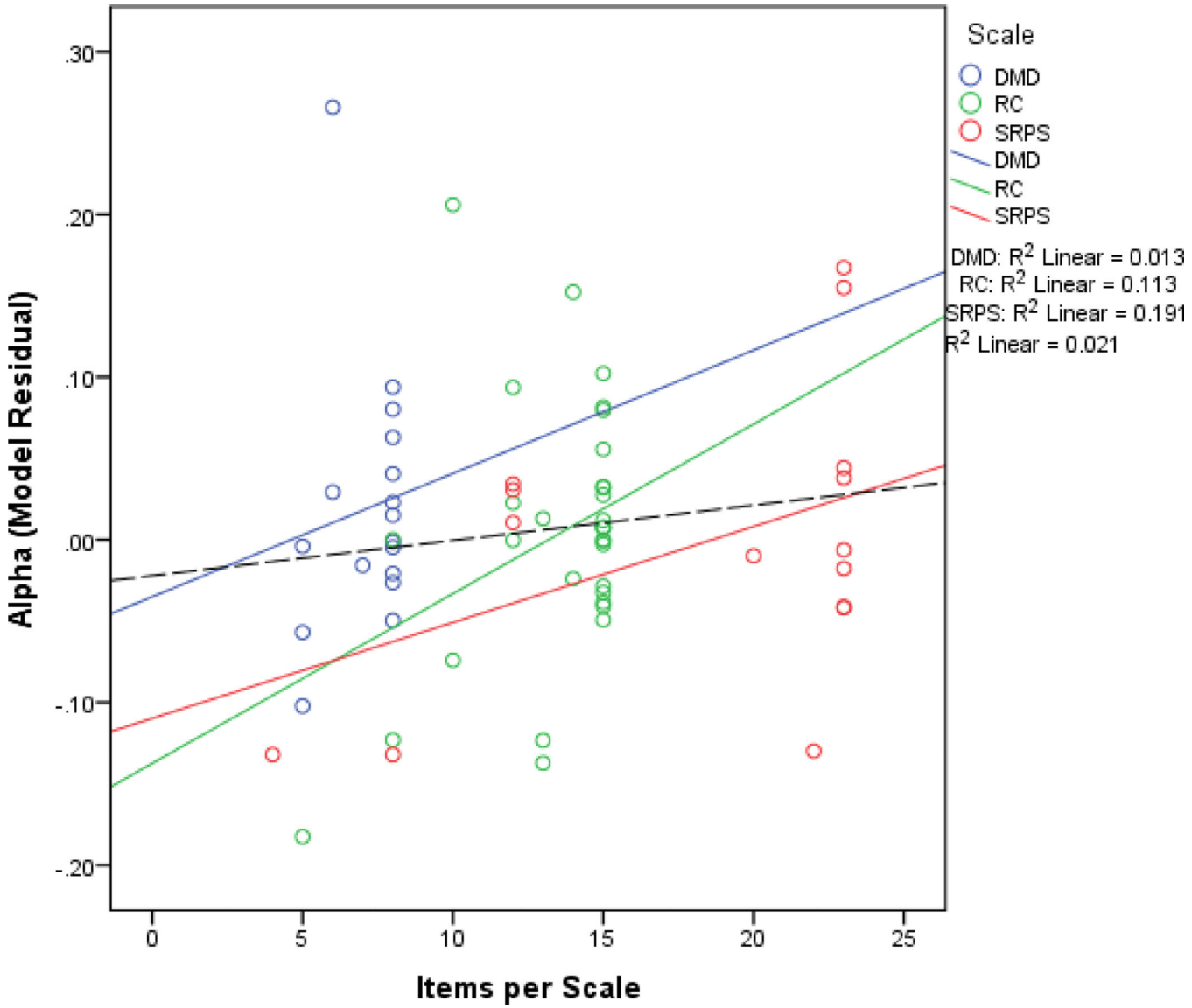

Figure 3.

Scatter plot of relationship between number of items per scale and alpha, after adjusting for population type, mean age of sample, and scale modifications.

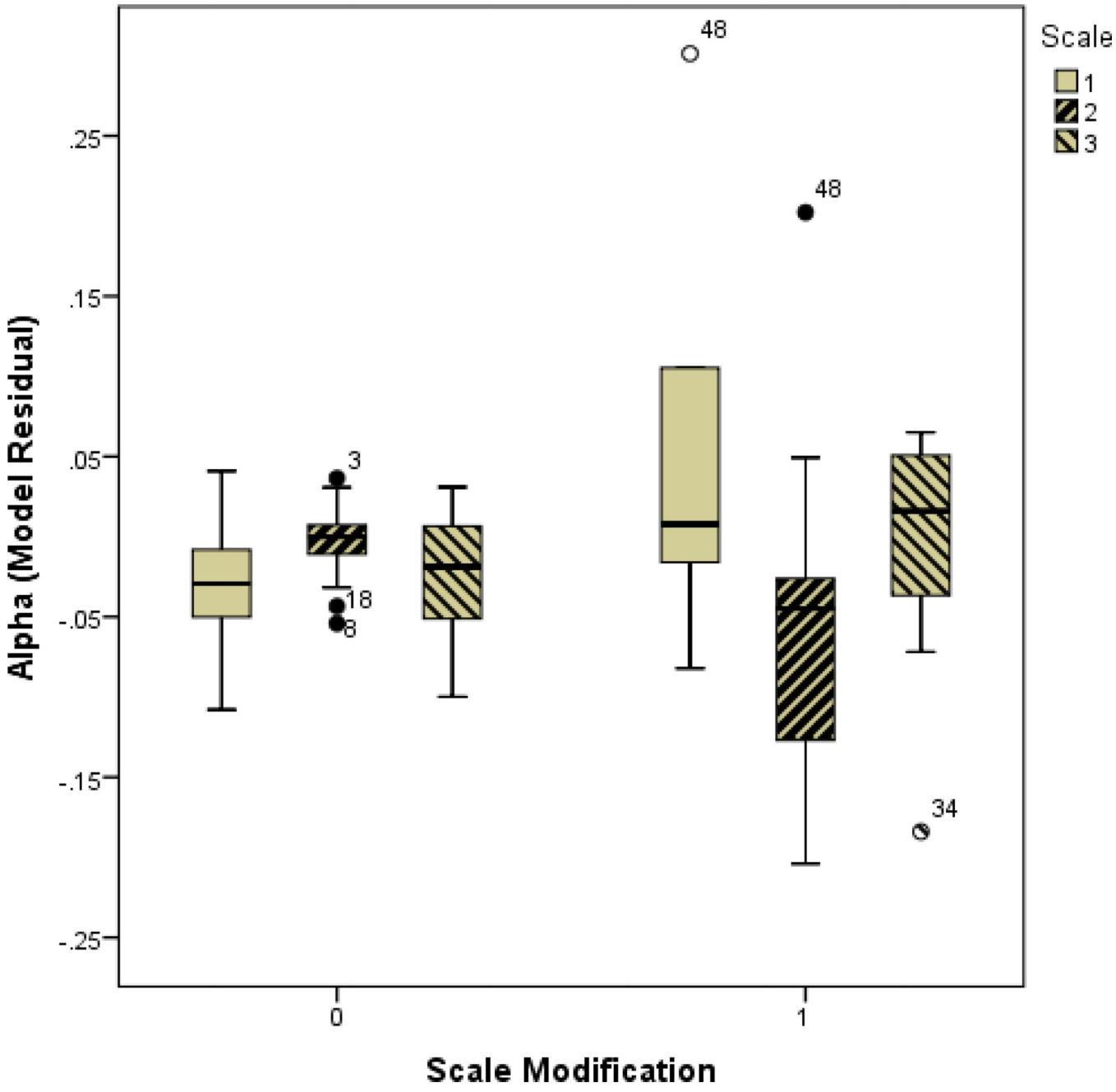

Figure 4.

Distribution of reported Cronbach's alpha by scale modification and scale type, after adjusting for population type and mean age of sample. Key: Scale: 1=DMD; 2=RC; 3=SRPS. Scale Modification: 0=no modification from original; 1=modification from original.

Table 1

Summary of psychometric properties of the SRPS reported in published HIV/AIDS-related research studies, 2000–2012.

Reference / Purpose	Sample Description	SRPS Modifications[a]	Reliability[b]	Association with Other Variables
Pulerwitz, Gortmaker & DeJong (2000) Develop and assess original SRPS. (**Original Scale**)	N= 388; female; age 18–45 yrs; mean age 27 yrs; 89% Latina; have primary sexual partner; low income	**Original Scale Development (plus modified version denoted with small "m"** *Items*: SRPS=23-items and SRPSm=19-items (4 condom-related items removed); RC=15-items, RCm=12 items; DMD=8-items, DMDm=7-items *Scoring:* RC= 4pt Likert (1=strongly agree to 4=strongly disagree). DMD=3 level scale (1=your partner, 2=both equally; 3=you). Higher scores indicated greater power of responder. Subscales scored separately (calculated mean) then combined with each other equal weighting. Rescaled 1- 4. (see Appendix for Scoring details). Tertiles SRPS: low, medium and high. Low level of power 1– 2.430, medium level of power 2.431–2.820, high level of power 2.821–4. *Language*: English and Spanish *Administration*: Interviewer-administered	**English** SRPS=0.84 RC= 0.85 DMD=0.63 SRPSm= 0.86 RCm= 0.85 DMDm=0.57 **Spanish versions** SRPS=0.88 RC= 0.89 DMD=0.60 SRPSm= 0.82 RCm=0.81 DMDm=0.62	**Analysis:** Mantel-Haenszel chi-square test (values not reported) Consistent condom use (outcome) related to higher levels of SRPS ($p<0.01$), SRPSm ($p<0.01$), RC ($p<0.10$), RCm ($p<0.05$), DMD ($p<0.05$), and DMDm ($p<0.05$). Physical abuse (outcome) related to lower levels of SRPS ($p<0.01$) and RC ($p<0.05$), but not with DMD ($p>0.05$). Forced sex (outcome) related to lower levels of SRPS ($p<0.001$) and RC ($p<0.01$), but not with DMD ($p>0.05$). Relationship dissatisfaction (outcome) related to lower levels of SRPS ($p<0.01$) and RC ($p<0.01$), but not with DMD ($p>0.05$). Education (predictor) related to higher levels of SRPS ($p<0.001$) and RC ($p<0.001$), but not with DMD ($p>0.05$).
Pulerwitz, Amaro, DeJong, Gortmaker & Rudd (2002) Further validation of original SRPS.	N= 369; female, age 18–45 yrs; 89% Latina; have primary sexual partner; low income.	None *Administration*: Interviewer-administered	See Pulerwitz et al. (2000)	**Analysis**: Multiple logistic regression. Consistent condom use (outcome) related to high versus low SRPS scores (OR=4.95, $p<0.05$) and high versus low SRPSm scores (OR=4.72, $p<0.05$). **Analysis**: Multiple linear regression: Significant predictors of SRPS: education (B=0.05, $p<0.001$), higher income (B=0.31, $p=0.012$), Spanish (−0.21, $p<0.001$). SRPS not significantly related to age or relationship status.
US African American (AA) Females				

Reference / Purpose	Sample Description	SRPS Modifications[a]	Reliability[b]	Association with Other Variables
Bralock & Koniak-Griffin (2007) Explore association between relationship power, perceived self-efficacy beliefs and percentage condom use.	N= 126; female; age 14–20 yrs; mean age 18, SD 1.8; African American; sexually active in heterosexual relationship; recruited from community health clinic in Los Angeles County, CA.	*Items:* No adaptations *Scoring*: Tertiles *Language:* English *Administration*: Self-administered	SRPS, not reported; RC=0.89; DMD=0.63	**Analysis**: Correlation. SRPS positively correlated with perceived self-efficacy beliefs (r = 0.39, p <.01). SRPS not significantly correlated with percentage condom use (r=0.12, ns).
Harris, Grant, Pitter, & Brodie (2009) Explore the association between relationship power and HIV risk.	N=217; female; ages 18–45 yrs; mean age 35 yrs, SD 1.26; African American; attendees of a citywide outdoor event in Michigan.	*Items*: No adaptations. Condom–use items used for outcome *Scoring*: Bivariate: low/moderate combined and high power. *Language:* English *Administration*: Interviewer-administered	SRPSm=0.89	**Analysis**: Multiple linear regression. HIV risk (outcome) negatively related to SRPSm (B=−0.147, p<0.001). SRPSm accounts for 40% of variance in HIV risk (R^2=.40, p<.000).[e] **Analysis**: Logistic regression. Lower versus higher SRPSm related to increased odds of belief that partner would get angry if asked to wear a condom (OR=4.93, p=0.004), belief that partner would get violent if asked to wear a condom (OR=6.41, p<0.001) and belief that partner would think they are having sex with other men, if asked to wear a condom (OR=40, p<0.001).
Younge, Salem, & Bybee (2010) Explore the effects of HIV knowledge, relationship context, and cultural worldview on HIV risk perception.	N=196; female; mean age =30.4, SD=9.34; African American; unmarried; sexually active with primary male partner; recruited from 3 cities in Michigan.	*Items:* 8-items combined from RC and DMD. Items retained not specified. *Scoring*: Single 5-pt Likert scale for each item assessing who is in control (anchors: 1=my partner completely; 3=both equally; 5-me completely). Mean scores used. *Language*: English. *Administration*: Interviewer-administered	± SRPS=0.64	**Analysis**: Multiple linear regression: HIV risk perception (outcome) negatively related to ± SRPS (B= −0.24, p<.05).
Salazar et al (2011) Identify personal and social predictors of engaging in oral sex.	N=714; female; age 15–21yrs; M=17.8, SD=1.72; African American; sexually active; recruited from health clinics in major city in Southeastern, US.	*Items*: 12-items (unspecified) *Scoring*: Dichotomized. Median split for low/high power (to correct for skew) *Language*: English. *Administration*: Self-administered (ACASI)	± SRPS=0.80	**Analysis**: Group differences on proportion. Performing oral sex (outcome) not significantly related to ± SRPS (Prevalence Ratio 1:11, p=0.113)
US Latina Females				
Parrado, Flippen, & McQuiston (2005) Identify predictors of relationship power in	N=417; female; age 18–49 yrs; Hispanic/Mexican; in stable	*Items:* Original items used for data collection; exploratory factor analysis revealed 3	± RC=0.80; 5 item ± RC=0.65	**Analysis**: Multivariable Poisson regression.

Reference / Purpose	Sample Description	SRPS Modifications[a]	Reliability[b]	Association with Other Variables
migrant Hispanic women	heterosexual relationships; recruited from Mexican communities in Durham, NC, and sending communities in Mexico.	subscales within the RC (relationship control, sexual negotiation, emotional dissonance); Relationship control construct was thus reduced to 5 items (3, 4, 7, 10, 12) *Scoring:* Responses modified to yes/no scale. *Language*: Spanish or English *Administration*: Interviewer-administered		Significant predictors of ± RC: education (B= −0.05, p<0.05), visits a friend once a week (B=−0.33, p<0.05), visits family once a week (B=−0.31, p<0.05). SRPS not significantly related to age (B= −0.02, ns), currently working.(B=−0.04, ns), single marital status (B=−0.35, ns), number of children younger than 12 (B=0.05, ns), years in relationship (B=−0.01, ns), partner age difference (B=−0.02, ns), partner educational difference (B=−0.01, ns), perceived lack of social support (B=−0.01, ns), and number of family co-residents (B=0.01, ns).
Ragsdale, Gore-Felton, Koopman, & Seal (2009) Explore the effects of relationship power and acculturation on sexual risk behavior with primary partners.	N= 40; female; age 18–29 yrs; M=20.6, sd=2.8; Puerto Rican or Mexican; unmarried in primary heterosexual relationship; recruited in family planning clinic.	*Items:* 1 item (item 15) deleted from RC subscale. *Scoring*: No adaptations. *Language*: Not specified. *Administration*: Interviewer-administered	± SRPS=.87; ± RC= 0.88; DMD=0.63	**Analysis**. Group mean difference. Ethnicity (predictor) related to ± SRPS: greater ± SRPS among Mexican (M = 3.08) compared to Puerto Rican ethnicity (M = 2.47, p =.02). **Analysis:** Multiple linear regression. Unprotected sex (outcome) negatively related to ± SRPS (B= −0.46, p<0.01).
Rocca, Doherty, Padian, Hubbard, & Minnis (2010) Test the hypothesis that pregnancy intention mediates the effects of structural risk factors on pregnancy.	N=213; female; age 15–19 yrs; 27% born outside US; 60% reported having vaginal sex; recruited in San Francisco, CA.	*Items:* No adaptations. *Scoring*: Tertiles 3 ordinal categories: low, med, or high power. *Language*: English or Spanish *Administration*: Randomly assigned to either interviewer-administered or self-administered (ACASI)	Not reported	**Analysis**: Multiple logistic regression. Risk of pregnancy (outcome) related to low SRPS versus no main partner (OR=3.30, p<0.01)
Zukoski, Harvey, Oakley, & Branch (2011) Explore patterns and predictors of relationship power.	N=58; 50% female (n=29); age 18–25 yrs; mean age 21.6, SD 2.3; sexual active; community-recruited from rural US northwest.	*Items*: RC subscale only. No adaptations. *Scoring:* 5-point Likert scale, (1=strongly disagree to 5 = strongly agree). Mean scores used. High scores indicate partner has more power. *Language*: English or Spanish *Administration*: Interviewer-administered	RC= 0.90	No inferential analysis performed using RC subscale.
US Multiple Race/Ethnicity Female Samples				
Mosack, Weeks, Sylla, & Abbott (2005) Explored predictors of simulated microbicide use.	N=96; female; age 18–53 yrs (M=36, SD=8.8); 53% African American, 30% Hispanic; 16%	*Items*: No adaptations. *Scoring*: No adaptations. *Language:* Not specified. *Administration*: Method not reported.	SRPS=0.88	**Analysis**: Group mean difference. Compliance with microbicide (outcome) related to SRPS:

Reference / Purpose	Sample Description	SRPS Modifications[a]	Reliability[b]	Association with Other Variables
	White; high sexual risk; recruited in Hartford, CT.			lower SRPS among women with 100% microbicide use compliance (M=2.77) compared to those with less than perfect compliance (M=2.80, p <.05.) **Analysis**: Multiple logistic regression. Microbicide use (outcome) at last sexual encounter not significantly related to SRPS (OR=0.32, p=.12).
Beckman, Harvey, Thorburn, Maher, & Burns (2006) Explore predictors of diaphragm use.	N=448; female; age 18–49 yrs (M=32.6, SD=8.28); 85% White non-Hispanic; in primary heterosexual relationship; 68% married; 75% employed; receiving contraceptive services from managed care organization in northwest, US.	*Items*: 15-item RC; item stems adapted from original but no details provided. *Scoring:* 5-point Likert scale. Mean scores used. *Language*: Not specified. *Administration*: Interviewer-administered (telephone)	±RC=0.76	**Analysis**: ANOVA. Preferred contraceptive method not significantly related to ±RC scores: diaphragm (M=4.54), pill (M=4.53) and condom (M=4.47, p>.05). Diaphragm use satisfaction not significantly related to ±RC (no statistics provided).
Amaro, Larson, Zhang, Dai, & Marsumoto (2007) Explore the effects of integrated trauma and substance abuse services on unprotected sex.	N=206; female; age 18 or older; 35% White, 33% African American, 30% Hispanic; recent primary heterosexual relationship; personality disorder and substance-related disorder; history of sexual or physical abuse; Boston, MA.	*Items*: Items from RC and DMD subscales used (items unspecified). *Scoring*: Total score on items. *Language*: English and Spanish. *Administration*: Interviewer-administered	Not reported	**Analysis**: Group mean difference. Treatment group (independent variable) related to SRPS: higher SRPS in intervention group (M=3.14) compared to control group (M=2.78, p <.01) at 6-month follow-up, and at 12-month follow-up (M=3.28, M=2.72, p<0.001) **Analysis**: Multiple logistic regression. Sexual risk behavior (dichotomous outcome) negatively related to SRPS (OR=0.35, p<0.01).
Knudsen et al (2008) Explore the effects of relationship control and decision-making dominance on sexual risk behavior.	N= 304; female; age 18 or older (Med=35); 68% White, 25% African American, 1% Hispanic; incarcerated; current illicit drug user; 65% completed high school; recruited in correctional facilities in Connecticut,	*Items*: No adaptations. *Scoring*: SRPS tertiles continuous scale scores for RC and DMD used. *Language*: Not specified. *Administration*: Interviewer-administered	SRPS=0.93 RC=0.92 DMD=0.83	**Analysis**: Multiple logistic regression. High SRPS tertile related to decreased odds of having unprotected anal sex (AOR=0.37, p<0.05) compared to low SRPS and unprotected sex with a drug user (A0R=0.43, p<0.05) compared to medium SRPS. Higher RC scores related to decreased odds of unprotected anal sex (AOR=0.65, p<0.05),

Reference / Purpose	Sample Description	SRPS Modifications[a]	Reliability[b]	Association with Other Variables
	Delaware, Kentucky and Rhode Island.			unprotected vaginal sex (AOR=0.55, p<0.05), and unprotected sex with a drug user (AOR=0.60, p=). DMD was not significantly associated with sexual risk behaviors (no estimates given).
Tietelman, Ratcliffe, Morales-Aleman, & Sullivan (2008) Explore the effects of partner violence and control on condom use negotiations.	N=56; female; age 15–19 yrs (Med=17); 61% African American, 39% Hispanic; sexually active; primarily low income; recruited from clinic and community sites in urban setting, Michigan.	*Items:* Used RCm 12-item version but adapted three of the original items to make the wording clear for adolescents to understand. *Scoring:* Adapted the original response format into a 5-point Likert-type scale (to include neutral). Composite sum and mean scores used. *Language*: English. *Administration*: Interviewer-administered	±RCm=0.78	**Analysis**: Group mean difference. Condom use (outcome) not related to ±RCm: no significant difference in mean ±RCm scores between consistent condom users (M=3.75) and inconsistent condom users (M=3.58, p=0.21) **Analysis**: Multiple linear regression. Intimate partner violence (outcome) negatively related to ±RCm (B=−0.03, p=0.004). Threatening behavior (p=0.02) and verbal and emotion abuse (p=0.02) related to ±RCm (no effect sizes given).
Campbell et al (2009) Explored association between relationship power and unprotected sex.	N=396; female; mean age 38.6, SD 8.6; 57% White, 24% African American, 10% Hispanic; in primary heterosexual relationship; recruited in urban and suburban community drug treatment programs in USA.	*Items:* No adaptations. *Scoring:* No adaptations. *Language*: Not specified. *Administration*: Interviewer-administered/ self-administered (ACASI) for sensitive items	RCm=0.90; DMDm=0.78.	**Analysis**: Multiple negative binomial regression. Unprotected sexual occasions (outcome) negatively related to DMDm (AOR=0.73, p<0.01), but not related to RCm (AOR=1.16, ns). Outcome negatively related to interaction term involving RCm and condom use intention (AOR=0.61, p<0.5) and positively related to interaction term involving RCm and alcohol or drugs >12 days in last 30 (AOR=1.82, p<0.01).
Jones & Gulick (2009) Assess the reliability and validity of the sexual pressure scale.	N=325; female; ages 18–29 yrs; 56% African American, 15% Hispanic; 5% White; in primary heterosexual relationship; recruited from downtown urban district,	*Items*: 20-item scale (unspecified). *Scoring*: No details provided. *Language*: Not specified. *Administration*: Self-administered (ACASI)	±SRPS=0.87 (Study 1); ±SRPS=0.84 (Study 2)	**Analysis**: Correlation. Sexual pressure negatively correlated with ±SRPS (Study 1: r= −0.59, p < 0.001; Study 2: r=−0.55, p < 0.001).

Reference / Purpose	Sample Description	SRPS Modifications[a]	Reliability[b]	Association with Other Variables
	university Student Center, community college, daycare center, and STD clinic in Northeast.			
Buelna, Ulloa, & Ulibarri (2009) Test the hypothesis that relationship power mediates the effect of dating violence and STIs.	N= 290; female age 18–36 yrs M=19, SD=2.09); 48% White, 22%, Hispanic, 16% Asian American, 4% African American; undergraduate college students; unmarried; recruited in college psychology course.	*Items:* No adaptations. *Scoring:* Reversed Likert scores on RC subscale, recoded for total score. Higher SRPS =higher power *Language*: Not specified. *Administration*: Self-administered	SRPS= 0.86; RC= 0.82; DMD =0.65	**Analysis**: Correlation. SRPS negatively correlated with overall dating violence (DV) (r=−0.47, p<.01), psychological DV (r= −0.44, p<.01), physical DV (r=−0.32, p<0.01), sexual DV (r=−0.35, p<0.01), and treated STIs (r=−0.48, p<.05). SRPS was not significantly correlated with injurious DV (r=0.02, ns) and STI positive tests (r=−0.02, ns). **Analysis**: Mediation analysis. SRPS partially mediated three relationships involving (1) DV and STI, (2) psychological DV and STI, and (3) physical DV and STI.
Roye, Krauss, & Silverman (2010) Explore the association between relationship power and anal intercourse.	N=101; female; age 14–22 yrs (M=17.4); 70% Hispanic, 30% African American or Caribbean Black; sexually active; recruited from Planned Parenthood Clinics in New York City, NY.	*Items*: No adaptations. *Scoring*: DMD not analyzed due to poor factorability (KMO=0.56) and emergence of three factors in EFA. RC analyzed as tertiles and as continuous variable. *Language*: Not specified. *Administration*: Self-administered (ACASI)	RC=0.90	**Analysis**: Correlation. RC (continuous) not significantly correlated with age (p=0.43) or anal intercourse (ns). **Analysis**: Chi-square. Higher RC (ordinal) significantly related to higher condom use (X^2=11.5, p< .003) and lower anal intercourse (X^2=13.9, p<0.001). (Latinas)
Mosack et al (2010) Examine the association between contextual variables and HIV risk behavior.	N=388; female; age 18–62 yrs (M=37.3, SD=8.6); 49% African American, 32% Hispanic, 16% White; sexually active; 24% married; 58% unemployed.	*Items*: No adaptations. *Scoring:* No adaptations. *Language*: Not specified. *Administration*: Interviewer-administered (CAPI)	RC=0.89	**Analysis**. Group mean difference. Childhood sexual abuse (predictor) not significantly related to RC: CSA (*M* = 1.81), non-CSA (*M* = 1.86, p=0.25). **Analysis**. Path analysis. Among women with a history of CSA, RC had a direct negative effect on engaging in sex work (B=−0.31, p<0.01); and a negative indirect effect on frequency of unprotected

Reference / Purpose	Sample Description	SRPS Modifications[a]	Reliability[b]	Association with Other Variables
				sex (B=−0.07, p<0.01) through sex work and being intoxicated during sex. RC did not have a direct effect on unprotected sex (ns). Among women without a history of CSA, RC had a direct negative effect on engaging in sex work (B=−0.10, p<0.01); but did not have an indirect effect on frequency of unprotected sex (ns) through sex work and being intoxicated during sex. RC had a direct negative effect on unprotected sex (B=−0.31, p<0.01).
Koblin et al (2010) Identify factors associated with unprotected anal intercourse.	N=404; female; mean age 42.2; 65% African American, 26% Hispanic; current non-injection drug use; HIV negative; recruited from South Bronx, NY.	*Items*: RCm without adaptation. *Scoring*: No adaptations. Tertiles. *Language*: Not specified. *Administration*: Self-administered (ACASI)	Not reported	**Analysis**: Multivariable logistic regression. In the multivariable model, level of relationship control was not significantly associated with unprotected anal intercourse.
Panchanadeswaran, Frye, Nandi, Galea, Vlahov, & Ompad (2010) Explore association between relationship factors and condom use.	N=244; female; mean age 38.9, SD 9.7; 55% African American, 31% Hispanic; recently in heterosexual relationship; 52% completed high school; current illicit drug-use; venue-based sampling of 38 low-income New York City neighborhoods.	*Items*: 5 of 8 DMD items retained (not specified). *Scoring*: No adaptations. Tertiles Language: Not specified. *Administration*: Interviewer-administered	RC=0.90; ±DMD=0.78	**Analysis**: Multiple logistic regression. Consistent condom use (dichotomous outcome) not related to higher versus lower ±DMD scores (AOR=1.59, ns). Not related to higher vs lower RC scores (AOR =.032, ns)
Weeks, Coman, Abbott, Sylla, Corbett, & Dickson-Gomez (2010) Explore multi-level factors associated with female condom use.	N=461; female; mean age 39.1, SD 9.4; 55% African American, 30% Hispanic; 14% White; 57% current illicit drug use; recruited in Hartford, CT.	*Items*: 1 unspecified item removed from DMDm subscale. *Scoring:* No adaptations. *Language*: Not specified. *Administration*: Interviewer-administered	RC= 0.89; ±DMDm= 0.77	**Analysis**. Group mean difference. Race/ethnicity (predictor) was significantly related to DMDm: African American (M=1.20), Latina (M=1.10), White (M=1.05, p<0.01), but not to RC: African American (M=2.9), Latina (M=2.89), White (M=2.92, ns). Female condom use was significantly related to RC: female condom (FC) users

Reference / Purpose	Sample Description	SRPS Modifications[a]	Reliability[b]	Association with Other Variables
				(M=3.04) compared to FC non-users (M=2.88, p<.05). **Analysis**: Multiple linear regression. Female condom (FC) use (outcome) marginally positively related to RC (B=010, p=0.09). **Analysis**: Correlation. FC use positively correlated with RC (r=0.14, p<.01), but not with DMDm (r=.05, p>.05). **Analysis:** Structural equation modeling. Education (β=.13), crack use (β= −.13) and had STI (β= −.08) had direct effect on RC. RC had indirect effect on FC stage through internal STD locus of control (p<. 05).
Filson, Ulloa, Runfola, & Hokoda (2010) Test the hypothesis that relationship power mediates the effect of intimate partner violence on depression.	N=327; female; age 18–40 yrs (M=19.6, SD=2.63); 52% White, 18% Hispanic; 18% Asian American, 5% African American; undergraduate college students; unmarried; recruited in college psychology course and health services.	*Items*: No adaptations. *Scoring*: Reversed Likert for RC. Reversed scores RC and DMD subscales for total SRPS. Higher SRPS=lower power. Mean of Z-score used. *Language*: Not specified. *Administration*: Self-administered	RC=0.87; DMD=0.61	**Analysis**: Correlation. SRPS correlated with intimate partner violence (B=0.40, p<. 001) and depression (r=−0.28, p<.001), **Analysis**: Mediation analysis. SRPS partially mediates the relationship between IPV and depression (product coefficient=0.11, p=. 0005).
Operario, Nemoto, Iwamoto, & Moore (2011a) Identify correlates of unprotected sex among transgendered women.	N=174; transgendered women; age 18 yrs or older (M=37.8, SD=10.7); 24% African American; 23% Hispanic, 17% Asian, 12% White; in primary sexual relationship with male partner; 41% self-reported HIV positive; recruited from San Francisco, CA.	*Items*: 12 items (unspecified) *Scoring*: Item mean Transformed to achieve normal distribution *Language*: English and Spanish *Administration*: Self-administered (ACASI)	±SRPS=0.84	**Analysis**: Group difference t-tests SRPS scores were not significantly different (t=0.46) between those having any unprotected sex M – 0.03 (SD=1.05) compared to those having no unprotected sex M 0.05 (SD=.90) with partner in the last 3 months.
Volpe, Hardie, & Cerulli (2012) Test hypothesis that relationship power mediates the effect of dating violence on depression.	N=155; female; age 14–18 yrs (M=16.1, SD=1.3); 69% African American; 19% Hispanic, 7% White; low	*Items*: No adaptations *Scoring*: No adaptations *Language*: English *Administration*: Self-administered (CASI)	Not reported	**Analysis**: Correlation RC inverse correlation with both depressive symptoms (-.434, p < .001) and DV aggression (−.455, p < .001). DMD

Reference / Purpose	Sample Description	SRPS Modifications[a]	Reliability[b]	Association with Other Variables
	socioeconomic status; sexually active with a boyfriend; Northeastern USA			not correlated with either depressive symptoms or DV aggression. **Analysis**: Mediation analysis (product of coefficients) Indirect effect of dating violence on depression through SRPS was significant (0.007, 95% CI: 0.001, 0.015). Indirect effect of SRPS on depression through dating violence was significant (−0.022, 95% CI: −0.063, 0.004)
Campbell, Tross, Hu, Pavlicova, & Nunes (2012) Identify predictors of relationship power.	N=513; female; age 18 yrs or older; 58% White; 24% African American; 9% Hispanic, recruited from outpatient community-based drug treatment programs in the USA	*Items*: No adaptations *Scoring*: No adaptations *Language*: English *Administration*: Interviewer administered/self-administered (ACASI) for sensitive items	RC=0.90; DMD=0.80	**Analysis**: Multivariable regression RC: Having an abusive partner ($p<0.001$) or having more than one male partner ($p<0.05$) predicted lower RC scores; women with androgynous or masculine traits had higher RC scores ($p<0.01$). Age, race/ethnicity, education, length of time in treatment, substance use, and economic dependence not related to RC. DMD: Two interactions were predictive: having an abusive partner x used alcohol or drugs predicted higher DMD scores ($p<0.001$); older women who identified with masculine traits had higher DMD scores ($p<0.05$). African American women had higher DMD scores than White women ($p<0.01$). Women with >1 partner had lower DMD ($p<0.01$). Education and economic dependence not related to DMD.
Leukefeld et al (2012) Efficacy trial of an intervention designed to increase relationship power and other factors related to HIV risk.	N=344; female, median age 34.6 yrs; 71% White; incarcerated women offenders released from prison, conducted in Connecticut, Delaware, Kentucky and Rhode Island.	*Items*: No adaptations *Scoring*: No adaptations *Language*: English *Administration*: Interviewer-administered	Not reported	**Analysis**: Analysis of covariance (ANCOVA) Intervention had a significant effect on SRPS ($\omega^2 = 0.11$, $p=0.018$), RC ($\omega^2 = 0.11$, $p=0.019$), and DMD ($\omega^2 = 0.09$, $p=0.055$),

Reference / Purpose	Sample Description	SRPS Modifications[a]	Reliability[b]	Association with Other Variables
Roye, Tolman, & Snowden (2012) [c] Examined the association between relationship power and engaging in heterosexual anal intercourse.	N=61; 87% female, 13% male; age 15–22 yrs (M=18); 58% African American; 57% Hispanic, 15% mixed; sexually active, recruited from college setting and adolescent clinic in New York.	*Items*: 2 unspecified item removed from DMD subscale *Scoring*: No adaptations *Language*: English *Administration*: Self-administered (ACASI)	RC=0.88; ±DMD=0.63	**Analysis**: Correlation High RC scores associated with decreased heterosexual anal intercourse (r=−0.44, p<0.001), history of STDs (r=−0.27, p=0.04), and history of physical abuse (r=−0.27, p=0.03). High ±DMD scores associated with increased frequency of condom use (r=−0.36, p=0.009), and marginally associated with decreased heterosexual anal intercourse (r=−0.24, p=0.07).
South African Females				
Pettifor, Measham, Rees, & Padian (2004) Explore the effects of sexual relationship power on HIV serostatus and condom use.	N= 4066; female; age 15–24 yrs; South African; sexually experienced; 21% HIV positive; recruited in the Reproductive Health and HIV Research Unit (RHRU) National Youth Survey.	*Items*: Wording revised in translation. 4 items retained on SRPS: items 6, 12, 17 and 22 from original scale. *Scoring*: Agree or disagree. Summed and dichotomized 4-pt scale (0–2= high power, 3–4= low power). *Language*: Translated from English into Sotho, Zulu, Tswana, Xhosa, Pedi, Venda, Tsonga, and Afrikaans. *Administration*: Interviewer-administered	±SRPS=0.69	**Analysis**: Multiple logistic regression. Inconsistent condom use (outcome) related to low versus high ±SRPS (AOR=2.10, p=0.013). HIV positive status (outcome) not related to low versus high ±SRPS scores (AOR=1.00, p=0.99).
Dunkle et al (2004) Explore the effects of partner violence and control on HIV risk behavior and serostatus.	N=1366; female; age 16–44 yrs; South African; pregnant; 34% HIV positive; attending antenatal clinics; recruited in Soweto, South Africa.	*Items:* 12 items of RC South African adaption of SRPS (4 items removed, 1 created) *Scoring*: Tertile categories High scores indicate male dominance and control. *Language*: Not specified. *Administration*: Interviewer-administered	±±RC=0.84	**Analysis**: Logistic regression. High versus low ±±RC related to increased odds of being HIV infected (OR=1.65, p=0.002), having a non-primary male partner (OR=1.58, p<0.05), engaging in transactional sex (OR=1.65, p<0.05), and never used condoms (OR=2.02, p<0.05); but not related to having >5 male partners (OR=1.30, ns), or having an alcohol or drug problem (OR=1.64, ns). **Analysis**: Multiple logistic regression. HIV positive status (outcome) related to high (male control) versus low ±SRPS (AOR=1.52, p=0.023).
Jewkes et al (2006) Assess gender-based violence as a risk factor for HIV after	N=1295; female; age 15–26 yrs (M=18.7); South African;	*Items:* 10-items RC, not specified (Dunkle, 2004) *Scoring:* Continuous variable (sum or mean not specified).	±±RC =0.73	**Analysis: Linearized models**

Reference / Purpose	Sample Description	SRPS Modifications[a]	Reliability[b]	Association with Other Variables
adjustment for women's own high-risk behaviors	Stepping Stones survey, sexually active; recruited mostly from schools in Eastern cape providence, South Africa.	*Language*: Xhosa *Administration*: Interviewer-administered		±± RC no differences with woman with HIV or without HIV (0.156, vs .021, ns) **Generalized linear mixed models** ±± RC related to having greater frequency of sex (AOR .84, p=.017)
Sayles et al (2006) Identify predictors of self-efficacy for condom use and sexual negotiation.	N=7409; 53% female (n=3890); age 15–24 yrs; South African; sexually active; recruited in the Reproductive Health and HIV Research Unit (RHRU) National Youth Survey.	Used Pettifor's (2004) adaptation and translations. *Administration*: Interviewer-administered	See Pettifor (2004)	**Analysis**: Group differences on proportion. Self-efficacy (outcome) related to ± SRPS: greater proportion with high ± SRPS in high self-efficacy group than low self-efficacy group (Prevalence Ratio=1.08, p<0.05).
Ketchen, Armistead, & Cook (2009) Examined the effects of HIV status and stressful life events on relationship power.	N=208; female; age not reported; South African; had biological children age 11–16 yrs; 42% HIV positive; convenience sample from three communities on the outskirts of Pretoria, South Africa.	*Items*: 22-items (1 DMD item removed (not specified) because not relevant. Several items revised during translation. *Scoring*: ± RC score summed 15–60. Lower scores=higher power. DMD scores used to create 3 scales representing male-dominated, female-dominated, and mutual decision making. *Language*: English, Afrikaans, Sotho *Administration*: Interviewer-administered	± SRPS=0.70	**Analysis: Regression analysis** ± RC negatively associated with education (*B*=−-.16, p<.01) and positively with life changes (*B*=.19, p<.01). Male DMD negatively associated with education (*B*=−.24, p<.0) and negatively associated with knowledge (*B*=−.12, p<.05). Female DMD (*B*=−.13, p<.05). Mutual DMD is positively associated with education (*B*=.28, p<.01), HIV status (*B*=−.13, p<.05) and knowledge (*B*=.14, p<05)
Jewkes, Dunkle, Nduna, & Shai (2010) Assessed whether intimate partner violence and relationship power inequity increase risk of incident HIV infection.	N=1099; female; age 15–26 yrs (M=18.5); South African; HIV negative at baseline; Stepping Stones survey, baseline and 2 years; recruited in Eastern cape providence, South Africa.	*Items*: 10-items RC, not specified (Dunkle, 2004) *Scoring*: Same as Dunkle, 2004. *Language*: Xhosa *Administration*: Interviewer-administered	Reported in Jewkes, 2006	**Analysis**: Pearson Chi-square Low power equity more likely to acquire HIV (51/124; 41.1%) vs no HIV (274/905; 30.3%) p=.018. Low ±± RC more likely to have experienced physical or sexual IPV (29% vs 22%, p< 0.014) as compared to high ±± RC Multilevel modeling Low ±± RC had higher incidence of HIV (AOR 1.51. p.027) than medium or high ±± RC.

Reference / Purpose	Sample Description	SRPS Modifications[a]	Reliability[b]	Association with Other Variables
Shai, Jewkes, Levin, Dunkle, & Nduna (2010) Investigate the factors associated with both any condom use and consistent use by young rural women.	N= 1204; female; age 15–26 yrs; South African; sexually active; Stepping Stones baseline data; recruited in Eastern Cape Province, South Africa..	*Items:* RC 10-items, not specified Dunkle, 2004. *Scoring*: Higher scores=higher gender equity *Language*: Xhosa *Administration*: Interviewer-administered	Reported in Jewkes, 2006	**Analysis:** Multilevel regression modeling Consistent condom use, when compared to inconsistent condom use, was associated with higher gender equity (higher ±± RC) in relationships (AOR 1.43, p =.001)
Nduna, Jewkes, Dunkle, Shai, & Colman (2010) Investigate whether baseline depressive symptomatology was associated with risky sexual behavior and relationship characteristics.	N=2289; 57% female (n=1294); age 15–26 yrs; sexually active; Stepping Stone survey baseline and 1 year, recruited in Eastern Cape Province, South Africa.	*Items*: RC 13-item (unspecified) *Scoring:* 4 point Likert. Higher score equals more equitable relationship ("liberal power dynamics"). *Language*: Xhosa *Administration*: Interviewer-administered	±± RC= 0.68	**Analysis**: Multilevel regression modeling ±± RC not correlated with depression at baseline (AOR 0.81. p=0.229) or after 12 months (OR 0.7, p=0.237).
Steffenson, Pettifor, Seage, Rees, & Cleary (2011) Explore the behaviors and attitudes of those engaged in differ40ent patterns of sexual partnerships.	Same as Sayles (2006)	Used Pettifor's (2004) adaptation and translations. *Administration*: Interviewer-administered	Not reported	**Analysis**: Group differences on proportion. Sexual concurrency (outcome) not related to ± SRPS: concurrents and monogamists did not differ on percent low ± SRPS among females (Prevalence Ratio=1.09, p<0.715).
Groves, Kagee, Maman, Moodley, & Rouse (2012) Explore exposure to IPV and emotional distress in pregnant women	N=1402; female; age 18–46 yrs; pregnant; had current heterosexual partner; recruited from primary health clinic antenatal care in Durban, South Africa	*Items*: Same as Dunkle, 2004 *Scoring:* Same as Dunkle, 2004 *Language*: Xhosa Administration: Interviewer-administered (CAPI)	Reported in Dunkle, 2004	**Analysis**: Multivariable logistic regression. Male partner having high versus low ±± RC related to increased odds of women reporting emotional distress during pregnancy (OR=1.47, p=0.013)
Other/International Females				
Yang & Xia (2006) Explore effects of individual cognitive factors and social influences on consistent condom use.	N= 159; female; mean age 22.9; Asian/Chinese; entertainment workers; 54% reported commercial sex work; 75% migrants to urban center; recruited in beauty salons, bathing/ massage centers or karaoke halls in Shanghai, China.	*Items*: 12-item scale (unspecified). *Scoring:* 5-point Likert scale. Sum of scores, higher score= less power *Language*: Chinese. *Administration*: Interviewer-administered	± SRPS=0.81	**Analysis: 2-sample t-test** Inconsistent condom users have less power than consistent condom users (31 vs 25; p<.01). Multiple logistic regression Lack of sexual power reduced the odds of consistent condom use [OR .92 p<.01]; however when cognitive/affective factors were added to the model (i.e. HIV information, attitudes toward condom use, peer support for condom use, perceived

Reference / Purpose	Sample Description	SRPS Modifications[a]	Reliability[b]	Association with Other Variables
				ease of condom use), relationship power was no longer statistically significant.
Kershaw et al (2006) Assessed the influence of factors related to the theory of gender and power on sexual behavior.	N=196; female; mean age 26.7 yrs, SD 6.9; Haitian; pregnant women receiving pre-natal care; recruited in clinic in Haiti.	*Items*: Linguistically adapted 5-items from DMD (items retained unspecified). *Scoring:* Mean of 5-item scale. Language: Haitian Creole. *Administration*: Interviewer-administered	± DMD =0.66	**Analysis:** Multivariable Logistic regression ± DMD was significantly correlated w/ intentions to use condoms after pregnancy (OR 1.58 p < .05), controlling for HIV knowledge and demographics. Not related to ≥2 partners in year prior to pregnancy, condom use or self-reported STI.
Powwattana (2009) Test a model that includes contributions of self-discrepancies, negative emotions cognitive strategies, power in sexual relationships and sexual self-efficiency to sexual behaviors	N=492; female; age 15–24 yrs (M=19.7, SD=2.9); Asian/Thai; unmarried; recruited in impoverished urban areas of Bangkok, Thailand.	*Items*: No adaptations. *Scoring*: No adaptations. *Language*: Not specified. *Administration*: Self-administered	RC= 0.74; DMD=0.68	**Analysis:** Analysis of variance Risky sex group had lower scores on RC and DMD compared to safer, and no risk groups (p<.001). In Multivariate logistic model Lower DMD in women predicted unprotected sex (AOR=0.3, p <. 001). RC was not significantly associated with risk behavior in final model and therefore excluded.
Ulibarri et al (2010) Examined factors influencing intimate partner violence among female sex workers.	N=924; female sex workers (FSW); mean age 32.9; Hispanic/Mexican; recruited in community or municipal health clinics and street outreach in Tijuana and Cuidad Juarez, Mexico.	*Items:* RC 8-item scale (unspecified). *Scoring*: No adaptations. *Language*: Spanish. *Administration*: Interviewer-administered	± RC .76	**Analysis:** Univariate logistic regression models FSW experiencing recent intimate partner violence (IPV) has lower ŦRC than those not experiencing recent IPV (OR .39, p< .01). Multivariate model FSW with lower ŦRC more likely to have experienced IPV recently, along with factors of child abuse and partner with another partner (OR . 35, p.01)
Shannon et al (2012) Examined the influence of gender inequity on male sexual dominance, sexual violence and sexual risk behavior.	N=2049; 51% female, 49% male; age 15–49 yrs; population-based sampling; conducted in Botswana and Swaziland	*Items*: 2-item DMD (items 17 & 22); items reworded *Scoring:* Dichotomous scoring: male-controlled sexual decision-making defined by male partner having more control in at least one of the two items. Language: Setswana, siSwati *Administration*: Interviewer-administered	Not reported	**Analysis:** Logistic regression Male-controlled sexual decision-making associated with increased age (females: OR=1.02; 95% CI: 1.00, 1.04; males: OR=1.13, 1.06, 1.19), cohabitating or married status (females: OR=2.12; 1.65, 2.74; males: OR=1.89, 1.1.24, 2.36),

Reference / Purpose	Sample Description	SRPS Modifications[a]	Reliability[b]	Association with Other Variables
				less than high school education (females: OR=0.31, 0.31, 0.33; males: OR=0.62, 0.48, 0.80), lower monthly household income (females: OR=0.57, 0.55, 0.60; males: OR=0.48, 0.37, 0.63), and increased gender inequality (females: OR=2.10, 1.59, 2.73; males: OR=1.98, 1.17, 2.60).
Hatcher et al (2012) Examined the association between relationship power and depression in HIV positive women.	N=270; female, age 15–49 yrs (Med=34); HIV-positive and ART-naive; recruited from health clinic in Uganda	*Items*: 1 unspecified item removed from RC subscale *Scoring:* No adaptations. Tertiles. Language: Runyankole *Administration*: Interviewer-administered	SRPS= 0.96; ±RC= 0.95; DMD =0.92	**Analysis:** Multivariable Linear Regression Women with moderate (b=−0.21, 95% CI: −0.36, −0.07) or high SRPS (b=−0.21; 95% CI: −0.36, −0.06) had lower depression symptom severity compared to women with low SPRS. Women with moderate SRPS had better mental health status (b= 3.38, 95% CI: 0.08, 6.68) compared to women with low SRPS. Women with moderate (b=−0.31, 95% CI: −0.45, −0.17) and high ±RC (b=20.19; 95%CI: −0.33, −0.05) had lower depression severity compared to women with low relationship control. Women with moderate DMD had lower depression (b=−0.17, 95% CI: −0.31, −0.03).
Males				
Magee, Small, Frederic, Joseph, & Kershaw (2006) Explore predictive psychosocial variables of HIV/AIDS risk behaviors.	N=93; male; Haitian; mean age 39, SD 9.6; biological fathers of expectant females; 36% married; recruited in community clinics in Deschapelles, Haiti.	*Items*: DMD 5-items (items retained unspecified). *Scoring*: Total score for DMD was dichotomized at mid-point (0–5= low, 6–10= high DMD). *Language*: Haitian Creole. *Administration*: Interviewer-administered	±DMD=0.71	**Analysis**: Bivariate analysis: DMDm and condom use in the last year not related (OR=1.22, p=0.66). Multivariable analysis: Higher DMDm associated with a greater likelihood of having more than one sex partner in the past year [AOR=62.5p=0.006].
Sayles et al (2006) Identify predictors of self-efficacy for condom use and sexual negotiation.	N=7409; 47% male (n=3519); age 15–24 yrs; South African; sexually active; recruited in	Used Pettifor's (2004) adaptation and translations.	Not reported	**Analysis**: Group differences on proportion. Self-efficacy (outcome) related to ±SRPS: greater proportion

Reference / Purpose	Sample Description	SRPS Modifications[a]	Reliability[b]	Association with Other Variables
	the Reproductive Health and HIV Research Unit (RHRU) National Youth Survey.			with high ± SRPS in low self-efficacy group than high self-efficacy group (Prevalence Ratio=0.94, p<0.05)
Dunkle et al (2007) Explored predictors of transactional sex with casual and primary female partners.	N=1288; male; age 15–26 yrs; South African; unmarried; current or past primary heterosexual relationship; Stepping Stones survey, recruited in 70 villages in rural Eastern Cape province of South Africa.	*Items*: RC 13-item scale used a combination of items from the SRPS and previous South African studies covering beliefs in gender norms. Scoring: RC scored as a 5 level ordinal variable: 4 quartile levels and a 5th level representing men who had no current primary partner. *Language*: Xhosa. *Administration*: Interviewer-administered	±± RC=0.69	**Analysis:** Multilevel logistical regression modeling Men in highest quartile (most equitable gender attitudes and less controlling behavior) with main partner were less likely to report giving material exchanges then men with lowest ±± RC (AOR . 55; 95%CI =.32-.94) and with getting material exchanges (. 43; 95%CI=.25-.74). Not significant in model with casual partners
Kaufman, Shefer, Crawford, Simbayi, & Kalichman (2008) Explore the association between gender roles and HIV risk mediated by relationship power.	N=309; male; median age 25 yrs; age range 18–45 yrs; South African; 10% married; 70% employed; attending STI services in a primary health care clinic in Cape Town, South Africa.	*Items*: RC 10 items and 6 DMD items, not specified. No details given regarding item translation. *Scoring*: Not specified. *Language*: Xhosa, English or Afrikaans *Administration*: Self-administered	± RC=.0.89; ± DMD=0.91	**Analysis:** Structural equation modeling Masculine ideology was positive path to ± DMD (.473, p<.001) and inverse path to ± RC (−.316, p<.001). Negative attitudes to women positive path to ± RC (. 341; p<.05), not related to ± DMD. No significant path to HIV.
Nduna, Jewkes, Dunkle, Shai, & Colman (2010) Investigate whether baseline depressive symptomatology was associated with risky sexual behavior and relationship characteristics.	N=2289; 43% male (n=995); age 15–26 yrs; sexually active; Stepping Stone survey baseline and 1 year, recruited in Eastern Cape Province, South Africa..	*Items*: RC 13-item (unspecified) *Scoring:* 4 point Likert. Higher score equals more equitable relationship ("liberal power dynamics"). *Language*: Xhosa	±± RC=0.54	**Analysis**: Multilevel regression modeling ±± RC not correlated with depression (AOR 1.24, p=.362) at baseline or after 12 months (AOR .74. p=. 256)
Bermudez, Castro, Gude, & Buela-Casal (2010) [c] Determine whether relationship power and sexual double standard predict risk of HIV/STI.	N=689; females 63%; males 37%; age 14–18 yrs; native Spanish or Latin American; sexually active; in primary heterosexual relationship; recruited in sexual health centers, schools and immigrant associations in Spain.	*Items*: No adaptations. *Scoring*: No adaptations. *Language*: Spanish *Administration*: Self-administered	RC= 0.88 (native Spaniards), 0.90 (immigrants); DMD= 0.70 (native), 0.88 (immigrants)	**Analysis:** Group difference, t-tests Among native Spaniards, females scored significantly higher than males on both RC (t=−2.05, p=.04) and DMD scores (t=−2.27, p=.02). Among Latin American adolescents, males scored significantly higher than females on both DMD (t=6.22, p=.0001), but there was no difference on RC scores

Reference / Purpose	Sample Description	SRPS Modifications[a]	Reliability[b]	Association with Other Variables
				(t=−1.42, p=.16). Higher DMD, but not RC, scores predicted lower sexual risk (OR=0.92, p=.02).
Jewkes, Sikweyiya, Morrell, & Dunkle (2011) Explore association between violence perpetration and HIV prevalence.	N=1229; male; age 18–49 yrs; South African; 23% married; 18% HIV positive; recruited in three districts in the Eastern Cape and KwaZulu-Natal provinces of South Africa.	*Items*: RC 12-item (Same as Dunkle, 2004) *Scoring*: Sum of items *Language*: Xhosa, Zulu, English *Administration*: Self-administered (ACASI)	±± RC=0.78	**Analysis:** Pearson's Chi Square Fewer men with HIV reported being in the most equitable tertile Multilevel logistic regression ±± RC not retained in model
Operario, Nemoto, Iwamoto, & Moore (2011) Examined prevalence and correlates of unprotected sex with a primary male partner among transgender women	N=174; male; age 18–60 yrs (M=35.6, SD=10.7)35.6; 36% African American, 24% Hispanic, 17% White, 4% Asian; primary partners of transgendered women; recruited in San Francisco, CA.	*Items*: "brief version", unspecified modification. *Scoring*: Not specified. *Language*: English and Spanish *Administration*: Self-administered (ACASI)	± SRPS=0. 87	**Analysis:** Group difference t tests ± SRPS not related to unprotected sex (no statistics provided)
Zukoski, Harvey, Oakley, & Branch (2011) Explore patterns and predictors of relationship power.	N= 58; 50% male (n=29); age 18–25 yrs; mean male age 21.9, SD 2.8; sexual active; community-recruited from rural US northwest.	*Items*: RC subscale only. No adaptations. *Scoring:* 5-point Likert scale, (1=strongly disagree to 5 = strongly agree). Mean scores used. High scores indicate partner has more power. *Language*: English or Spanish	RC= 0.76	No inferential analysis performed using RC subscale.
Steffenson, Pettifor, Seage, Rees, & Cleary (2011) Explore the behaviors and attitudes of those engaged in different patterns of sexual partnerships.	Same as Sayles (2006)	Used Pettifor's (2004) adaptation and translations.	Not reported	**Analysis**: Group differences on proportion. Sexual concurrency (outcome) not related to ± SRPS: concurrents and monogamists did not differ on percent low ± SRPS among males (Prevalence Ratio=1.00, p<0.673).
Heterosexual Couples				
Lau et al (2006) Explore association between relationship factors and sexual dysfunction.	N=596; 298 heterosexual couples; females age 20–39 yrs; males age 20–45 yrs; Asian/Chinese; married; recruited in rural areas of Dengfeng, China.	*Items*: No adaptations. *Scoring:* RC subscale categories: low, ≤25%, middle 50% and high > 25%. Female scores only *Language*: Chinese (back translation from English) *Administration*: Choice of interviewer- or self-administered	RC=0.82 (females only)	**Analysis:** Univariate odds ratios between low and high Low RC more likely to have at least 1 sexual dysfunction (AOR=3.77, , p<.01), report being dissatisfied with sexual life (AOR=2.51, p<.05), and to have a husband with at least 1

Reference / Purpose	Sample Description	SRPS Modifications[a]	Reliability[b]	Association with Other Variables
				sexual dysfunction (AOR=2.83, p<.05).
Gagnon, Merry, Bocking, Rosenberg, & Oxman-Martinez (2010) Explore association between relationship power and knowledge, attitudes, and practices towards STIs.	N=122; female: n=81; male: n=41; 14 couples; female mean age 31.9, SD 5.8; 95% married or cohabitating; South Asian immigrants to Canada; recruited in hospital and community settings.	*Items:* No adaptations. *Scoring*: DMD subscale dichotomized. If 6 or more items received “you” or “both of you" response, DMD coded as “high” power. *Language*: French, Hindi, Urdu, Tamil *Administration*: Choice of interviewer- or self-administered	Not reported.	**Analysis:** Bivariate analysis 24% more men than women reported "high" DMD (95% CI 8.0, 39.4). High STI symptom knowledge lower among woman with high power (Risk difference (RD) −43.3(95% CI −77.2–9.5) . High power women had heard of STIs (RD 25.5 (3.0, 48.0) would not keep HIV a secret (RD 31.1 (4.6, 57.5%) and felt they could ask a partner to use condoms RD 28.2 (4.7, 51.8) Men’s scores were not assessed.
VanderDrift, Agnew, Harvey, & Warren (2012) Identify predictors of power over condom use.	N=226; dyads, age 18–51 yrs (M=24, SD=5.12); 31% White, 27% African American, 24% Hispanic; reported high risk sexual behavior; recruited from clinics and community locations in East Los Angeles, CA.	*Items*: 8 of 15 RC items retained (not specified) *Scoring*: Reverse coded; high score indicates high power for respondent *Language*: English *Administration*: Interviewer-administered	±RC=0.99	**Analysis**: Multiple linear regression Condom use intentions of the partner with higher relational power (±RC scores) was significantly related to subsequent condom use (β=0.45, p<0.01), whereas intentions of the partner with lower relational power was not (β=0.18, ns)

Notes. If no modifications listed, study used original 23-item SRPS with response options described by Pulerwitz et al. 2000

[a] Scale conducted in English unless otherwise noted

[b] Reliability measured by Cronbach’s alpha unless otherwise noted

[c] Study contained female and male subjects and did not separate all results by sex

± Reliability score based on a version of the scale modified from the original (see SRPS Modification column for details)

±± South African Version of the SRPS. Jewkes RK, Nduna M, Jama N, Levin JB. Measuring relationship power: adaptation of the SRPS for South Africa. XIV International AIDS Conference 2002, Barcelona. http://www.aids2002.com/Program/ViewAbstract.asp?id=/T-CMS_Content/Abstract/20020629075034159.xml (accessed Feb 18, 2004).

SEM – Structural equation modeling

CI – 95% confidence interval

Table 2

Predictors of internal consistency reliability of SRPS and subscales across studies: multivariable model using generalized estimating equation (GEE) analysis.

Predictor	B	Std. Error	95% Confidence Interval	P-value
Scale:				
Relationship control (RC) subscale	−0.095	0.056	−0.204, 0.015	0.090
Decision-making dominance (DMD) subscale	−0.260	0.071	−0.399, −0.121	<0.001
Sexual Relationship Power Scale (SRPS) (reference)	--	--	--	--
Population:				
African American U.S. females	0.001	0.027	−0.051, 0.054	0.957
Latina U.S. females	0.057	0.029	−0.001, 0.114	0.052
South African females	0.041	0.030	−0.018, 0.100	0.178
Other international females	0.013	0.035	−0.055, 0.081	0.708
Males	−0.082	0.032	−0.145, −0.020	0.009
Couples/dyads	0.220	0.012	0.196, 0.243	<0.001
Mixed race/ethnicity U.S. females (reference)	--	--	--	--
Age (sample mean in years)	0.001	0.002	−0.003, 0.004	0.748
Number of items in scale	0.007	0.002	0.002, 0.011	0.007
Modification of original scale (1=yes, 0=no)	−0.059	0.024	−0.107, −0.012	0.014
Interaction terms by scale:				
RC x Age	0.001	0.001	−0.001, 0.003	0.427
DMD x Age	0.008	0.001	0.006, 0.010	<0.001
SRPS x Age (reference)	--	--	--	--
RC x Number of items	0.008	0.002	0.004, 0.013	<0.001
DMD x Number of items	−0.006	0.006	−0.017, 0.005	0.251
SRPS x Number of items (reference)	--	--	--	--
RC x Scale modifications	−0.001	0.007	−0.014, 0.012	0.842
DMD x Scale modifications	0.143	0.020	0.105, 0.181	<0.001
SRPS x Scale modifications (reference)	--	--	--	--