Published in final edited form as:

Sex Relation Ther. 2020 ; 35(1): 2–14. doi:10.1080/14681994.2017.1419559.

Measuring Relationship Functioning in South African Couples: A Strategy for Improving HIV Prevention Efforts

Jennifer M. Belus¹, Tracy Kline², Tara Carney^{3,4}, Bronwyn Myers^{3,4}, Wendee M. Wechsberg^{5,6,7,8}

¹Department of Psychology and Neuroscience, University of North Carolina at Chapel Hill, Davie Hall CB # 3270, Chapel Hill, NC, 27599, USA

²Statistics and Epidemiology, RTI International, 3040 Cornwallis Rd., Research Triangle Park, NC, 27709, USA

³Alcohol Tobacco and Other Drug Research Unit, South African Medical Research Council, Francie van Zijl Drive, Cape Town, South Africa

⁴Department of Psychiatry and Mental Health, University of Cape Town, J-Block, Groote Schuur Hospital, Observatory, Cape Town, South Africa

⁵Substance Use, Gender and Applied Research, RTI International, 3040 Cornwallis Rd., Research Triangle Park, NC, 27709, USA

⁶Health Policy and Management, University of North Carolina at Chapel Hill, 135 Dauer Drive, Chapel Hill, NC, 27599, USA

⁷Psychology in the Public Interest, North Carolina State University, 640 Poe Hall, CB#7650, Raleigh, NC, 27695, USA

⁸Psychiatry and Behavioral Sciences, Duke University, 4584 White Zone, Duke South, CB#3950, Durham, NC, USA

Abstract

Over the past decade there has been increased focus on targeting couples in HIV prevention efforts, particularly in sub-Saharan Africa where HIV transmission primarily occurs through heterosexual contact, in the context of intersecting alcohol use and intimate partner violence (IPV). However, little is known about couples' general relationship functioning. This understanding is needed to augment couple-based HIV prevention programs and address risk for IPV. This paper presents data on domains of relationship functioning with 300 South African couples who were recruited for an HIV prevention study. Exploratory and confirmatory factor analyses were conducted to determine the relevance of 17 individual items, as well as the overall factor structure of the questions. Results revealed three independent factors of relationship

Correspondence concerning this article should be addressed to Jennifer M. Belus, Department of Psychology and Neuroscience, Davie Hall CB # 3270, University of North Carolina, Chapel Hill, NC, 27599-3270. belus@live.unc.edu.

Author contact information

Jennifer M. Belus: telephone: +1 919-962-5082; belus@live.unc.edu, Tracy Kline: telephone: +1 919-541-2744; tkline@rti.org, Tara Carney: telephone: +27 21-9380326; tara.carney@mrc.ac.za, Bronwyn Myers: telephone: +27 21-9380993; Bronwyn.myers@mrc.ac.za, Wendee M. Wechsberg: telephone: +1 919-541-6422; wmw@rti.org

All authors confirm that there is no conflict of interest with the research conducted.

functioning; relationship satisfaction, arguing, and open communication; an overarching construct of relationship functioning for these three domains was not observed in the data. Results provide insight into the structure of relationship functioning questions and subscales that can be used to assess South African adult romantic relationships. This may allow for a greater focus on aspects of relationships within couple-based HIV prevention programs going forward.

Keywords

South Africa; couples; HIV prevention; relationship functioning; communication

South Africa currently has over six million people living with HIV, more than any other country worldwide (Shisana et al., 2014). Although the incidence rate of HIV infection has been declining over the past decade, the rate of new infections still remains high with the majority of HIV transmissions occurring through heterosexual sexual contact (Case et al., 2012; Shubber, Mishra, Vesga, & Boily, 2014). In light of this, more recent HIV prevention efforts have focused on the male-female dyad as the point of intervention, with the goal of reducing risky sexual behavior through discussion of safe-sex practices and increasing condom usage within the context of the couple (for a review see Burton, Darbes, & Operario, 2010; El-Bassel & Wechsberg, 2012). A meta-analysis of couple-based behavioral interventions for HIV prevention showed that these interventions generally increased condom usage and decreased outside sexual relationships, suggesting that couple-based approaches to HIV prevention are efficacious for reducing some risks for HIV acquisition (LaCroix, Pellowski, Lenon, & Johnson, 2013). However, additional refinements to these programs have been proposed so as to address the relationship context that informs the production of risk. Recommendations include greater grounding of programs in relationship theory as well more focus on the relationship dynamics of the couple—foci that are notably absent from most programs (Burton et al., 2010; El-Bassel & Remien, 2012; El-Bassel & Wechsberg, 2012; Jiwatram-Negrón & El-Bassel, 2014).

In South Africa, one of the barriers to following these recommendations is the paucity of data that exist on couples' intimate relationships. Researchers do not have an in-depth understanding of the context and nature of these relationships, something that is critical if interventions are going to adequately target the strengthening of these partnerships. Prior investigations that have examined relationship constructs in South African samples have typically focused on assessing relationship constructs most closely related to HIV risk, such as the couple's communication about sex and HIV (e.g., Jewkes, Levin, & Penn-Kekana, 2003; Minnis et al., 2015), relationship power and control (e.g., Jewkes, Dunkle, Nduna, & Shai, 2010; Minnis et al., 2015), and intimate partner violence (e.g., Townsend et al., 2011). One recent study assessed more general relationship constructs, specifically intimacy, trust, and constructive communication, in adult South African couples living in the province of KwaZulu-Natal using measures developed for US couples (Conroy et al., 2016). This study represents an important first step in evaluating broader intimate relationship constructs within South Africa.

Studies examining intimate relationships in South African heterosexual couples must consider the role of gender norms in shaping behavior within relationships. South Africa remains a patriarchal society with strong gender norms that encourage men to act in ways that demonstrate their virility and power, including within their intimate relationships, such as through having multiple sexual relationships or using violence against their partners (Jewkes et al., 2003; Jewkes & Morrell, 2010). A different set of behaviors is emphasised for women, primarily women's acquiescence to male power (Jewkes & Morrell, 2012; Pettifor, MacPhail, Anderson, & Maman, 2012). Although these norms are not uniformly true for either gender, they do suggest patterns that likely differentially affect how men and women behave in their intimate relationships, and should be taken into account when exploring this topic.

Thus, more research is necessary to help ascertain and evaluate intimate relationship constructs for South African men and women in heterosexual relationships, since ample opportunities remain to improve couple-based HIV prevention programs. More specifically, it is critical to accurately assess intimate relationships within this context because one of the major goals of couple-based HIV prevention programs is to improve how partners interact with each other about HIV risk behaviors and beyond. Therefore, if we can more thoroughly assess intimate relationships we can examine the extent to which couple-based interventions are successful towards this end. Addressing this gap requires psychometrically sound measurement of relationship functioning. Thus, the goal of the current investigation is to evaluate a measure of relationship functioning in South African couples in order to increase understanding of intimate heterosexual relationships, with the ultimate goal of improving couple-based HIV prevention programs.

Method

Participants and Procedure

This study uses secondary data from a larger study targeting problematic drinking, risky sex behaviors, violence, and gender norms in South African couples (see Wechsberg et al., 2015 for a full description of the parent study). Men were recruited from shebeens (informal drinking establishments) and taverns located in a township in Cape Town, South Africa. Men were eligible for the study if they were between 18–35 years old, self-identified as Black African, used alcohol or other drugs in the past 90 days, spent time in a tavern or shebeen at least weekly, were in a stable romantic relationship with a female partner of at least one year, and engaged in unprotected sex with his main female partner at least once in the past 90 days. Men who were interested in the study brought their female partners to be screened for possible study inclusion. Male and female partners were screened and consented separately to avoid coercion. The only inclusion criterion for female partners was their willingness to participate in the study. Couples who reported severe intimate partner violence were ineligible for the study, so as not to place individuals at greater risk for harm by raising issues that are potentially contentious, resulting in violence between partners. The study received ethics approval in the US and South Africa.

Three hundred heterosexual couples were recruited into the study, and the current investigation includes 300 women and 295 men who had completed baseline and follow up

data assessments (partners did not need to complete the follow-up together). The average age of men was 26.1 years ($SD = 4.7$) and for women was 24.2 years ($SD = 5.1$). The average relationship length reported by men was 38.6 months ($SD = 32.2$) and women reported 36.6 months ($SD = 23.8$). Regarding HIV status, 13.0% of the men¹ were HIV-infected at baseline ($n = 38$) and 25.7% of women were HIV-infected ($n = 77$). As reported elsewhere (Doherty et al., 2016), in approximately 70% of the couples both partners were HIV-negative ($n = 200$) and in 9.0% of the couples both partners were HIV-infected ($n = 26$), leaving about 21% of the couples in serodiscordant relationships ($n = 62$).

Measures

Relationship functioning.—A total of 17 items were drawn and adapted from research on intimate relationships with South African male and female teens (Gevers, Mathews, & Jewkes, 2013; Jewkes et al., 2011). Items assessing relationship functioning included communication strategies, areas of disagreement within the relationship, and overall levels of satisfaction with the current relationship. Participants were asked to focus on their main partner as they responded to the questions. Table 1 presents the questions used in the current investigation, including basic descriptive statistics for each item.

Data Analytic Strategy.—An iterative approach was used to evaluate the underlying structure of the relationship functioning items. Initially, descriptive statistics were examined for each item, including the mean and standard deviation, as well as a histogram (not shown). These items were normally distributed. Subsequent to this, adhering to analytic best practices, the sample was randomly split in half² creating specification and confirmation samples for the exploratory factor analysis (EFA) and confirmatory factor analysis (CFA), respectively. EFA is an appropriate initial analytic strategy because the underlying factor structure was not yet delineated; items included in this study were not specifically drawn from existing scales in their entirety so it was unclear how items would relate to one another. Initial assessment (not shown) of the split data confirms that there were no differences between the two samples with respect to demographic characteristic (age, relationship length, HIV status).

Model fit was assessed through five indices to guide decisions regarding adequate fitting models. This includes the Chi-Square test statistic to evaluate the null hypothesis, with larger Chi-Square values signifying greater misfit of the model. Therefore, a non-significant ($p > .05$) Chi-Square value is desired. The Root Mean Square Error of Approximation (RMSEA) was also used, with values over .10 indicating poor fit, values below .08 suggest moderate fit, and values below .05 indicate excellent fit (Browne & Cudeck, 1993). Two additional indices are the Tucker-Lewis Index (TLI) and Comparative Fit Index (CFI), and both are considered relative goodness-of-fit indices. Potential values fall between 0 and 1, with higher values representing improved fit relative to a restrictive baseline model where none of the variables in the model are related to each other. There are no sampling distributions for these indices nor are there universal cutoff values, but traditionally values

¹Two men were missing HIV status, resulting in $N = 293$.

²Equivalent proportions of men and women in each subgroup.

below .90 have been used to indicate improvement is needed, although values closer to .95 have been taken to indicate good fit (Hu & Bentler, 1999). Finally, the standardised root mean square residual, or SRMR, is a measure of the average degree of misfit in the model, with values less than .08 taken to indicate good fit.

Factor analyses were conducted using Mplus Version 7.3 (Muthén & Muthén, 2015). The EFA and CFA used the maximum likelihood (ML) estimator with robust standard errors. ML estimators treat data as continuous but Rhemtulla, Brosseau-Liard, and Savalei (2012) showed that when items had five or more response categories it was appropriate to treat the data using robust continuous estimation methods. Moreover, ML-based estimators use all available data, whereas data treated as categorical can only include participants with complete data (Muthén & Muthén, 2015). Excluding participants with incomplete data results in a smaller sample size and can lead to biased results when using SEM (Enders & Bandalos, 2001). In the current study, <1% of the data was missing at random³. In addition, the EFA included oblique rotation, which allows for the extracted factors to be correlated, a recommended procedure in EFA (Costello & Osborne, 2005). All analyses were conducted separately for men and women. Finally, reliability analyses were calculated for each final scale using Cronbach's alpha using SAS software Version 9.4 (SAS Institute, 2013).

Results

Exploratory Factor Analysis

In order to determine the appropriate factor structure for women, eigenvalues and the scree plot for 1 – 5 factors were examined. Eigenvalues indicated a four-factor solution and the scree plot suggested 3 factors. It was anticipated that refinements to the factor structure would be required during the CFA phase, so a model that provided a balance between parsimony and model fit was desired. The 3-factor model was ultimately chosen and model fit indices were as follows: $\chi^2(88) = 159.84$, $p < .001$, RMSEA = .074 (CI = .06 - .09), CFI = .90, and SRMR = .06. For men, very similar findings emerged. The eigenvalues indicated a four-factor solution, whereas the scree plot suggested 3 factors. The 3-factor model was chosen for parsimony, and the overall model fit of the men 3-factor EFA was as follows for men: $\chi^2(88) = 166.69$, $p < .001$, RMSEA = .078 (CI = .06 - .10), CFI = .87, and SRMR = .06.

Table 2 presents the item factor loadings from the EFA. Factor loadings from the men and women's EFAs showing significance ranged from .33 to .95 and all but one item loaded on the same factors for both sexes ("I keep silent/quiet when I disagree with my partner,"⁴). The three factors were designated as measuring the following constructs: relationship satisfaction, arguing, and open communication. Relationship satisfaction represents a broad construct that assesses how an individual feels about his/her relationship overall; arguing assesses the extent to which the couple argues about various relationship domains such as money, infidelity, and partner control, and open communication assesses an individual's

³ $n = 79$ (25 men and 54 women) were missing 5 items by design. Respondents who endorsed "never arguing" with their partner skipped the subsequent items asking about frequency of arguments in various domains (e.g., money, affairs).

⁴The item did not load on any factor for men and was removed from subsequent analyses.

propensity to communicate openly and feel comfortable sharing thoughts and feelings with one's partner.

Confirmatory Factor Analysis

Subsequent to the EFA, a CFA was conducted on the remaining half of the sample using the factor structure uncovered in the EFA. For men and women, the initial CFA demonstrated poor overall fit for the 3-factor model. Model fit indices were as follows for women: $\chi^2(116) = 239.10$, $p < .001$, RMSEA = .084 (CI = .07 - .10), CFI = .79, and SRMR = .10. For men, the fit indices were: $\chi^2(101) = 246.04$, $p < .001$, RMSEA = .099 (CI = .08 - .11), CFI = .77, and SRMR = .10. Model misfit diagnosis was carried out iteratively. First, individual factor CFAs determined which individual factor was a cause for the overall poor model fit. If the individual factor demonstrated poor fit, then modification indices provided by the software program as well as previous individual item analyses using Rasch models (not shown) were consulted.

Regarding the relationship satisfaction, Item 5 (love for main partner) was removed for women only and the response options for Items 2 – 4 were condensed based on the Rasch models⁵ (for both women and men). With respect to the arguing construct, Items 6 and 10 were removed (frequency of arguing over the entire relationship and arguing over one's own engagement in outside sexual relationships) due to similarity with other items (Items 7 and 9, respectively) for both women and men. In addition, Item 7 was also removed for men (frequency of arguing over past 6 months). No changes were made to the open communication factor since it was comprised of three indicators and was therefore just-identified, which also produces no model fit indices. With the above modification, final fit indices for the individual factors for men and women suggested good fit (see Table 3). Factor loadings are shown in Table 4.

The final models that combined the three factors for women and men showed improved model fit indices, though overall they demonstrated only borderline adequate fit. The final model fit indices for women were: $\chi^2(62) = 94.71$, $p = .005$, RMSEA = .059 (CI = .03 - .08), CFI = .92, and SRMR = .09. For men, the fit indices were: $\chi^2(62) = 119.32$, $p < .001$, RMSEA = .079 (CI = .06 - .10), CFI = .87, and SRMR = .08. Moreover, the correlations between the factors within each model showed that arguing was unrelated to relationship satisfaction for both men and women, and was also unrelated to open communication for men (see Table 5). Taken together, this suggests that the three factors do not comprise one broader construct of relationship functioning and are best interpreted individually. Thus, the final models are considered to be those from the one-factor models, with results presented in Tables 3 and 4.

Discussion

The goal of this study was to assess a measure of relationship functioning in South African couples who were participating in a couple-based alcohol and HIV risk reduction program in

⁵All items had initially had 5 response options. Items 2 and 4 were condensed to 3 response options and Item 3 was condensed to 4 response options.

Cape Town, South Africa. Seventeen items were adapted from previous work with South African teens regarding intimate relationships, and were subjected to both an EFA and a CFA. Results of the EFA revealed that a three-factor model was likely the most appropriate factor structure for the items, for both men and women. The three factors were relationship satisfaction, arguing, and open communication. The structure of these three factors was confirmed through the CFA, albeit with some modifications, again for men and women. However, it appears that these three factors are independent aspects of intimate relationships and do not comprise a broader, overarching relationship construct (at least in the current sample), as evidenced by the results of the CFA.

With regard to the three individual factors, results were very similar for men and women. In terms of the relationship satisfaction construct, this construct assessed more fundamental aspects of the relationship, such as having one's emotional needs and relationship expectations met. In addition, it also addressed a person's global perspective and satisfaction of their relationship. The item asking about how much the individual loves their main partner only loaded on the construct for men, not women. This may be because there was less variability in this item for women; in fact, this item had the smallest standard deviation of all the items in the sample of women. This item may be subject to high social desirability, as individuals are not likely to report only loving their partner to a minimal degree. Relatedly, love for one's partner is likely not a good indicator of relationship satisfaction since individuals who are mistreated by their partner, for example women who are physically abused, often report loving their partner (Peled, Eisikovits, Enosh, & Winstok, 2000). Finally, there are different types of love (Sternberg, 1986), and this item does not differentiate romantic love from other types of love.

The arguing construct primarily measured the frequency with which individuals argued with their partner across various domains, as well as overall. Only one item on this scale measured how individuals and their partners *responded* to a disagreement (in this case, by shouting). This item had the smallest factor loading for the factor, likely because it was worded differently from all the other items on the scale. Future research should include a range of behaviors or responses to a disagreement that occur at different time points, including when a relationship problem arises, during the discussion of a problem, as well as after the couple has discussed the issue, since all of these aspects are part of a couple's problem-solving behavior (Epstein & Baucom, 2002).

Finally, the open communication construct addresses an individual's comfort and propensity to be open with their partner. This construct had only three items so fit statistics were unavailable. The factor loadings for the items for women were all approximately .70 or higher, suggesting the appropriateness of the items. For men, one item had a factor loading of approximately .40 (regarding the propensity to talk problems through during arguments), suggesting room for possible item improvement. More specifically, two of the three items on this scale refer to an individual's communication openness during arguments. Items that assess one's openness more generally to discuss issues and concerns with their partner, not necessarily during arguments only, may also provide important information about the couple's communication. In addition, items that assess one's willingness to be open in both

the speaker and listener roles of communication are also likely important in a measure assessing communication behavior between partners.

A number of limitations to the current investigation exist. The major limitation lies in how the items were derived for the current study. Although individual items were taken from work with teens in South Africa, no existing scale was adapted in its entirety. This less systematic approach to scale adaptation and development increases the likelihood that items exploring important aspects of relationships were omitted. Although some formative work with couples took place and did inform the study intervention (Wechsberg et al., 2013), more qualitative work regarding couples' general relationship functioning is needed to inform the development of appropriate questionnaire items for assessing various aspects of intimate relationships. Relatedly, omission of critical items is also a plausible explanation for observing borderline adequate fit in the overall construct of relationship functioning despite good fit in the individual factors, which was another limitation.

In addition, the current investigation would have been bolstered through examining construct validity by correlating the purported relationship functioning variables with other related constructs, such as relational power. Future research should broaden the spectrum of relationship constructs examined and conduct qualitative work with South African couples to better understand their intimate relationships. Finally, another limitation of this investigation is that the sample of couples consisted of both HIV-infected and HIV-negative individuals, with some couples in seroconcordant and others in serodiscordant relationships. The concordance of HIV status in relationships may impact how couples interact around other relationship issues, since these couples face unique challenges and stressors when being in a discordant relationship (Rispel, Cloete, & Metcalf, 2015). Moreover, only 17% of the couples in this study had mutually correct knowledge about their partner's HIV status (Doherty et al., 2016); couples who have decided to disclose their HIV status to their partner may be in qualitatively different relationships than those who have not disclosed.

Overall, this study sought to examine a measure of relationship functioning in South African couples to determine if the constructs of relationship satisfaction, arguing, and open communication were relevant to this population. The results revealed that these three constructs were indeed applicable to this population, though an overall construct of relationship functioning did not exist in this sample. This suggests that important components of relationship functioning were likely omitted when assessing this broader construct in the current investigation. That said, this study does provide initial psychometric data on three constructs pertaining to intimate relationships for South African couples who were recruited for an alcohol use and HIV prevention intervention.

This investigation represents an important step in better understanding components of intimate relationships and hopefully can be used as a measurement tool to better evaluate couple-based HIV prevention programs. In order to accomplish this goal, future research should broaden the scope of couples assessed to include couples where partners do not abuse alcohol. In addition, investigations using both quantitative and qualitative data should be undertaken in order to ensure items accurately reflect couples' intimate relationships. It is recommended that researchers build off the current study by using the items presented as a

starting point for future investigations on this topic. Ultimately, we hope that a better understanding of intimate relationships for South African couples will not only improve the efficacy of HIV prevention programs but more importantly, improve the quality of life for South African men and women.

Acknowledgments

This work was supported by the National Institute on Alcohol Abuse and Alcoholism under Grant R01 AA018076.

References

- Burton J, Darbes LA, & Operario D (2010). Couples-focused behavioral interventions for prevention of HIV: Systematic review of the state of evidence. *AIDS and Behavior* 14(1), 1–10. doi:10.1007/s10461-008-9471-4 [PubMed: 18843530]
- Browne MW & Cudeck R (1993). Alternative ways of assessing model fit In Bollen KA & Long JS (Eds.), *Testing Structural Equation Models* (pp. 136–162). Beverly Hills, CA: Sage.
- Case KK, Ghys PD, Gouws E, Eaton JW, Borquez A, Stover J, . . . Hallett TB (2012). Understanding the modes of transmission model of new HIV infection and its use in prevention planning. *Bulletin of the World Health Organization*, 90(11), 831–838A. doi: 10.2471/BLT.12.102574 [PubMed: 23226895]
- Costello AB, & Osborne JW (2005). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical Assessment, Research, & Evaluation* 10 (7).
- Doherty IA, Myers B, Zule WA, Minnis AM, Kline TL, Parry CD, ... & Wechsberg WM. (2016). Seek, test and disclose: Knowledge of HIV testing and serostatus among high-risk couples in a South African township. *Sexually Transmitted Infections*, 92 5–11. doi:10.1136/sextrans-2014-051882 [PubMed: 26175479]
- El-Bassel N, & Remien RH (2012). Couple-based HIV prevention and treatment: State of science, gaps, and future directions In Pequegnat W, & Bell CC (Eds.), *Family and HIV/AIDS* (pp. 153–172). New York, NY: Springer.
- El-Bassel N, & Wechsberg WM (2012). Couple-based behavioral HIV interventions: Placing HIV risk-reduction responsibility and agency on the female and male dyad. *Couple and Family Psychology: Research and Practice*, 1(2), 94–105. doi: 10.1037/a0028890
- Enders CK, & Bandalos DL (2001). The relative performance of full information maximum likelihood estimation for missing data in structural equation models. *Structural Equation Modeling* 8(3), 430–457.
- Epstein NB, & Baucom DH (2002). *Enhanced cognitive-behavioral therapy for couples*. Washington, DC: American Psychological Association.
- Gevers A, Jewkes R, & Mathews C (2013). What do young people think makes their relationships good? Factors associated with assessments of dating relationships in South Africa. *Culture, Health & Sexuality*, 15(9), 1011–1025. doi:10.1080/13691058.2013.803295
- Hu LT, & Bentler PM (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural equation modeling: a multidisciplinary journal*, 6(1), 1–55. doi: 10.1080/10705519909540118
- Jewkes RK, Dunkle K, Nduna M, & Shai N (2010). Intimate partner violence, relationship power inequity, and incidence of HIV infection in young women in South Africa: A cohort study. *The Lancet*, 376(9734), 41–48. doi:10.1016/S0140-6736(10)60548-X
- Jewkes R, Gevers A, Cupp P, Mathews C, Russell M, LeFleur-Bellerose C, & Fisher A (2011). *Respect 4 U: Facilitator's Guide* (English). Cape Town, South Africa: South African Medical Research Council Retrieved from: <http://www.mrc.ac.za/gender/EnglishFacilitatorManualRESPECT4U.pdf>
- Jewkes RK, Levin JB, & Penn-Kekana LA (2003). Gender inequalities, intimate partner violence and HIV preventive practices: Findings of a South African cross-sectional study. *Social Science & Medicine* 56(1), 125–134. doi:10.1016/S0277-9536(02)00012-6 [PubMed: 12435556]

- Jewkes R, & Morrell R (2010). Gender and sexuality: Emerging perspectives from the heterosexual epidemic in South Africa and implications for HIV risk and prevention. *Journal of the International AIDS Society* 13(6). doi:10.1186/1758-2652-13-6
- Jewkes R, & Morrell R (2012). Sexuality and the limits of agency among South African teenage women: Theorising femininities and their connections to HIV risk practises. *Social Science & Medicine* 74(11), 1729–1737. doi:10.1016/j.socscimed.2011.05.020 [PubMed: 21696874]
- Jiwatram-Negrón T, & El-Bassel N (2014). Systematic review of couple-based HIV intervention and prevention studies: Advantages, gaps, and future directions. *AIDS and Behavior* 18(10), 1864–1887. doi:10.1007/s10461-014-0827-7 [PubMed: 24980246]
- LaCroix JM, Pellowski JA, Lennon CA, & Johnson BT (2013). Behavioural interventions to reduce sexual risk for HIV in heterosexual couples: A meta-analysis. *Sexually Transmitted Infections* 89(8), 620–627. doi:10.1136/sextrans-2013-051135 [PubMed: 23918756]
- Minnis AM, Doherty IA, Kline TL, Zule WA, Myers B, Carney T, & Wechsberg WM (2015). Relationship power, communication, and violence among couples: Results of a cluster-randomised HIV prevention study in a South African township. *International Journal of Women's Health* 7, 517. doi:10.2147/IJWH.S77398
- Muthén LK, & Muthén BO (2015). *Mplus user's guide* (Version 7.3). Los Angeles, CA: Author.
- Pasipanodya EC, & Heatherington L (2015). Relationship satisfaction of HIV-positive Ugandan individuals with HIV-negative partners. *AIDS Care* 27(5), 675–678. doi:10.1080/09540121.2014.985181 [PubMed: 25483813]
- Peacock D, Redpath J, Weston M, Evans K, Daub A, & Greig A (2008). Literature review on men, gender, health and HIV and AIDS in South Africa. Johannesburg, South Africa: Sonke Gender Justice Network.
- Peled E, Eisikovits Z, Enosh G, & Winstok Z (2000). Choice and empowerment for battered women who stay: Toward a constructivist model. *Social work*, 45(1), 9–25. doi:10.1093/sw/45.1.9 [PubMed: 10634083]
- Pettifor A, MacPhail C, Anderson AD, & Maman S (2012). 'If I buy the kellogg's then he should [buy] the milk': Young women's perspectives on relationship dynamics, gender power and HIV risk in Johannesburg, South Africa. *Culture, Health & Sexuality* 14(5), 477–490. doi:10.1080/13691058.2012.667575
- Rhemtulla M, Brosseau-Liard PE, & Savalei V (2012). When can categorical variables be treated as continuous? A comparison of robust continuous and categorical SEM estimation methods under suboptimal conditions. *Psychological Methods* 17(3), 354–373. doi:10.1037/a0029315 [PubMed: 22799625]
- Rispel LC, Cloete A, & Metcalf CA (2015). 'We keep her status to ourselves': Experiences of stigma and discrimination among HIV-discordant couples in South Africa, Tanzania and Ukraine. *Sahara-J* 12(1), 10–17. doi:10.1080/17290376.2015.1014403 [PubMed: 25778765]
- SAS Institute Inc. (2013). *SAS/STAT user's guide* (Version 9.3). Cary, NC: Author.
- Shisana O, Rehle T, Simbayi LC, Zuma K, Jooste S, Zungu N, & Onoya D (2014). South African national HIV prevalence, incidence and behaviour survey, 2012. Cape Town, South Africa: HSRC Press.
- Shubber Z, Mishra S, Vesga JF, & Boily M (2014). The HIV modes of transmission model: A systematic review of its findings and adherence to guidelines. *Journal of the International AIDS Society* 17(1), 18928. doi:10.7448/IAS.17.1.18928 [PubMed: 24962034]
- Sternberg RJ (1986). A triangular theory of love. *Psychological review*, 93(2), 119–135. doi: 10.1037/0033-295X.93.2.119
- Streiner DL, & Norman GR (2008). *Health measurement scales: A practical guide to their development and use* (4th ed.). New York, NY: Oxford University Press.
- Townsend L, Jewkes R, Mathews C, Johnston LG, Flisher AJ, Zembe Y, & Chopra M (2011). HIV risk behaviours and their relationship to intimate partner violence (IPV) among men who have multiple female sexual partners in Cape Town, South Africa. *AIDS and Behavior* 15(1), 132–141. doi:10.1007/s10461-010-9680-5 [PubMed: 20217470]

- Wechsberg WM, Myers B, Reed E, Carney T, Emanuel AN, & Browne FA (2013). Substance use, gender inequity, violence and sexual risk among couples in Cape Town. *Culture, Health & Sexuality* 15(10), 1221–1236. doi: 10.1080/13691058.2013.815366
- Wechsberg WM, El-Bassel N, Carney T, Browne FA, Myers B, & Zule WA (2015). Adapting an evidence-based HIV behavioral intervention for South African couples. *Substance Abuse Treatment, Prevention, and Policy* 10(6). doi: 10.1186/s13011-015-0005-6

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Items Measuring Various Aspects of Relationship Functioning with Descriptive Response Level Means

Item	Response options	Women M (SD)	Men M (SD)
1. Is your current relationship with your main partner excellent, good, just ok, or not very good? (R)	(1) excellent, (2) good, (3) just ok, (4) not very good	3.36 (.73)*	3.10 (.68)
2. How well does your main partner meet your emotional needs?	(1) hardly at all, (2) a little, (3) somewhat, (4) mostly, (5) completely	4.44 (.90)*	3.72 (1.17)#
3. In general, how satisfied are you now in your relationship with your main partner?	(1) extremely unsatisfied, (2) unsatisfied, (3) neither satisfied nor dissatisfied, (4) satisfied, (5) extremely satisfied	4.56 (.70)*	4.08 (.84) #
4. How much has your relationship with your main partner met up to the hopes/expectations you had when you first met?	(1) hardly at all, (2) a little, (3) somewhat, (4) mostly, (5) completely ⁶	4.39 (.92) +	4.09 (.83) **
5. How much do you love your main partner?	(1) hardly at all, (2) a little, (3) somewhat, (4) mostly, (5) completely	4.83 (.48)*	4.43 (.62) #
6. In your entire relationship with your partner, how often have you argued?	(0) never, (1) once, (2) a few times, (3) many times	1.68 (.98)	1.80 (.73)
7. During the past 6 months, how often have you and your main partner argued?	(0) never, (1) <1x/month, (2) 1x/month, (3) 2–3x/month, (4) 1x/week, (5) 2–3x/week, (6) daily or almost daily	1.95 (1.59)	1.97 (1.52)
8. How often in the past 3 months did you argue about money?	(0) never, (1) once, (2) a few times, (3) many times	1.15 (1.0) ++	1.24 (.99) ##
9. How often in the past 3 months did you argue because you suspect that he/she is having an affair?	(0) never, (1) once, (2) a few times, (3) many times	1.41 (1.03) ++	1.06 (.95) ##
10. How often in the past 3 months did you argue because he/she thinks you are having an affair?	(0) never, (1) once, (2) a few times, (3) many times	1.39 (.99) ++	1.19 (1.01) ##
11. How often in the past 3 months did you argue because you want him/her to spend more time with you?	(0) never, (1) once, (2) a few times, (3) many times	1.54 (1.02) ++	1.04 (.96) ##
12. How often in the past 3 months did you argue because he/she thinks you try to control him/her?	(0) never, (1) once, (2) a few times, (3) many times	1.37 (1.08) ++	.95 (1.00) ##
13. When I disagree with my main partner we usually end up shouting. (R)	(1) strongly agree, (2) agree, (3) disagree, (4) strongly disagree	2.76 (.97)*	2.43 (.98)
14. When I disagree with my main partner I usually keep silent/quiet. (R)	(1) strongly agree, (2) agree, (3) disagree, (4) strongly disagree	2.22 (.99)	2.77 (.96)
15. When I disagree with my main partner I try to talk the problem through with him/her.	(1) strongly agree, (2) agree, (3) disagree, (4) strongly disagree	1.57 (.60)	1.60 (.59)
16. When I disagree with my main partner I try to say what I feel.	(1) strongly agree, (2) agree, (3) disagree, (4) strongly disagree	1.50 (.58)*	1.69 (.68)
17. I feel free to discuss my hopes, fears, and future plans with my main partner.	(1) strongly agree, (2) agree, (3) disagree, (4) strongly disagree	1.47 (.58)*	1.58 (.69) #

Note. (R) = item is reverse coded.

* N= 299.

N= 294.

⁶The original item included the response option “*had no expectations*”, which was treated as missing data for the current investigation.

⁺ N=289.
^{**} N= 279.
^{##} N=270.
⁺⁺ N= 246.

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Table 2

Estimated Standardised Factor Loadings from the Exploratory Factor Analysis for Men and Women

Item	Men			Women		
	1	2	3	1	2	3
1. Overall relationship assessment	-.13	-.11	.58*	-.37*	-.19*	.30*
2. Emotional needs	<.01	-.20	.55*	-.04	-.05	.60*
3. Satisfied with partner	.23	-.01	.74*	-.06	<.01	.81*
4. Relationship hopes/expectations	.12	.03	.70*	<.01	-.04	.59*
5. Love your partner	-.04	-.07	.46*	.06	<.01	.68*
6. Entire relationship arguing overall	.47*	-.06	-.24	.84*	.02	.01
7. Past 6 months arguing overall	.62*	.13	-.09	.71*	<.01	-.02
8. Past 3 months arguing money	.69*	.01	-.17	.69*	.10	.16
9. Past 3 months arguing partner affair	.85*	-.02	-.15	.70*	.03	-.02
10. Past 3 months arguing own affair	.80*	-.01	-.11	.56*	.11	.02
11. Past 3 months arguing spend time together	.82*	.11	.08	.81*	-.12	-.07
12. Past 3 months arguing control partner	.79*	.15	.02	.83*	-.27*	-.01
13. Shouting when disagree	.59*	-.05	-.01	.75*	-.13	.22*
14. Keep silent/quiet when disagree	-.10	-.01	-.10	-.18	-.06	-.33*
15. Talk problem through	.17	.56*	<.01	.02	.61*	-.14
16. Say what one feels to partner	-.12	.73*	<.01	-.12	.95*	-.02
17. Discuss hopes, fears, future plans	<.01	.57*	-.27	.01	.77*	.08

Note.

* = values are significant at $p < .05$. Bolded values indicate that the item was retained on a given factor.

Table 3
Fit Indices for Individual Factor Models for Men and Women using Confirmatory Factor Analysis

Construct	Gender	Chi-square	RMSEA	CFI	SRMR	Number of items	Alpha
Relationship satisfaction	Men	$\chi^2(5) = 7.17, p = .21$	.054 [.00 – .14]	.98	.03	5	.78
	Women	$\chi^2(2) = .50, p = .77$	.00 [.00 – .11]	1.00	.01	4	.71
Arguing	Men	$\chi^2(5) = 7.09, p = .21$	.053 [.00 – .13]	.99	.03	5	.77
	Women	$\chi^2(9) = 8.78, p = .46$	.00 [.00 – .09]	1.00	.04	6	.75
Open communication	Men	--	--	--	--	3	.69
	Women	--	--	--	--	3	.84

Note. Open communication constructs do not have fit indices because these models have 3 indicators only, making them “just identified.”

Table 4

Estimated Standardised Factor Loadings from the Confirmatory Factor Analysis for Relationship Satisfaction, Arguing, and Open Communication for Men and Women

Item	Men			Women		
	Estimate	SE	R ²	Estimate	SE	R ²
Relationship satisfaction						
1. Overall relationship assessment	.39	.10	.15 *	.47	.09	.22 **
2. Emotional needs	.69	.07	.48 ***	.80	.11	.64 ***
3. Satisfied with partner	.75	.07	.56 ***	.74	.12	.55 **
4. Relationship hopes/expectations	.70	.08	.49 ***	.51	.09	.26 **
5. Love your partner Arguing	.70	.08	.49 ***	--	--	--
7. Past 6 months arguing overall	--	--	--	.49	.08	.24 **
8. Past 3 months arguing money	.44	.09	.19 *	.53	.08	.28 **
9. Past 3 months arguing partner affair	.65	.07	.43 ***	.66	.06	.44 ***
11. Past 3 months arguing spend time together	.92	.03	.85 ***	.86	.05	.73 ***
12. Past 3 months arguing control partner	.86	.05	.73 ***	.76	.05	.58 ***
13. Shouting when disagree	.33	.09	.11	.44	.08	.20 *
Open communication						
15. Talk problem through	.39	.11	.15	.69	.08	.48 ***
16. Say what one feels to partner	.86	.11	.74 ***	.92	.06	.84 ***
17. Discuss hopes, fears, future plans	.74	.12	.55 **	.81	.05	.65 ***

Note.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 5

Factor Correlations for Men and Women

Variable	1	2	3
1. Relationship satisfaction	--	-.10	-.28 [*]
2. Arguing	-.06	--	-.01
3. Open communication	-.49 ^{***}	-.25 ^{**}	--

Note. Women's correlations are below the diagonal and men's correlations are above.

^{*}
 $p < .05$.

^{**}
 $p < .01$.

^{***}
 $p < .001$.