Published in final edited form as:

J Sex Res. 2019 ; 56(6): 718–727. doi:10.1080/00224499.2018.1489490.

Studying the Motivations behind Sexual Agreements: A first look at the Motivations Behind Agreement (MBA) Scale for Male Couples

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Abstract

Sexual agreements are ubiquitous among male couples yet little is known about motivations behind agreements, and their association with sexual risk for HIV. Qualitative interviews with 39 couples informed the development of the items in the Motivations Behind Agreement scale. The scale was validated via exploratory and confirmatory factor analysis (EFA and CFA) using quantitative data from two (790 and 882 men) independent samples of couples. The EFA yielded two factors: Relationship Quality Enhancement Motive (RQEM) and Sex-life Enhancement Motive (SLEM). The CFA indicated satisfactory global model data fit. Finally, in predicting sexual risk, RQEM and SLEM showed significant interactions with agreement type. For men with monogamous agreements, higher RQEM was associated with less condomless anal sex (CAS) with an outside partner of discordant or unknown serostatus (aOR=0.15; 95% CI= 0.05,0.46). For men with non-monogamous agreements, higher RQEM was associated with less CAS (aOR=0.76; 95% CI=0.60,0.97) while higher SLEM was associated with greater odds of CAS (aOR=1.57; 95% CI=1.18,2.08). Men whose agreements were highly motivated by relationship enhancement were less likely to engage in sexual risk with outside partners regardless of agreement type. HIV prevention interventions targeting male couples will benefit from incorporating an understanding of couples' agreement motivations.

Keywords

MSM couples; HIV prevention; gay men; agreement motivations; relationship factors

Introduction

Among people living with HIV/AIDS in the US, a disproportionate 56% are men who have sex with men (MSM) (CDC, 2017). Male couples account for a large proportion of HIV incidence with 40% to 68% of new infections being a result of men engaging in condomless anal sex (CAS) with their primary partner (Sullivan, Salazar, Buchbinder, & Sanchez, 2009; Goodreau et al., 2012). Over the past decade a great deal of research has been conducted to identify relationship factors that are unique to male couples that may contribute to these high rates of incidence. Of particular interest are studies examining the agreements that couples make about whether or not to allow sex with partners outside their relationship. Such sexual agreements are common and an integral component of most couples' relationships because they enhance the relationship by providing structure and a mutual understanding about sexual boundaries (Hoff & Beougher, 2008). Agreements can be of many different types covering a whole range of permissibility from those that specify monogamy - where sex is not allowed with outside partners - at one end of the spectrum, to agreements that are open with no conditions (Hoff & Beougher, 2008) at the opposite end of the spectrum. In the middle of the spectrum are any number of variations of agreements, where sex is allowed with outside partners under certain conditions (Parsons, Starks, DuBois, Grov, & Golub, 2013).

Early studies reported that although agreements were not always adhered to, couples that had one were less likely to engage in behaviors that increase the likelihood of HIV transmission than those who did not have an agreement (Crawford, Rodden, Kippax, & Van de Ven, 2001). Moreover, couples with monogamous agreements tended to report less condomless anal sex (CAS) with main or non-main HIV-discordant or unknown HIV status partners than couples with non-monogamous agreements (Hoff, Chakravarty, Beougher, Neilands, & Darbes, 2012; Mitchell & Petroll, 2013). Studies have also found that couples who are more invested in, and satisfied with, their agreement are less likely to report CAS with main or non-main HIV-discordant and unknown HIV status partners (Mitchell & Petroll, 2013; Neilands, Chakravarty, Darbes, Beougher, & Hoff, 2010). Agreement investment and satisfaction has also been associated with lower odds of breaking an agreement (Gomez et al., 2012) which is important because broken agreements are associated with increased sexual risk behavior for HIV. Thus, the examination of agreements is central to the broader examination of HIV prevention among male couples.

One aspect of agreements that has not been addressed, but one that could be an important component of HIV risk as well as agreement investment, relationship satisfaction and sexual satisfaction, is a couple's motivation behind having the agreement. In a prior qualitative study, couples enumerated the benefits to having an agreement which can be broadly categorized as those enhancing their relationship quality and those that improve the quality of their sex lives (Hoff & Beougher, 2008). Specifically, the relationship benefits were that agreements provided structure to the relationship by setting boundaries and promoting a deeper level of trust within the couple while the sexual benefits included greater sexual intimacy, added excitement when engaging in three-way sexual encounters and excitement about sexual encounters with outside partners. Another study found that trust, a desire to be honest and a desire to strengthen the relationship were the most common reasons for having

an agreement regardless of the couple's HIV status or the type of agreement they had (Hoff et al., 2012). HIV prevention was not listed as one of the top motivations for having an agreement except among HIV-negative couples. This could be an avenue for HIV risk, at least with regard to discordant couples, if they engage in CAS with their primary partner. The few studies that have addressed motivations behind making agreements show that relationship-based factors are more salient drivers than individual-level (i.e., self-protection from HIV) factors (Hoff & Beougher, 2008; LaSala, 2004).

While having agreements is quite common among male couples, the motivations may vary and could have a direct influence on sexual risk behavior for HIV. Thus, it is important to understand the drivers of these agreements, but validated measures to assess this information are virtually non-existent. We hypothesize that a couple's motivations behind their agreement influences their investment in the agreement, relationship satisfaction, sexual satisfaction and sexual risk behavior for HIV. In the absence of any existing validated instrument to examine said motivations, we developed the Motivations Behind Agreement (MBA) scale to do so. The present paper will discuss the development and validation of this scale which studies male couples' motivations for making a sexual agreement with their primary partner and examine the associations of these motivations with selected outcomes including sexual risk behavior for HIV.

Methods

Participants

Between February and April 2002, we conducted qualitative interviews with 39 gay male couples living in the San Francisco Bay Area to investigate sexual agreements within couples. These interviews formed the basis for creating the potential pool of items for the MBA scale. Details of this phase have been reported in-depth earlier (Neilands et al., 2010). Following this, we used quantitative data from two independent samples (referred to as Sample 1 and Sample 2) of gay male couples to generate and validate the new MBA scale. Finally, we explored the association of MBA subscales with various outcomes of interest.

Screening, recruitment and survey administration procedures for all three phases were identical and have been reported in-depth earlier (Neilands et al., 2010). Gay male couples were recruited from community venues in the San Francisco Bay area using active and passive recruitment strategies that included distributing study postcards, posting study flyers, and placing advertisements inviting interested potential participants to call a toll-free recruitment hotline for information. Callers and their primary partners were screened individually over the phone for eligibility and each partner had to be individually eligible for the couple to qualify for participation. Eligibility criteria were: being in their relationship for at least three months, being at least 18 years old, being fluent in English, not being transgender, and having knowledge of their own as well as their partner's HIV status. Informed consent was obtained individually at the study offices prior to administering an audio computer assisted self-interview (A-CASI) to each partner separately. The surveys covered numerous topics including relationship dynamics, sexual risk behavior and sexual agreements. Each partner was paid an incentive of \$40 for their participation.

Materials

The following measures were included in the surveys:

Demographics: Information recorded in order to characterize the samples included age, relationship length, race, education, employment, and HIV-status.

Sexual Agreements: Participants described their current sexual agreement about outside partners and then categorized it into one of several offered options. The categorical responses from both partners in a couple were combined to obtain the couples' agreement type: monogamous (the agreement is to have sex only with each other) and non-monogamous (partners have agreed to allow sex with outside partners with or without conditions; or, one partner reported the agreement as monogamous while the other reported it as non-monogamous). Participants also reported whether they ever broke their current agreement (0=No; 1=Yes) and whether they disclosed a broken agreement to their primary partner (0=No; 1=Yes).

Motivations Behind Agreement: A set of 11 items were used to query participants about the motivations behind their sexual agreement about outside partners. They were all worded as "We made the agreement" (sample item: "so I can be honest in my relationship with my primary partner") (see Appendix). The Likert response options ranged from 1 (Strongly Disagree) to 4 (Strongly Agree), with higher subscale scores representing higher levels of the measured characteristic.

Sexual Risk behavior: Participants were queried in-depth about their sexual behavior in the past three months with outside partners of concordant, discordant and unknown HIV-status. These responses in conjunction with the participant's own HIV status were used to determine whether the participant had CAS with an outside partner of discordant or unknown serostatus in the past 3 months (0=No; 1=Yes).

Sexual Agreement Investment: The 13-item Sexual Agreement Investment Scale (Neilands et al., 2010) was used to assess investment in one's agreement with the primary partner on three domains: value of the agreement, commitment to the agreement, and satisfaction with the agreement. The Likert response options range from 0 (Not at all) to 4 (Extremely) and higher scores on the scale represent greater investment in the sexual agreement. Cronbach's alpha from Sample 2: 0.95; sample item: "How satisfied are you with your current agreement?"

Sexual Satisfaction: A 4-item scale (Ritvo et al., 1997) was used to measure sexual satisfaction within the primary relationship in the previous 6 months. The original Likert response options of 1 (Extremely Satisfied) through 6 (Extremely Dissatisfied) were reversed for the present calculations so that higher scale scores represent greater sexual satisfaction. Cronbach's alpha from Sample 2: 0.97; sample item: "During the past 6 months, how satisfied have you been with the variety of sexual activities you engage in with your primary partner?"

Relationship Satisfaction: Satisfaction with the primary relationship was measured using a 5-item subscale from the Rusbult Investment Model Scale (Rusbult, Martz, & Agnew, 1998) with Likert response options of 0 (Do not agree at all) through 8 (Agree completely). Higher scale scores represent greater relationship satisfaction. Cronbach's alpha from Sample 2: 0.91; sample item: "Our relationship makes me very happy."

Design

The analysis of the qualitative interviews was guided by grounded theory (Glaser & Strauss, 2012; Strauss & Corbin, 1990), which allows themes to emerge from the data. Details of this analysis process have been reported in-depth earlier (Neilands et al., 2010).

Exploratory factor analysis (EFA) of MBA items—Seroconcordant HIV-positive couples were eligible for the original parent study (the first quantitative sample), but were not included here in the exploratory factor analyses to maintain parity with the second quantitative study whose data has been used for the confirmatory factor analyses and outcome analyses and which did not include HIV-positive couples. Data from 790 gay men from intact couples, recruited between June 2005 and February 2007 in the San Francisco Bay Area (referred to as Sample 1) were used to assess the construct validity of MBA using EFA. The EFA was done in SAS V9.3 using PROC FACTOR with the iterated principal axis factor method and an oblique rotation (PROMAX). This process aided in identifying the items with unambiguous and sufficiently strong (i.e., $\geq .40$) factor loadings demonstrating simple structure (i.e., that each item is associated unambiguously with only one latent factor). Factors were extracted based on the scree plot, eigenvalues, cumulative variance and factor interpretability (McDonald, 1985).

Confirmatory factor analysis (CFA) of MBA items—Between February 2012 and August 2013, a second sample of 441 couples (882 men) was recruited in the San Francisco Bay Area for a larger parent study (referred to as Sample 2). This sample included 91 couples that had participated in the previous study above used for the EFA. These couples, plus one participant who did not respond to any of the MBA items, were dropped from consideration for the purposes of conducting the CFA, yielding an independent sample of 699 gay men from intact couples. The CFA was conducted using *Mplus* Version 7. Due to the clustering of men within couples, cluster-based robust standard errors and test statistics were used to account for clustering of men within couples (model type: COMPLEX) for the CFA. Global model fit was assessed using three approximate fit criteria for structural equation models: the Comparative Fit Index (CFI) (Bentler & Bonnett, 1980), the root mean square error of approximation (RMSEA; (Browne & Cudek, 1993), and the standardized root mean square residual (SRMR; (Bollen, 1989). Hu and Bentler (Hu & Bentler, 1999) recommend that at least two of these three fit criteria be met to indicate satisfactory model–data fit: RMSEA $\leq .06$, CFI $\geq .95$, and SRMR $\leq .08$. Internal reliability of MBA was assessed via Cronbach's alpha.

Associations of MBA with outcome variables—For these modelling purposes, the entire sample from the second study (441 couples; 882 men) was used. Using generalized estimating equations (GEE) with an exchangeable correlation structure, with individuals

clustered within couples, we tested for the associations of the MBA factors with six outcomes of interest - sexual risk behavior for HIV, history of broken agreements, disclosure of broken agreement, sexual satisfaction, relationship satisfaction and sexual agreement investment. We standardized all the continuous variables to have mean 0 and standard deviation 1. For the binary outcomes - CAS, any broken agreements, and broken agreement disclosure outcomes - a binomial distribution and logit link function were used to yield logistic GEEs. For these models, adjusted odds ratios (aOR) (to be interpreted per standard deviation change in the continuous predictor), their 95% confidence intervals (CI), and *p*-values are reported. For the continuous outcomes - relationship satisfaction, sexual satisfaction, and sexual agreement investment - a normal distribution and identity link were used. For these models, the standardized regression coefficient β , its 95% confidence interval (CI) and *p*-values are reported. The interaction of the MBA factors with agreement type (monogamous vs. non-monogamous) was also tested for each outcome. Significant interactions were decomposed using simple main effects of each correlate with the outcome, for monogamous and non-monogamous men, respectively. For ease of visualization, figures were generated for significant interactions. SAS V9.3 (PROC GENMOD) was used to evaluate these models. All models controlled for relationship length.

Results

Item generation from qualitative interviews: Based on the analysis of the qualitative interviews we created a set of 11 items to capture the motivations that couples reported for having a sexual agreement with their primary partner.

Quantitative Study 1

Sample characteristics—In the exploratory factor analysis sample, the mean age was 40 years (SD: 11.9 years) and the mean relationship length was 7 years (SD: 8.4 years) (see Table 1). In addition to the 67.7% White participants, the sample also had 11.7% Hispanic, 6.1% African American, and 7.7% Asian or Pacific Islander men. The majority of participants had a college education (87%) and was employed (73%). About 37% of the participants had annual incomes less than \$30,000. Nearly one third of participants (31.3%) reported ever breaking their current agreement, and 11.9% reported CAS in the preceding three months. Forty-eight percent of couples reported a monogamous agreement. Over 70% of the participants were HIV-negative.

Exploratory factor analysis of MBA items—The scree plot, eigenvalues, and factor structure from the exploratory factor analysis of the 11 items indicated either a two- or three-factor solution. We chose the two-factor solution (eigenvalues: 3.87 and 2.05; proportion of variance explained: 0.35 and 0.19) based on its simple factor structure and interpretability of factor loadings (see Table 2). The factor loadings of 10 of the 11 items were large in magnitude and exceeded |.40|. One item ('To promote my gay identity') had low loadings (less than |.40|) on both the factors and was dropped from further consideration. The first factor consisted of seven items that together signified a Relationship Quality Enhancement Motive (RQEM) underlying the agreement. The second factor had two items that

represented a Sex-life Enhancement Motive (SLEM). The two factors had low correlation with each other ($r=0.02$).

Quantitative Study 2

Sample characteristics—In the confirmatory factor analysis sample, the average age was 39 years (SD: 12.1 years) and the average relationship length was 6.4 years (SD: 7.3 years) (see Table 1). The racially diverse sample included 58% White, 13% Hispanic, 10% Asian/ Pacific Islander and 9% Black men. The majority of men reported a college education and was employed. However, 38% also had annual incomes less than \$30,000. 29% reported ever breaking their current agreement and 11% had CAS in the preceding three months. 45% of couples reported a monogamous agreement. Over 89% of the participants were HIV-negative.

Confirmatory factor analysis of MBA items—The global model fit statistics indicated a satisfactory model data fit with RMSEA=0.056, CFI=0.966, and SRMR=0.042. This was achieved by treating RQEM as a higher order factor containing two lower order factors, and by dropping one item ('So I could have satisfying sex.') from SLEM. The factors had good internal reliability with Cronbach's alpha being 0.82 for RQEM and 0.78 for SLEM. All standardized factor loadings exceeded $|\lambda|$ (see Table 2). The inter factor correlation was small ($r=-0.17$, $p=0.001$).

Association of MBA with outcome variables—The entire sample from the second quantitative study (sample 2) was used in the GEE models to test the association of MBA with the six outcome variables. This sample had characteristics that were very similar to the subsample used for the CFA (see Table 1). Table 3 displays the results from the GEE models. For the sexual risk outcome variable, both factors of MBA showed significant interactions with agreement type. Specifically, for men with monogamous agreements, higher scores on RQEM were associated with lower odds of CAS (aOR=0.15; $p=0.001$). For men with non-monogamous agreements, higher scores on RQEM were associated with lower odds of CAS (aOR=0.76; $p=0.029$) while higher scores on SLEM were associated with greater odds of CAS (aOR=1.57; $p=0.002$) (Figure 1(a) and 1(b)).

For the outcome variable of ever broken current agreement, RQEM had a significant interaction with agreement type) while SLEM did not. Specifically, for men with monogamous agreements, higher scores on RQEM were associated with lower odds of having ever broken the current agreement (aOR=0.69; $p=0.016$) (Figure 2(a)).

Disclosure of broken agreements was not significantly associated with the motivations behind making the agreement (RQEM: aOR = 1.31, $p = 0.16$; SLEM: aOR = 1.14, $p = 0.45$).

For the relationship satisfaction outcome variable, neither factor of MBA had significant interactions with agreement type, indicating that the associations of RQEM and SLEM with the outcome did not vary by agreement type. Higher scores on RQEM were associated with greater relationship satisfaction ($\beta=0.23$; $p<0.0001$).

Similarly, for the sexual satisfaction outcome variable, neither factor of MBA had significant interactions with agreement type; higher scores on RQEM were associated with greater sexual satisfaction ($\beta=0.16$; $p<0.0001$).

For the outcome variable of sexual agreement investment, both factors of MBA showed significant interactions with agreement type). Specifically, for men with monogamous agreements, higher scores on RQEM were associated with higher scores on sexual agreement investment ($\beta=0.53$; $p<0.0001$). For men with non-monogamous agreements, higher scores on RQEM were associated with higher scores on sexual agreement investment ($\beta=0.39$; $p<0.0001$) and higher scores on SLEM were also associated with higher scores on sexual agreement investment ($\beta=0.17$; $p=0.0003$) (Figure 2(b) and 2(c)).

Discussion

In order to study the motivations behind agreements that same-sex male couples make about sex with outside partners, we recruited three independent samples of same-sex male couples from the San Francisco Bay area. Qualitative data from the first sample was used to generate items for the MBA scale while quantitative data from the latter two studies were used to assess the scale's validity and reliability. Exploratory factor analysis suggested the presence of two factors: "Relationship Quality Enhancement Motive" (RQEM) and "Sex Life Enhancement Motive" (SLEM). The global model fit statistics from the confirmatory factor analysis indicated a satisfactory model data fit. Both factors demonstrated good internal reliability. In regression analyses using this newly developed MBA scale, scores on RQEM were associated with sexual risk, broken agreements, relationship satisfaction, sexual satisfaction, and agreement investment while scores on SLEM were associated with sexual risk and agreement investment only among men with non-monogamous agreements.

Within male couples, agreements about whether or not to have sex with partners outside the relationship are common and those who are satisfied with and invested in their agreements have lower risk for HIV (Neilands et al., 2010). Understanding what motivates couples to make agreements could better inform future interventions in targeting unique prevention needs for male couples. Men whose agreements were motivated by relationship enhancement were less likely to engage in sexual risk with outside partners regardless of agreement type. Moreover, monogamous men motivated by relationship enhancement were less likely to break their agreements and were more satisfied with their relationship and their sex life. Previous literature has reported that couples with monogamous agreements tend to report less risk than couples with non-monogamous agreements (Gass, Hoff, Stephenson, & Sullivan, 2012; Hoff et al., 2012; Mitchell & Petroll, 2013). The present study suggests that agreement motivations, in addition to agreement type, are an important factor to consider when examining couple-level risk for HIV. Previous research reported that few couples were motivated by HIV prevention to make agreements (Hoff & Beougher, 2008). The fact that the RQEM scale included items about HIV prevention is in contrast to this earlier research. One explanation could be that the HIV and STI items included in the RQEM are couched in a relationship context and more specifically suggest a desire to protect one's partner. This couple-focus may be an illustration of 'transformation of motivation' which, according to interdependence theory, suggests that couples reach a point in their relationship where the

needs of the couple take precedence over the needs of the individual (Drigotas, Rusbult, & Verette, 1999). Relationship enhancement motives may also play a role in other important decisions that couples make such as, whether to take PrEP or whether get tested for HIV together. In this regard, it might be important for HIV prevention providers to highlight to couples how decision-making about PrEP and HIV testing can enhance the quality of their relationship in addition to protecting their sexual health.

Monogamous and non-monogamous men motivated by relationship enhancement had greater investment in their agreement. Non-monogamous men motivated by sexual enhancement had a greater investment in their agreement. Previous research has found that monogamous couples are as satisfied with their relationships as men who are non-monogamous, and this may also be true for agreement investment. (Hoff et al., 2012; Whitton, Weitbrecht, & Kuryluk, 2015). It may be that agreement motivation and its association with agreement investment are the key drivers of sexual risk for HIV among couples. This is important since agreement type has long been relied on as a primary variable identifying risk among male couples (Hoff et al., 2012; Mitchell & Petroll, 2013; Parsons, Starks, DuBois et al., 2013).

Sex-life enhancement motivations among men with non-monogamous agreements are associated with sexual risk with outside partners. It is unclear why sex-life enhancement motives would be associated with greater risk for those with non-monogamous agreements. However, in general, non-monogamous agreements by definition offer greater opportunity for sex with multiple partners and potentially greater opportunity for risky sex. It may be that those who scored higher on the SLEM factor found more pleasure in condomless sex rather than sex with condoms. An emerging factor to consider with regards to condomless anal sex is the uptake of PrEP. As PrEP uptake increases, particularly by those who are motivated by sexual enhancement, the greater risk for HIV found in the present study may dissipate. However, given that the incidence of STI infections has increased since PrEP has become available, condoms should still be considered (Volk, Marcus, Phengrasamy, et al., 2015). More research is warranted to assess the impact of new and emerging biomedical interventions on important couple dynamics associated with sex so that couples who are motivated to make agreements that enhance sex are not at increased risk for HIV.

Strengths and Limitations

One of the main strengths of our study is that it is based on large samples of intact MSM couples, as opposed to single MSM individuals. Additionally, these samples were diverse in terms of race/ethnicity, couple serostatus, and agreement type. Moreover, the use of ACASI minimized potential issues of reliability of self-reported personal data.

However, our findings should be interpreted in the context of certain limitations of the study. The study's modified convenience sample is from a specific geographic area and might limit the generalization of our findings to a broader population of MSM couples. The couples in our samples were older, in stable relationships and a majority was White; it will be informative to study whether our findings hold true for other samples such as young, non-White couples in new relationships. Since HIV status of participants was self-reported, it is possible that there were participants in the study who were HIV-positive but did not know it.

This could have contributed to underestimating sexual risk behavior since condomless anal sex between two HIV-negative men was not categorized as risky. Finally, our results should be considered within the context of low PrEP uptake, due to the timing of the data collection – sample 2 only slightly overlapped with the initial FDA approval of PrEP. The availability of PrEP may impact both the motivations behind, and the composition of sexual agreements. Future research should examine the influence of PrEP on agreement motivations, including its impact on relationship- and sex-life based factors in those motivations. Similarly, we believe that the role of couples' serostatus in motivations behind sexual agreements warrants in-depth examination in future couples research, especially in the context of biomedical prevention strategies.

Conclusion

Sexual agreements that male couples make about sex with outside partners is an important aspect of their relationship. Understanding the motivations behind couples' agreements will help providers support couples in creating and maintaining clear agreements that do not place the partners at risk for HIV. Longitudinal analyses to examine how agreement motivations and agreement needs change for couples over time is needed to ensure continuing relationship satisfaction among couples while ensuring the health and safety of both partners.

Acknowledgements

We are grateful to the couples who participated in our studies for their willingness to share details about their life and relationships, for the cause of furthering our knowledge of HIV prevention. We also thank the three anonymous reviewers and the editor for their inputs and comments which have greatly improved the manuscript.

Appendix: The Motivations Behind Agreement (MBA) Scale

We want to learn more about the main reasons behind your current agreement or understanding. Please indicate your degree of agreement with each of the following statements.

Response Options

1 = Strongly Disagree

2 = Disagree

3 = Agree

4 = Strongly Agree

We made the agreement

RQEM – Relationship Quality Enhancement Motive

To strengthen my relationship with my primary partner.

To protect my relationship.

So I could protect my partner and myself from HIV
 So I could protect my partner and myself from STDs.
 To build trust in my relationship with my primary partner.
 So I could please my primary partner.
 So I can be honest in my relationship with my primary partner.

SLEM – Sex Life Enhancement Motive

To keep me from getting bored sexually in my relationship with my primary partner.
 To be more sexually adventurous.

Scoring: Calculate the mean of the individual items within each factor, to obtain the factor-specific scores.

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Figure 1: Graphs of significant interactions of RQEM and SLEM with couple agreement type for outcome CAS

1(a) fit computed at SLEM=0, Relationship length=0

1(b) fit computed at RQEM=0, Relationship length=0

CAS: condomless anal sex; RQEM: Relationship Quality Enhancement Motive; SLEM: Sex Life Enhancement Motive

Figure 2: Graphs of significant interactions of RQEM and SLEM with couple agreement type for outcomes EVRBRK and Sexual Agreement Investment

2(a), 2(b) fit computed at SLEM=0, Relationship length=0

2(c) fit computed at RQEM=0, Relationship length=0

EVRBRK: Ever broken current agreement; RQEM: Relationship Quality Enhancement Motive; SLEM: Sex Life Enhancement Motive

Table 1:

Descriptive characteristics of the samples

Characteristic	Sample 1		Sample 2	
	(for EFA) (N=790)	(for CFA) (N=699)	(for Models) (N=882)	
Individual Level:				
Age(years) mean (SD)	40.5 (11.9)	39.4 (12.1)	41.3 (12.4)	
Relationship Length(years) mean (SD)	7.0 (8.4)	6.4 (7.3)	7.8 (7.9)	
	n (%)	n (%)	n (%)	
<i>Race</i>				
White, not of Hispanic Origin	535 (67.7)	407 (58.2)	541 (61.3)	
Hispanic (Latino)	92 (11.7)	90 (12.9)	115 (13.0)	
Black, not of Hispanic Origin	48 (6.1)	60 (8.6)	66 (7.5)	
Asian/Pacific Islander	61 (7.7)	72 (10.3)	84 (9.5)	
American Indian or Alaskan Native	9 (1.1)	6 (0.9)	6 (0.7)	
Other	45 (5.7)	64 (9.2)	70 (7.9)	
<i>Education</i>				
High School / GED or less	103 (13.0)	77 (11.0)	88 (10.0)	
Some college/ Associate Degree	235 (29.8)	225 (32.2)	271 (30.7)	
Bachelor's Degree or higher	452 (57.2)	397 (56.8)	523 (59.2)	
<i>Employment</i>				
Employed (full-time/ self-employed)	493 (62.4)	422 (60.4)	543 (61.6)	
Employed part-time	85 (10.8)	96 (13.7)	113 (12.8)	
Unemployed	212 (26.8)	181 (25.9)	226 (25.6)	
<i>Income</i>				
Less than \$30,000	297 (37.6)	264 (37.8)	319 (36.2)	
\$30,000–\$59,999	261 (33.0)	200 (28.6)	244 (27.7)	
\$60,000 and higher	232 (29.4)	235 (33.6)	319 (36.1)	
Ever broke current sexual agreement	247 (31.3)	200 (28.6)	266 (30.2)	
Had condomless anal sex with outside partner of discordant or unknown HIV status in the past three months	94 (11.9)	76 (10.9)	103 (11.7)	
Couple Level:				
	N=425*	N=350	N=441	
<i>Agreement Type</i>				
Monogamous	204 (48.0)	160 (45.7)	182 (41.3)	
Non-monogamous	221 (52.0)	190 (54.3)	259 (58.7)	
<i>Couple HIV-status</i>				
Seroconcordant negative	300 (70.6)	275 (78.6)	336 (76.2)	
Serodiscordant	125 (29.4)	75 (21.4)	105 (23.8)	

* Includes couples where one partner had not reported their agreement type and therefore was excluded from the individual-level EFA and descriptive statistics above.

Table 2:**Factor Loadings**

	EFA Sample 1 (N=790)	CFA * Sample 2 (N=699)
<i>Factor 1: RQEM – Relationship Quality Enhancement Motive</i>		
To strengthen my relationship with my primary partner.	0.65	0.64
To protect my relationship.	0.68	0.65
So I could protect my partner and myself from HIV	0.68	0.94
So I could protect my partner and myself from STDs.	0.73	0.94
To build trust in my relationship with my primary partner.	0.81	0.85
So I could please my primary partner.	0.56	0.48
So I can be honest in my relationship with my primary partner.	0.53	0.50
<i>Factor 2: SLEM – Sex Life Enhancement Motive</i>		
To keep me from getting bored sexually in my relationship with my primary partner.	0.82	0.60
To be more sexually adventurous.	0.70	0.99
So I could have satisfying sex. ^a	0.48	--

EFA: Exploratory factor analysis; CFA: Confirmatory factor analysis

One item ('To promote my gay identity') had low loadings (less than |.40|) during EFA on both the factors and was dropped from further consideration.

*: All factor loadings in the CFA were significant ($p < 0.001$)

^a: Dropped during CFA to obtain satisfactory model fit.

Table 3:

Associations of factors – RQEM and SLEM – of the MBA scale with outcome variables (N=882 men from 441 intact couples from sample 2)

Model Number	Outcome	Agreement Type [#]	Predictor	aOR	(95% CI)
1	Engaged in sexual risk (CAS)	Monogamous	RQEM	0.15	(0.05, 0.46) ^{**}
			SLEM	0.41	(0.15, 1.11)
		Non-Monogamous	RQEM	0.76	(0.60, 0.97) [*]
			SLEM	1.57	(1.18, 2.08) ^{**}
2	Ever broke current agreement	Monogamous	RQEM	0.69	(0.51, 0.93) [*]
		Non-Monogamous	RQEM	1.07	(0.89, 1.29)
3	Disclosed broken agreement	†	RQEM	1.31	(0.90, 1.92)
			SLEM	1.14	(0.81, 1.62)
			β (95% CI)		
4	Relationship Satisfaction	†	RQEM	0.23	(0.16, 0.31) ^{**}
			SLEM	-0.01	(−0.08, 0.06)
5	Sexual Satisfaction	†	RQEM	0.16	(0.09, 0.23) ^{**}
			SLEM	-0.02	(−0.09, 0.05)
6	Sexual Agreement Investment	Monogamous	RQEM	0.53	(0.42, 0.63) ^{**}
			SLEM	0.01	(−0.05, 0.08)
		Non-Monogamous	RQEM	0.39	(0.29, 0.49) ^{**}
			SLEM	0.17	(0.08, 0.26) ^{**}

Note: All models controlled for relationship length (not shown above).

[#]: In the presence of statistically significant interaction between the predictor and agreement type for an outcome, the simple main effect of the predictor is presented for each agreement type (monogamous and non-monogamous).

CAS: Condomless anal sex with an outside partner of discordant or unknown HIV status; RQEM: Relationship Quality Enhancement Motive; SLEM: Sex-Life Enhancement Motive

†: No significant interaction between predictor and agreement type.

* p < .05,

** p < .01