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Permalink

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Journal

Archives of Sexual Behavior, 48(3)

ISSN

0004-0002

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Publication Date

2019-04-01

DOI

10.1007/s10508-018-1190-y

Peer reviewed



Published in final edited form as:

Arch Sex Behav. 2019 April ; 48(3): 763–779. doi:10.1007/s10508-018-1190-y.

Development and Validation of the Power Imbalance in Couples Scale (PICS)

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Abstract

Few researchers have quantitatively explored the relationship power–HIV risk nexus in same-sex male couples. We developed and validated the Power Imbalance in Couples Scale (PICS) to measure relationship power among men in same-sex, committed relationships and its association with sexual risk behaviors. We recruited three independent and diverse samples of male couples in the greater San Francisco and New York City metropolitan areas and conducted qualitative interviews (N1=96) to inform item development, followed by two quantitative surveys (N2=341; N3=434) to assess the construct, predictive, convergent, and discriminant validity of the PICS. Exploratory factor analysis of the first survey's data yielded four factors – overtly controlling partner, supportive partner, conflict avoidant actor, and overtly controlling actor – that accounted for more than 50% of the shared variance among the PICS items. Confirmatory factor analysis (CFA) of the second survey's data supported these four factors: $\chi^2 (1823)=2493.40$, $p<.001$; CFI=.96, RMSEA=.03 and WRMR=1.33. Strong interfactor correlations suggested the presence of a higher-order general perception of power imbalance factor; a higher-order factor CFA model was comparable in fit to the correlated lower-order factors' CFA: $\chi^2 (2)=2.00$, $p=.37$. Internal reliability of the PICS scale was strong: $\alpha=.94$. Men perceiving greater power imbalances in their relationships had higher odds of engaging in condomless anal intercourse with outside partners of discordant or unknown HIV status (OR=1.27; 95% CI=1.01–1.60; $p=.04$). The PICS is an important contribution to measuring relationship power imbalance and its sequelae among male couples; it is applicable to research on relationships, sexuality, couples, and HIV prevention.

Keywords

gay male couples; relationship power; scale development; validity; sexual risk behavior; HIV

Power in romantic relationships has long been studied as an important factor in safer sex practices and HIV risk. Numerous theories suggest that “relationship power” emerges out of both structural and interpersonal power (Connell, 1987; Emerson, 1972). Relationship power is defined as a person’s ability to act or make decisions relative to their partner and to influence (as well as resist the influence of) their partner (Blanc, 2001; Farrell, Simpson, & Rothman, 2015; Pulerwitz, Gortmaker, & DeJong, 2000). Much of the literature on relationship power to date focuses on power imbalances between men and women and examines power differences that are produced by demographic factors (e.g., age differences) (Campbell et al., 2016), socioeconomic status (Hallman, 2004), demonstrations of dominance (Dunbar & Burgoon, 2005), the gendered division of household labor and decision-making (Blair-Loy, Hochschild, Pugh, Williams, & Hartman, 2015; Thebaud, 2010), perceived balance of power (Sprecher & Feinlee, 1997), and the intersection of power and psychological factors, such as self-esteem (Devieux, Rosenberg, Saint-Jean, Bryant, & Malow, 2015). The literature is also clear that when men adhere to narrow or constraining masculine gender norms, relationship power differentials are reinforced between partners (Bowleg et al., 2011; Dworkin, Lippman & Treves-Kagan, 2014; Dworkin, 2015; Pleck, Sonenstein, & Ku, 1993).

Relationship power differentials within heterosexual couples are associated with risk for HIV. In particular, women with less decision-making dominance (i.e., who has the final say in a relationship) and relationship control (i.e., which partner controls the other’s mode of dress, interactions, or relative freedom) have been found to be at greater risk for HIV (Amaro, 1995; Blanc, 2001; Pulerwitz, Amaro, De Jong, Gortmaker, & Rudd, 2002; Pulerwitz et al., 2000; Stokes, Harvey, & Warren, 2016). Relationship power is likewise an important construct to address in HIV prevention among gay couples. Men who have sex with men (MSM) continue to represent a large proportion of new HIV infections in the US (Goodreau et al., 2012; Sullivan, Salazar, Buchbinder, & Sanchez, 2009). Moreover, new research indicates that male couples have unique prevention needs that have been long missed by HIV prevention efforts targeting individual MSM (Hoff, Campbell, Chakravarty, & Darbes, 2016), many of which are centered around the agreements they make about outside sexual partners (Darbes, Chakravarty, Neilands, Beougher, & Hoff, 2014; Gomez et al., 2014; Hoff & Beougher, 2010; Mitchell, Harvey, Champeau, & Seal, 2012). For example, one study found that couples who experience broken agreements are at greater risk for HIV (Gomez et al., 2012). Furthermore, couples who are satisfied with their agreements tend to engage in less sexual risk (Hoff, Beougher, Chakravarty, Darbes, & Neilands, 2010; Hoff, Chakravarty, Beougher, Neilands, Darbes, 2012). Other research has elucidated the role of positive relationship factors in HIV risk, such as commitment, satisfaction, communication intimacy, and trust (Hoff et al., 2016).

Despite the critical importance of relationship power to sexual agreements and other relationship characteristics that can shape HIV risk, it has been an understudied aspect of

male relationships. Fortunately, recent HIV prevention research is increasingly focused on power in the relationships of MSM. For example, Newcomb & Mustanski (2016) found that age differences and violence shaped unprotected sex among a diverse sample of young MSM (ages 16–20 years). Perry, Hubener, Baucom & Hoff (2016) reported that, among male couples, those who had greater income than their partners or who were White broke their sexual agreements more than men who made less income in the partnership or who were non-White. Mitchell & Sophus (2016) examined whether HIV-negative male couples concurred or disagreed about their level of power in the relationship and the impact this had on unprotected sex. They found that greater concurrence about who has the most power in the relationship led to higher levels of unprotected sex both within and outside of the relationship. Finally, scholars have theorized a number of factors to shape decision-making power in male relationships, including age and income gaps (Harry, 1982; Harry & DeVall, 1978; Oreffice, 2011), mixed race relationships (Nemoto et al., 2003), degree of effeminacy (Carballo-Diéguez, Remien, Dolezal, & Wagner, 1997), and the interaction between gender norms and economic resources (Henderson & Shefer, 2008; Howard, Blumstein, & Schwartz, 1986).

While the above studies are critical to understand the breadth of power dynamics in male relationships, it is clear that additional research is needed to uncover and measure the specific aspects of relationship power in same-sex male couples that are associated with risk for HIV. Few validated scales exist, however, to measure relationship power, and we know of no validated instruments to measure relationship power specifically in male couples. The Sexual Relationship Power Scale (SRPS) (Pulerwitz et al., 2000; Stokes et al., 2016), rooted in the structural theory of gender and power (Connell, 1987) and interpersonal-level social exchange theory (Emerson, 1972), captures measurable aspects of relationship power and includes two primary constructs: decision-making dominance and relationship control. The SRPS has been used widely among diverse populations of heterosexual women and men in HIV prevention research. However, recent analysis suggests that the decision-making dominance subscale has weak psychometric properties across most populations and settings (McMahon, Volpe, Klostermann, Trabold, & Xue, 2015). Additionally, the SRPS was developed for heterosexual women and does not measure unique aspects of relationship power among male couples. The recently developed Relationship Power Inventory (RPI) (Farrell et al., 2015) is a self-report measure of power in romantic relationships that allows partners to choose specific decision-making domains that are most relevant to their relationship and to weight these domains based on perceived importance to themselves and/or the relationship. The RPI items, informed by the dyadic power-social influence model (Simpson, Farrell, Oriña, & Rothman, 2015), assess both power processes and outcomes pertaining to the individual as well as her/his partner, allowing researchers to evaluate power dyadically. While intended for use in a variety of romantic relationships, the RPI was not developed or validated for use with same-sex couples.

Measures that incorporate unique aspects of male relationships are essential to understanding the interplay between relationship power and risk for HIV because previous research has shown that same-sex male couples experience distinct racialized, masculinity-related, sexuality-focused, and age-based differentials that may shape power imbalances within couples (Campbell et al., 2016; Dworkin et al., 2017; Kubicek et al., 2015; Lundy &

Levanthal, 1995; Nemoto et al., 2003). This paper describes the development and validation of a relationship power scale designed specifically for same-sex male couples. Our conceptualization of relationship power as interpersonal power was guided by social exchange theory (Emerson, 1972) and the theory of gender and power (Connell, 1987).

Method

The present set of findings is based on data from a three-phase, mixed methods study that aimed to develop and validate a measure of relationship power for male couples. Each phase included an independent sample of male couples: Study 1 consisted of in-depth, individual qualitative interviews, while Studies 2 and 3 were quantitative and utilized computerized surveys. While the parent study has the broader goal of investigating the intersection of relationship power dynamics, race, and HIV risk, the present set of findings demonstrate the validity of the newly developed Power Imbalance in Couples Scale (PICS). The qualitative analysis results from Study 1 are published elsewhere (Dworkin et al., 2017); here we present the quantitative psychometric analysis results from the quantitative data of Studies 2 and 3, prefaced by a description of the quantitative items' development, which took place following the analysis of interviews from Study 1.

Recruitment and Screening

All three samples of male couples were recruited in the Greater San Francisco and New York City metropolitan areas following uniform screening and recruitment protocols. Because one of the requirements of the parent study is to investigate differential risk by couple HIV serostatus and race, we recruited Black, White, and interracial (Black-White) couples as well as couples of concordant HIV-negative and HIV-discordant serostatus. Participants were recruited from venues frequented by MSM using both passive and active strategies. Staff placed recruitment cards, flyers, and posters and conducted active recruitment in community-based venues, such as street fairs, bars, community centers, churches, and local businesses. Advertisements were placed in local print media and online, and the research team reached out to specific staff members at community-based organizations and clinics who were willing to refer clients, patients, and members of their social and professional networks to participate in the study. Social media platforms such as Facebook and Grindr were also used to recruit couples.

Interested individuals were screened via telephone or online. To be eligible, each participant had to: identify as Black or White as their primary racial identity; be at least 18 years old; have lived in the US since age 7 or younger; know their own and their partner's HIV status; and have been in their relationship for at least 6 months. A partner was defined as "a person whom you have had sex with and are committed to above anybody else." Additionally, at least one of the two partners in the relationship had to report engaging in anal sex within the previous three months. Men who identified as transgender were not eligible nor were couples who provided discrepant reports of their HIV serostatuses. Both partners were individually screened and had to satisfy the eligibility criteria to be eligible for participation as a couple. Eligible couples participated in in-person data collection at study offices. To guarantee independent samples, couples were limited to participating in a single phase of the

study (a database was used to prevent couples from participating in more than one phase). All study procedures were reviewed and approved by the Institutional Review Boards of San Francisco State University, the University of California at San Francisco, and Columbia University. In each phase, all participants provided written informed consent prior to data collection and received a \$40 cash incentive upon completion of the interview or survey. To provide privacy and to encourage independent responses to the interview or survey questions, data were collected from each partner simultaneously but separately. Specific procedures and analytic approaches for each study are described below.

Study 1: Qualitative Interviews and Item Generation

Between March and November 2011, we conducted semi-structured, in-depth, individual qualitative interviews averaging 90 minutes in length with 48 couples (96 individuals). Interviews were conducted simultaneously for both partners, but in separate spaces by separate interviewers to ensure confidentiality and to allow each partner the opportunity to share sensitive information about relationship dynamics, power, and HIV risk without the influence of his partner's presence. Interview domains were informed by a review of the HIV and social sciences literature concerning relationship power as well as by social exchange theory (Emerson, 1972) and the theory of gender and power (Connell, 1987). Social exchange theory emphasizes the interpersonal, rather than individual, nature of power, which resides in a person's ability to dominate decision-making, control their partner, and have alternatives to the relationship. The theory of gender and power characterizes the gender-based power imbalances between men and women as a function of social structures and social norms that shape gender roles and expectations, and it has been used to highlight the ways in which structural power differentials can increase women's vulnerability to adverse health outcomes by increasing male control over sexual decision-making. Additionally, previous research conducted by members of the study team highlighted the significance of sexual agreements as a factor in relationship power dynamics among male couples, as well as the role of relationship satisfaction, trust, and commitment in reducing HIV risk. Finally, sexual behavior was explored in the interviews as an outcome of interest that could be predicted by perceptions of relationship power. The final list of interview domains included: definitions of power, decision-making (gender, finances, and sex), conflict and disagreements, conflict resolution, perceived alternatives to the current relationship, relationship satisfaction, trust, commitment, sexual behavior, agreements regarding sex outside the relationship, and condom use decision-making.

Interviews were digitally recorded and transcribed verbatim. Eight members of the study team were each the primary reader for two couples' interviews (four transcripts), and the secondary reader for two additional couples' interviews (four transcripts). There was overlap in the initial analysis of transcripts across the readers to ensure that the codebook was set on 50% of the couples, leaving 50% of the transcripts for independent coding. The primary reader summarized the interviews and led a discussion that underscored primary and secondary themes with the research team. The secondary reader also read the interview in detail and made additions and edits to the summary. All other members of the study team read the interviews before each in-depth team discussion. During these discussions, the team came to agreement on common primary and secondary themes, from which the initial

codebook was developed. Four master's-level research staff members applied the codes to a transcript to verify code definitions and application consistency. This process was repeated twice until agreement was reached among research staff. Four research assistants independently applied codes to all interview transcripts using Transana qualitative analysis software (Woods & Fassnacht, 2007). One-quarter of the transcripts were randomly selected and independently coded by a second coder and verified by senior staff members to ensure consistency and accuracy in the application of codes. Decision trails were also kept to ensure accuracy and consistency throughout the coding process.

Following the completion of coding, we developed analytical memos to characterize the constructs that addressed power dynamics in primary relationships (Evans, 1996). The resulting constructs were: sex, decision-making, overt power/control, perceived alternatives, health, conflict, avoidance, gender roles, agreements, partner support, time together, control/monitoring, outness, sexual identity, and education. Of the 15 constructs listed above, we chose to focus on the four domains that were directly indicative of power imbalances: decision-making, conflict (and its avoidance), partner support, and overt power/control. Likert-type survey items were generated for each of these constructs and sought to capture both covert and overt manifestations of power dynamics within the relationship. The study team reviewed and modified survey items to enhance clarity and minimize redundancy, resulting in a set of 107 potential items. We view these items as representing the maximum known scope of participants' thoughts and feelings regarding their relationship power in the targeted domains.

Study 2: Pilot Quantitative Survey and Factor Analyses of PICS Items

A second independent sample of 171 couples (342 individuals) was recruited between June 2012 and May 2013. The survey included the 107 prospective PICS items, as well as measures of demographic characteristics, including age, race, level of education, employment status, annual income, cohabitation status, and length of relationship with primary partner. A participant's HIV status was determined via self-report of the results of his most recent HIV test. Participants also reported their partner's HIV status. These responses were used to derive the couples' HIV status concordant HIV-negative or serodiscordant).

Analytic Approach—The demographic and other descriptive characteristics of the sample, consisting of measures of central tendency for continuous variables and one-way frequency tables for categorical variables, were first generated using SAS 9.3. Next, factor analyses were conducted on the 107 prospective PICS items identified during Phase 1 of the study. Due to the high dimensionality presented by having 107 items in the analysis, Gerbing and Hamilton's (1996) 2-step procedure was employed. In the first step we performed exploratory factor analysis (EFA) using the iterated principal axis factor method and the oblique rotation promax, which allows the factors to be correlated. In this initial analysis, we determined the number of latent factors to extract and retained items whose standardized factor loadings (i.e., factor-variable relationships) were sufficiently strong (i.e., $|\lambda| \geq .40$) and that also loaded unambiguously onto a single latent factor (Stevens, 1992). The number of factors to retain was determined by examining a scree plot of the factors' eigenvalues,

assessing the cumulative variance accounted for by the factors, and, most importantly, gauging the factors' interpretability (McDonald, 1985).

In the second step, the retained items were submitted to a confirmatory factor analysis (CFA) to refine the EFA solution by identifying items whose factor loadings were substantially lower than those of other items for the factor and which were therefore candidates for removal in the subsequent Phase 3 survey. An additional benefit in performing CFA is that global model fit statistics are available to assess whether the chosen factor fits the data well. CFAs were fitted using *Mplus* 7.31 via a weighted least-squares estimation approach (*Mplus* WLSMV estimator) suitable for use with binary and ordered categorical data (Flora & Curran, 2004). Exact fit of CFAs was evaluated using the chi-square test of exact fit. Because the test of exact fit is prone to detect trivial departures from perfect fit (Bollen & Long, 1993), the following well-studied descriptive latent variable model fit statistics were used to evaluate the CFAs' approximate fit to the data: the Comparative Fit Index (CFI) (Bentler & Bonnett, 1980), the Root Mean Square Error of Approximation (RMSEA) (Browne & Cudek, 1993), and the Weighted Root Mean Square Residual (WRMR) (Yu, 2002). Hu and Bentler (1999) and Yu (2002) recommend that at least two of the following fit criteria be met to indicate satisfactory model-data fit: RMSEA \leq .06, TLI \geq .95, and WRMR \leq 1.00.

Study 3: Quantitative Survey and Validation of the PICS

A third independent sample of 217 couples (434 individuals) was recruited across the two study locations between August 2013 and October 2014 to validate the final CFA obtained at the end of Study 2. In addition to the reduced PICS, a number of standardized measures regarding demographics and sexual behavior were administered in the survey. A robust set of indicators of relationship dynamics, mental health, and discrimination were also included and are utilized here for convergent and discriminant validity analyses (see Table 3).

To assess predictive validity, we evaluated the association of the PICS with condomless anal intercourse (CAI) with outside partners (i.e., partners outside of the primary relationship) of discordant or unknown serostatus. Participants reported the number of times in the preceding three months they had CAI with outside partners. The questions were asked separately for outside partners of HIV-negative, HIV-positive, and unknown serostatus. A single composite binary variable representing CAI with outside partners of discordant or unknown serostatus was created based upon these responses and the respondent's own serostatus, where "1" indicated the participant engaged in at least one act of CAI with an outside partner of discordant or unknown serostatus in the past three months, and "0" indicated the participant did not engage in any acts of CAI with an outside partner of discordant or unknown serostatus in the past three months.

Analytic Approach—As in Study 2, initial analyses employed SAS 9.3 to produce the sample characteristics. CFA was then used to evaluate the fit of the final factor structure obtained in Study 2 to the Study 3 data. Two CFAs were fitted. The first CFA consisted of the final set of factors obtained in Study 2, with all factors being correlated. The second was a higher-order CFA with the set of factors treated as lower-order factors measuring a single

higher-order general relationship power factor. CFAs were fitted using *Mplus* 7.31 using the weighted least-squares estimation approach (*Mplus* WLSMV estimator) suitable for use with binary and ordered categorical data (Flora & Curran, 2004). As in Study 2, fit of CFAs was evaluated using the chi-square test of exact fit and the CFI, RMSEA, and WRMR using the same criteria as in Study 2 to determine satisfactory model-data fit. The fit of the higher-order CFA was compared directly to the fit of the lower-order CFA with correlated factors using a nested models chi-square difference test because the higher-order CFA is nested within the lower-order CFA with correlated factors.

Following the validation of the factor structure of the PICS, subsequent analyses assessed the scale's internal reliability via Cronbach's coefficient alpha (Cronbach, 1951). Additionally, we examined whether the PICS was associated with CAI with outside partners of discordant or unknown HIV status using a logistic regression model estimated via generalized estimating equations (GEE) with an exchangeable correlation structure to account for the clustering of individual men within couples. This analysis examined the change in the odds of CAI per standard deviation change in PICS scores and controlled for couple relationship length.

Finally, convergent and discriminant validity analyses illuminated the associations between the PICS and a variety of relationship constructs. The list of constructs is shown in Table 3. In these analyses, previously validated instruments that are significantly correlated with perceived imbalance in relationship power (Pulerwitz et al., 2002; Pulerwitz & Barker, 2008; Pulerwitz et al., 2000) represent convergent validity, with the magnitude of the correlation indicating the degree of instrument convergence. If one or more of the previously validated instruments are uncorrelated with the PICS' factors, or weakly correlated with those factors, the conclusion is that the PICS exhibits discriminant validity. Perception of greater power imbalances in the relationship, as manifested by higher PICS scores, was expected to be negatively associated with positive relationship and psychological health markers, such as relationship satisfaction, commitment, constructive communication, internal control, trust, and outness. By contrast, greater power imbalance was expected to be positively associated with depression, anxiety, masculine gender role stress, avoidance and withholding, perceived dearth of relationship alternatives, internalized homophobia, and greater emphasis on overt masculinity, all of which are indicators of poorer relationship or psychological functioning (Carballo-Diéguez et al., 1997; Nemoto et al., 2003; Newcomb & Mustanski, 2016). Finally, a power imbalance within the relationship was not expected to be associated with social dominance, which is applicable to groups of people in society. The degree of correlation between the PICS and these other measures elucidate the relationships between this new measure of perceptions of power in same-sex male relationships and other contextual relationship and psychological factors. To make use of all available information, convergent and divergent validity correlations among the scales were computed simultaneously using full-information maximum likelihood estimation (FIML) in *Mplus*.

Individual-Within-Dyad as the Unit of Analysis—Individual respondents comprised the unit of analysis for all data analyses even though we had data from intact dyads. Our primary goal was to develop an instrument that can be administered to individual gay men who are in committed relationships, since researchers, clinicians, and prevention

practitioners typically have access to only one member of a couple rather than both members simultaneously. However, individual members of dyads are likely to have correlated responses to survey questions due to their shared life experiences and similarity of views (Kenny, Kashy, & Cook, 2006). Standard analysis methods compute confidence intervals and p -values under the assumption that each observation is independent from other observations, but dyadic data often violate this assumption. A robust variance estimator for confidence intervals and p -values relaxes this independence assumption and requires only that between-dyads data be independent while within-dyad responses may be correlated (White, 1980). Therefore, all inferential analyses reported below make use of this robust variance estimation approach to obtain appropriate confidence intervals and p -values.

Results

Study 1

Sample Characteristics—The sample was approximately equally recruited at the two study locations (SF: 52.1%; NYC: 47.9%; see Table 1). Roughly one-third of the couples were White (35.4%), Black (33.3%), and Black-White, where one partner was Black and the other was White (31.3%). The median age of the participants was 30 years (range: 18 – 66 years). Three quarters (75.0%) had some college education and more than half were employed (58.3%). Approximately two-fifths (41.7%) reported annual incomes of less than \$20,000. The median relationship length was 1.6 years (range: 0.5 – 36 years). More couples reported monogamous sexual agreements (56.3%) than open agreements (39.6%). As noted previously, the primary qualitative findings are presented in a separate publication (Dworkin et al., 2017).

Study 2

Sample Characteristics—The sample was approximately equally recruited at the two study locations (SF: 47.4%; NYC: 52.6%; see Table 1). Half the couples (54.4%) were White while 24.0% were Black and 21.6% were Black-White. The median age of the participants was 36 years (range: 19 – 71 years). Most of the participants (78.7%) had some college education and were employed (73.3%). Close to half of the participants (48.1%) reported annual incomes of less than \$20,000. The median relationship length was 3 years (range: 0.5 – 45 years), and 72.5% reported living with their primary partner. Concordant HIV-negative couples comprised 70.2% of the sample while 29.8% were serodiscordant. Thirty-eight percent had monogamous sexual agreements and 42.7% had open agreements, while 19.3% of responses were discrepant (i.e., one partner reported their agreement to be monogamous while the other reported it as open). Further, 9.9% of participants reported having CAI in the preceding 3 months with an outside partner of discordant or unknown serostatus.

Exploratory Factor Analysis (EFA)—EFA of the 107 prospective items for the PICS yielded factors with eigenvalues 23.21, 6.40, 3.98, and 3.59. We decided to retain the first four factors based on their interpretability, the scree plot, and because they accounted for greater than 50% of the shared variance in responses to the 68 items whose factor loadings met or exceeded $|\lambda| \geq .40$. Across the four factors, one item, “I walk on ‘eggshells’ because I am

afraid my partner will get angry,” was dropped due to split loadings of .41 and .40 on the first and third factors, respectively. The remaining 67 items each unambiguously loaded onto a single latent factor and were retained for confirmatory factor analysis. The factor loadings of the retained items were large in magnitude, and the factors were moderately correlated. Based on the items’ content, we named the first factor “vertly Controlling Partner” sample item: “My partner threatens me”), the second factor “Supportive Partner” sample item: “My partner makes me feel valued”), the third factor “Conflict Avoidant Actor” sample item: “When my partner and I disagree, I don’t express my feelings to avoid making my partner angry”), and the fourth factor “Overtly Controlling Actor” sample item: “I bully my partner to get my way”).

Confirmatory Factor Analyses (CFA)—The starting CFA model contained the 67 items extracted from the EFA. The fit of this model to the data was good: $\chi^2(2138) = 3343.03$, $p < .001$; CFI = .95, RMSEA = .04 and WRMR = 1.55. However, examination of the standardized factor loadings revealed low factor loadings for the following five items relative to the other items in their factors: “My partner mentors me” loading = .39; supportive partner factor); “My partner and I have worked together to build our life to what it is today” loading = .50; supportive partner factor); “My partner controls when difficult conversations end” loading = .44; conflict avoidant actor factor); “I am quiet during difficult conflicts” loading = .37; conflict avoidant actor factor); and “I control when difficult conversations end” loading = .43; overtly controlling actor factor). Removal of these items resulted in a model with 62 items whose fit was good and comparable to that of the initial CFA model: $\chi^2(1823) = 2993.92$, $p < .001$; CFI = .95, RMSEA = .04 and WRMR = 1.57. These 62 items formed the tentative PICS to be validated in Study 3 (see Appendix for a list of the final PICS items and their response options).

Study 3

Sample Characteristics—The sample characteristics for this study closely resembled those of Study 2 (see Table 1). Half the couples were White (53.0%), while 23.5% each were Black and Black-White. The median age of the participants was 34 years (range: 18 – 71 years). Most of the participants had some college education (78.1%) and were employed (70.5%). Nearly half of the participants reported annual incomes of less than \$20,000 (46.1%). The median relationship length was 2.9 years (range: 0.5 – 36.0 years), and 72.8% reported living with their primary partner. Three quarters of the couples were concordant HIV-negative (74.7%), and the remaining quarter was serodiscordant (25.4%). Among the couples, 45.6% had monogamous agreements and 38.3% had open agreements, while 16.1% of responses were discrepant. Finally, 10.8% of participants reported having CAI in the preceding 3 months with an outside partner of discordant or unknown serostatus.

Confirmatory Factor Analysis—Since the vast majority of participants responded with ‘Never’ or ‘Not true at all’ to the PICS items, there were small cell sizes ($n < 10$) in three of the remaining four response categories leading to estimation difficulties (e.g., negative variance estimates) in the initial CFA models. To address this problem, we pooled the three categories, “About half the time,” “Most of the time,” and “Always,” with the category “Sometimes” to create binary versions of the items to ensure sufficient numbers of cases per

response category in the CFAs. Since the EFA of the Study 2 data identified four latent factors that satisfactorily explained the shared variance among the 62 PICS items, we initially fitted a CFA consisting of the same four correlated factors to the Study 3 data. Results from this CFA suggested that the fit of the four-factor model was very good: χ^2 (1823) = 2493.40, $p < .001$; CFI = .96, RMSEA = .03 and WRMR = 1.33. Standardized factor loadings and 95% confidence intervals (CI) were generally large in magnitude, with all loadings exceeding .50, except for: “My partner tells me what to wear” loading = .35; overtly controlling partner factor); “My partner and I rarely disagree” loading = .48; supportive partner factor); and “I prefer to be in charge in my relationship” loading = .48; overtly controlling actor factor). The higher-order CFA had comparable fit: χ^2 (1825) = 2476.14, $p < .001$; CFI = .96, RMSEA = .03 and WRMR = 1.34. The nested model comparison of the higher-order CFA with the lower-order CFA with correlated factors revealed that the more parsimonious higher-order CFA fit no worse than the lower-order CFA with correlated factors: χ^2 (2) = 2.00, $p = .37$. Factor loadings were highly similar to those of the lower-order CFA with correlated factors (Table 2). Based on these results, we chose the higher-order factor structure as the final latent variable structure for the PICS.

Internal Reliability Analyses—Reliability for the PICS was very strong ($\alpha = .94$). Deletion of items one-by-one did not appreciably improve alpha values largest α with items removed = .95).

Convergent and Discriminant Validity Analyses—The correlations of the PICS with other available measures in Study 3 appear in Table 4. As expected, higher perceived power imbalances had mild to moderate negative correlations with most of the measures of positive relationship traits and mild to moderate positive correlations with the markers of negative relationship traits. For example, power imbalance was negatively associated with relationship satisfaction, constructive communication, and dyadic trust and positively associated with masculine gender role stress, internalized homophobia, and anxiety. Perceived power asymmetry as measured by the PICS was not associated with conceptions of masculinity related to physical appearance and social dominance orientation.

Association with Sexual Risk Behavior—Logistic regression of the sexual risk outcome (CAI with outside partners of discordant or unknown serostatus) onto the PICS total score revealed that higher PICS scores (representing greater perceived power imbalance in the relationship) were associated with increased odds of engaging in CAI with outside partners of discordant or unknown serostatus (OR = 1.27; 95% CI = 1.01 – 1.60; $p = .043$).

Discussion

Three independent samples of same-sex male couples from the San Francisco Bay and New York City metropolitan areas were utilized to create the PICS and assess its validity and reliability. Each sample was racially and ethnically diverse and contained both concordant HIV-negative and serodiscordant gay male couples. Factor analyses from Studies 2 and 3 suggest the presence of four factors that measure key facets of perceived relationship power imbalance: “vertly Controlling Partner,” “Supportive Partner,” “Conflict Avoidant Actor,” and “Overtly Controlling Actor.” However, Study 3 CFA model comparisons found support

for a higher-order power imbalance latent factor to explain the correlations among the four lower-order power imbalance factors, indicating considerable shared variance among these four factors that can be explained by the presence of a single overall relationship power imbalance latent factor. The reliability of the PICS was also very strong. In logistic regression analysis, we found that perceptions of greater power imbalance were associated with greater odds of CAI with an outside partner of discordant or unknown HIV status, a key source of HIV risk to members of the couple.

As hypothesized, convergent and discriminant validity analyses indicated a strong association between the PICS and the majority of previously validated instruments of relationship dynamics and mental health. A higher degree of perceived power imbalance was positively associated with masculine gender role stress, depression, avoidant and withholding communication, conceptions of masculinity as sexual and social behavior, experiences of discrimination, and internalized homophobia. In contrast, a higher degree of perceived power imbalance was inversely associated with positive relationship indicators such as relationship satisfaction, commitment, mutually constructive communication, and trust. Outness was also negatively associated with power imbalance, suggesting that gay men who are more out in society may also perceive more equitable levels of power in their primary relationships. It is noteworthy that power imbalances were associated with masculine gender role stress, a measure of the strain and anxiety that men feel when they perceive that they do not meet or “live up to” dominant ideals of masculinity. Previous research has shown that heterosexual men with high gender role stress scores are more likely to enact risky sex and violent behavior towards partners (Bosson, Vandello, Burnaford, Weaver, & Wasti, 2009; Santana, Raj, Decker, La Marche, & Silverman, 2006; Vandello & Bosson, 2013). Future research is therefore needed to examine how gay men’s norms of masculinity influence gay couples’ relationship power and HIV outcomes. In addition, research has shown that the intersections of race, class, gender, and sexuality better explain numerous health outcomes, including HIV, than any single construct can do on its own (Dworkin, 2015; Stirratt, Meyer, Ouellette, & Gara, 2008; Watkins-Hayes, 2015). Thus, future research should examine how racial identity and/or discrimination, internalized homophobia, and masculinity may interact to shape relationship power and HIV risk in gay male couples. Finally, longitudinal data are needed to tease apart whether positive relationship factors and lower levels of psychosocial constructs, such as depression and internalized homophobia, lead to more power-equitable romantic relationships, whether the reverse is true, or whether a third set of variables (e.g., inclusive vs. exclusive laws, policies, and social interactions) affect both. Because power and power imbalance are dynamic and can change over time, longitudinal data would also enable the study of how and why levels of power and power imbalance change across time.

A primary strength of this study is its intentional diversity in various aspects, namely, the inclusion of gay couples of specific racial compositions (Black, White and Black-White), varying couple-HIV status (concordant HIV-negative and serodiscordant), different types of sexual agreements (monogamous, open, and discrepant), and multiple geographic locations (New York City and San Francisco metropolitan areas). All of these factors enhance the applicability of the PICS. From a scale development perspective, the greatest strengths are the use of theory-backed cognitive methods of item development and the psychometric

validation of the newly developed PICS using independent samples. To our knowledge, the PICS is the first scale to attend to gay couples' unique relationship traits while measuring the power dynamics between partners. An additional strength is the finding that the factor structure replicated across two independent samples of gay couples, even when the responses in Phase 3 were collapsed to two categories. While we recommend researchers collect data using the original five response options shown in the Appendix and employed in our Phase 2 analyses in order to maximize the variability obtainable during measurement, it is reassuring that if it is necessary to collapse response categories during analyses, the same factor structure emerges and the overall scale retains high internal consistency reliability.

The study's limitations must be acknowledged while interpreting the study's findings and when using the PICS in the future. The data used in this study were collected from two large coastal metropolitan areas in the US; future studies should validate the generalizability of findings in other urban and rural settings domestically (e.g., Midwestern and Southern US) and globally. Also, convergent and divergent validity were assessed using the same set of instruments. While we demonstrated an association between perceived power imbalances within same-sex male relationships and sexual risk behavior for HIV, the cross-sectional nature of the samples precludes causal inferences. For instance, while it is possible that greater perceived imbalances within the relationship leads men to engage in CAI with outside partners, it is also possible that men may attribute their relationship-power imbalance to one of them engaging in CAI, or they may engage in CAI for other reasons above and beyond those accounted for in our analysis (Hoff et al., 2016). Finally, the study excluded men who did not identify as Black or White. Future research should test the reliability and validity of the PICS with racially diverse samples of MSM.

Additional future research into the linkages between HIV risk and perceived relationship imbalances should take into account the role of emerging biomedical technologies for HIV prevention such as pre-exposure prophylaxis (PrEP) for at-risk HIV-negative men and treatment as prevention (TasP) for men living with HIV. At the time our study began, PrEP was not yet approved by the FDA, and since then PrEP uptake has been modest and targeted to high-risk men. Men in committed relationships may not view themselves as being "high risk" and therefore may not consider PrEP as an appropriate HIV prevention tool for their situation (Hoff et al. 2015). Nonetheless, as biomedical interventions to prevent HIV become more numerous and accessible, it will be important to document their influences on the relationship between perceptions of relationship power and HIV risk behaviors and how, in turn, perceived relationship power imbalances may drive decision-making regarding the use of antiretroviral medications.

In considering future research regarding the PICS, we acknowledge that this initial 62-item version of the scale is long and may not be suitable for all measurement scenarios. Our goal in this study was to characterize as fully as possible the dimensions of perceived relationship power imbalances. Accordingly, for researchers who are interested in a comprehensive single measure of relationship power imbalance, we recommend using the full scale and computing a single scale score reflecting the higher-order factor structure obtained with the Phase 3 CFA. However, some researchers may prefer to use only one or more of the subscales implied by the four lower-order factors if they seek to measure only specific

aspects of relationship power imbalance. Future investigations can also identify ways to shorten the scale for time-limited measurement settings. How the scale is shortened and which items are selected will depend upon the goals of future studies relying on the PICS. By supplying the long form of the instrument here, we have provided researchers the option of selecting the most relevant items and subscales to fit their needs.

Power is an important facet of relationship dynamics and a factor in sexual risk for HIV that has not been studied extensively in the relationships of MSM. Given the disproportionately high rates of HIV incidence among MSM who are young, of low socioeconomic status, and/or of minority racial and/or ethnic identity, understanding the intersections of relationship power with broader systems of inequity may reveal new directions for HIV prevention efforts. In an effort to move beyond individual-level approaches to HIV prevention, the PICS is an important step forward in expanding our knowledge in an understudied area and can help identify key relationship factors to be addressed in future interventions for gay couples.

Appendix: Power Imbalance in Couples Scale (PICS)

For the next set of questions, think about your current relationship with your primary partner.

Response Option Sets (RS)

RS1	RS2
<u>Frequency</u>	<u>How True?</u>
1 = Never	1 = Not at all true
2 = Sometimes	2 = A little true
3 = About Half the Time	3 = Moderately true
4 = Most of the Time	4 = Very true
5 = Always	5 = Extremely true

Overtly Controlling Partner

	<i>Item Text</i>	<i>Response Set</i>
1	I try to avoid conflict with my partner because I am afraid of him.	RS1
2	My partner bullies me to get his way.	RS2
3	My partner belittles me to get his way.	RS2
4	My partner insults me to get his way.	RS2
5	My partner threatens me to get his way.	RS2
6	My partner hits me to get his way.	RS2
7	When my partner and I disagree, I fear that my partner will hurt me physically.	RS2
8	My partner tells me what to wear.	RS2
9	My partner tells me I look too feminine.	RS2

	<i>Item Text</i>	<i>Response Set</i>
10	My partner tells me how to act.	RS2
11	My partner doesn't want me to hang out with my friends.	RS2
12	My partner forces me to drink alcohol when I don't want to.	RS2
13	My partner forces me to use drugs when I don't want to.	RS2
14	My partner manipulates me by being a drama queen when I want to talk about something important.	RS2
15	My partner has control over what I do with my body.	RS2
16	My partner denigrates my feminine qualities.	RS2
17	My partner belittles me when I act gay.	RS2
18	My partner is jealous of most of the people I interact with.	RS2
19	My partner threatens me.	RS2
20	My partner is controlling.	RS2
21	I act less feminine when I'm around my partner than I do at other times.	RS2
22	I am afraid of my partner.	RS2
23	My partner tries to make me feel guilty.	RS2
24	My partner does things to make me feel ugly.	RS2
25	My partner says things to make me feel ugly.	RS2
26	My partner sabotages my attempts to stay healthy.	RS2

Supportive Partner

	<i>Item Text</i>	<i>Response Set</i>
27	When my partner and I disagree, we sit down and talk through the problem.	RS2
28	My partner and I rarely disagree.	RS2
29	I feel able to change things in my relationship if I don't like them.	RS2
30	My partner does things to make me feel attractive.	RS2
31	My partner says things to make me feel attractive.	RS2
32	My partner does things to make me feel desirable.	RS2
33	My partner says things to make me feel desirable.	RS2
34	My partner makes me feel valued.	RS2
35	My partner appreciates my intelligence.	RS2
36	My partner supports my endeavors.	RS2
37	My partner values what I have to say.	RS2
38	My partner looks after my well-being.	RS2
39	I can talk to my partner about anything.	RS2
40	I feel empowered by my partner.	RS2
41	My partner is my equal.	RS2

Conflict Avoidant Actor

	<i>Item Text</i>	<i>Response Set</i>
42	I give in to my partner to keep him from getting angry.	RS1
43	I hold back my feelings in order to avoid conflict with my partner.	RS1
44	I watch what I say because my partner might get angry.	RS1
45	I avoid conflict with my partner.	RS1
46	I get quiet during difficult conversations because I am afraid of what my partner's reaction might be.	RS1
47	I use silence to influence the way difficult conversations go.	RS1
48	I avoid disagreeing with my partner.	RS2
49	When my partner and I disagree, he usually gets his way.	RS2
50	When my partner and I disagree, I am usually quiet.	RS2
51	I am afraid to disagree with my partner.	RS2
52	When my partner and I disagree, I don't express my feelings to avoid making my partner angry.	RS2
53	When my partner and I disagree, my partner has more say about how we resolve the disagreement.	RS2

Overtly Controlling Actor

	<i>Item Text</i>	<i>Response Set</i>
54	My partner gives in to keep me from getting angry.	RS1
55	I bully my partner to get my way.	RS2
56	I belittle my partner to get my way.	RS2
57	I insult my partner to get my way.	RS2
58	I threaten my partner to get my way.	RS2
59	I hit my partner to get my way.	RS2
60	My partner is afraid to disagree with me.	RS2
61	I prefer to be in charge in my relationship.	RS2
62	My partner should feel obligated to me for all the things I do for us.	RS2

Scoring

The score for each of the four subscales is calculated as the sum of the individual items in it. To calculate the overall PICS score, first reverse-score all items in the subscale 'Supportive Partner' and sum the reversed items. Add this sum to the total subscale scores of the remaining three subscales.

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Table 1

Sample characteristics

	Study 1 N = 96	Study 2 N = 342	Study 3 N = 434
	n (%)	n (%)	n (%)
Individual-Level Characteristics:			
Age (years) median (range)	30 (18–66)	36.2 (19.4–71.4)	34.1 (18–71)
<i>Education</i>			
Completed high school or less	24 (25)	73 (21.3)	95 (21.9)
Some college/Associate's Degree	55 (57.3)	198 (57.9)	246 (56.7)
Bachelor's Degree			
Graduate Degree	17 (17.7)	71 (20.8)	93 (21.4)
<i>Employment</i>			
Employed (full-time/self-employed)	41 (42.7)	190 (55.6)	229 (52.8)
Employed part-time	15 (15.6)	60 (17.7)	77 (17.7)
Unemployed	40 (41.7)	92 (26.9)	128 (29.5)
<i>Annual Income¹</i>			
Less than \$20,000	40 (41.7)	164 (48.1)	200 (46.1)
\$20,000 – \$49,999	37 (38.5)	93 (27.3)	119 (27.4)
\$50,000 – \$79,999	8 (8.3)	1 (0.3)	1 (0.2)
\$80,000 and higher	11 (11.5)	83 (24.3)	114 (26.3)
Live with primary partner	NA	248 (72.5)	316 (72.8)
Had CAI with outside partner of discordant or unknown HIV status in past 3 months	NA	34 (9.9)	47 (10.8)
Couple-Level Characteristics:			
Relationship length (years) median (range)	1.6 (0.5–36)	3 (0.5–45)	2.9 (0.5–36)
<i>Number at Each Site</i>			
San Francisco Bay Area	25 (52.1)	81 (47.4)	109 (50.2)
New York City	23 (47.9)	90 (52.6)	108 (49.8)
<i>Serostatus</i>			
Concordant HIV-Negative	26 (54.1)	120 (70.2)	162 (74.7)

	Study 1 N = 96		Study 2 N = 342		Study 3 N = 434	
	n	(%)	n	(%)	n	(%)
Serodiscordant	22	(45.8)	51	(29.8)	55	(25.4)
<i>Couple Race</i>						
Black	16	(33.3)	41	(24)	51	(23.5)
White	17	(35.4)	93	(54.4)	115	(53.0)
Interracial Black-White	15	(31.3)	37	(21.6)	51	(23.5)
<i>Sexual Agreement Type²</i>						
Closed	27	(56.3)	65	(38)	99	(45.6)
Open	19	(39.6)	73	(42.7)	83	(38.3)
Discrepant ³	1	(2.1)	33	(19.3)	35	(16.1)

¹: In Study 2, one participant did not report annual income.

²: In Study 1, one couple reported not having an agreement.

³: A couple's agreement is categorized as discrepant if one partner reports it as closed and the other partner reports it as open.

Table 2

Standardized factor loadings from factor analyses (95% confidence intervals)

<i>Factor Item</i>	Study 2 N = 341	Study 3 N = 434
<i>Overtly Controlling Partner</i>		
My partner threatens me.	.86	.99 (.92, 1.07)
My partner hits me to get his way.	.84	.84 (.74, .94)
My partner belittles me when I act gay.	.77	.75 (.65, .86)
My partner threatens me to get his way.	.75	.87 (.79, .96)
My partner denigrates my feminine qualities.	.73	.75 (.67, .84)
When my partner and I disagree, I fear that my partner will hurt me physically.	.67	.69 (.52, .87)
My partner tells me I look too feminine.	.67	.67 (.51, .83)
My partner tells me what to wear.	.64	.35 (.21, .50)
My partner tells me how to act.	.63	.66 (.57, .76)
My partner has control over what I do with my body.	.59	.67 (.55, .78)
I act less feminine when I'm around my partner than I do at other times.	.58	.59 (.46, .72)
My partner is controlling.	.56	.76 (.69, .83)
My partner bullies me to get his way.	.55	.85 (.79, .90)
My partner insults me to get his way.	.54	.89 (.84, .94)
My partner forces me to use drugs when I don't want to.	.53	.80 (.66, .94)
My partner belittles me to get his way.	.53	.89 (.84, .94)
I try to avoid conflict with my partner because I am afraid of him.	.52	.74 (.65, .83)
My partner says things to make me feel ugly.	.51	.85 (.77, .92)
My partner manipulates me by being a drama queen when I want to talk about something important.	.51	.67 (.58, .76)
I am afraid of my partner.	.50	.86 (.76, .96)
My partner does not want me to hang out with my friends.	.50	.63 (.52, .74)
My partner forces me to drink alcohol when I don't want to.	.49	.68 (.52, .83)
My partner does things to make me feel ugly.	.47	.83 (.76, .90)
My partner sabotages my attempts to stay healthy.	.46	.53 (.40, .66)
My partner tries to make me feel guilty.	.44	.76 (.69, .84)
My partner is jealous of most of the people I interact with.	.44	.61 (.51, .70)
<i>Supportive Partner</i>		
My partner makes me feel valued.	.88	.89 (.85, .93)
My partner says things to make me feel desirable.	.87	.99 (.96, 1.01)
My partner does things to make me feel desirable.	.84	.97 (.95, 1.00)
My partner says things to make me feel attractive.	.80	.95 (.92, .98)
My partner does things to make me feel attractive.	.73	.92 (.88, .96)
My partner looks after my well-being.	.73	.89 (.85, .93)
My partner values what I have to say.	.73	.94 (.91, .98)
My partner appreciates my intelligence.	.70	.86 (.81, .90)
My partner supports my endeavors.	.69	.90 (.86, .94)
I feel empowered by my partner.	.64	.78 (.71, .84)
When my partner and I disagree, we sit down and talk through the problem.	.56	.61 (.51, .72)

Factor Item	Study 2 N = 341	Study 3 N = 434
I feel able to change things in my relationship if I don't like them.	.54	.75 (.66, .84)
My partner is my equal.	.52	.67 (.58, .75)
My partner and I rarely disagree.	.49	.48 (.34, .63)
I can talk to my partner about anything.	.44	.72 (.65, .79)
<i>Conflict Avoidant Actor</i>		
When my partner and I disagree, I don't express my feelings to avoid making my partner angry.	.81	.86 (.79, .92)
I hold back my feelings in order to avoid conflict with my partner.	.71	.75 (.67, .83)
I get quiet during difficult conversations because I am afraid of what my partner's reaction might be.	.69	.71 (.63, .79)
When my partner and I disagree, my partner has more say about how we resolve the disagreement.	.65	.64 (.55, .74)
When my partner and I disagree, I am usually quiet.	.59	.66 (.57, .74)
I avoid conflict with my partner.	.50	.74 (.67, .82)
I give in to my partner to keep him from getting angry.	.50	.78 (.71, .86)
I am afraid to disagree with my partner.	.50	.77 (.67, .87)
I avoid disagreeing with my partner.	.49	.68 (.59, .76)
I use silence to influence the way difficult conversations go.	.47	.61 (.51, .70)
I watch what I say because my partner might get angry.	.45	.82 (.76, .89)
When my partner and I disagree, he usually gets his way.	.42	.70 (.61, .79)
<i>Overtly Controlling Actor</i>		
I bully my partner to get my way.	.74	.77 (.69, .85)
I belittle my partner to get my way.	.67	.82 (.76, .89)
I threaten my partner to get my way.	.63	.92 (.81, 1.03)
I hit my partner to get my way.	.58	.79 (.60, .98)
My partner gives in to keep me from getting angry.	.56	.61 (.50, .72)
I insult my partner to get my way.	.54	.92 (.86, .98)
My partner is afraid to disagree with me.	.53	.51 (.39, .63)
I prefer to be in charge in my relationship.	.43	.48 (.37, .58)
My partner should feel obligated to me for all the things I do for us.	.43	.51 (.37, .64)
<u>Power Imbalance in Couples Higher-Order Factor</u>		
Overtly Controlling Partner	—	.98 (.90, 1.06)
Supportive Partner	—	-.46 (-.55, -.37)
Conflict Avoidant Actor	—	.69 (.61, .77)
Overtly Controlling Actor	—	.77 (.68, .86)
<u>Factor Intercorrelations</u>		
Overtly Controlling Partner – Supportive Partner	-.42	—
Overtly Controlling Partner – Conflict Avoidant Actor	.56	—
Overtly Controlling Partner – Overtly Controlling Actor	.39	—
Supportive Partner – Conflict Avoidant Actor	-.37	—
Supportive Partner – Overtly Controlling Actor	-.23	—
Conflict Avoidant Actor – Overtly Controlling Actor	.35	—

Notes: One participant in Study 2 did not complete the PICS. Study 2 factor loadings and intercorrelations were estimated by iterated principal factor (IPF) exploratory factor analysis (EFA) using SAS 9.3. Study 3 factor loadings were estimated using a higher-order confirmatory factor

analysis (CFA) model fitted in *Mplus* 7.3. CFA confidence intervals were computed using a robust variance estimator to account for the non-independence of individual respondents nested within couples.

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Table 3

Standardized measures in Study 3 used for the convergent and divergent validity analyses

Measure	Reference	No. of Items	Response Scale	Sample Item
Masculine Gender Role Stress	(Eisler & Skidmore, 1987)	31	7 point: 'Not at all stressful' to 'Extremely stressful'	"Being perceived as having feminine traits."
Rusbult Investment Model Scale	(Rusbult, Martz, & Agnew, 1998)		9 point: 'Do not agree at all' to 'Agree completely'	
Satisfaction		5		"My relationship is close to ideal."
Commitment		7		"I want our relationship to last for a very long time."
Quality of Alternatives		5		"My needs for intimacy, companionship, etc., could easily be fulfilled in an alternative relationship."
Internal Control Index	(Duttweiler, 1984)	28	5-point: 'Rarely Less than 10% of the time' to 'Usually More than 90% of the time'	"I _____ decide to do things on the spur of the moment."
Center for Epidemiologic Studies Depression Scale (CES-D)	(Radloff, 1977)	20	4-point: 'Rarely or none of the time' to 'Most or all of the time'	"I felt hopeful about the future."
Communication Patterns Questionnaire			9-point: 'Very unlikely' to 'Very likely'	
Mutual Constructive Communication	(Heavey, Larson, Christensen, & Zumtobel, 1996)	6		"During a discussion of a relationship problem, both of us express our feelings to each other."
Mutual Avoidance & Withholding	(Christensen & Shenk, 1991)	3		"When some problem in the relationship arises, both of us avoid discussing the problem."
Dyadic Trust	(Larzelere & Huston, 1980)	8	7-point: 'Strongly disagree' to 'Strongly agree'	"I feel that I can trust my partner completely."
Anxiety	(Derogatis & Melisaratos, 1983)	6	5-point: 'Not at all' to 'Extremely'	"In the past week how much have you been bothered by nervousness and shakiness inside?"
Conceptions of Masculinity	(Halkitis, Green, & Wilton, 2004)		5-point: 'Completely disagree' to 'Completely agree'	
As Physical Appearance		4		"Well-built men give the impression of masculinity at first sight."
As Sexual Behavior		4		"A masculine man has lots of sex."
As Social Behavior		6		"I watch my behavior to make sure that I act masculine around other gay men."
Social Dominance Orientation	(Weber & Federico, 2007)	8	7-point: 'Strongly disagree' to 'Strongly agree'	"Some groups of people are simply inferior to others."

Measure	Reference	No. of Items	Response Scale	Sample Item
Lifetime Discrimination	(Meyer, Frost, Narvaez, & Dietrich, 2006)	32	Varies	“ver your lifetime, how often have you experienced people acting as if as if they are better than you are?”
Outness	(Meyer et al., 2006)	5	4 point: ‘Out to none’ to ‘Out to all’	“How much are you out of the closet to your family?”
Internalized homophobia	(Meyer et al., 2006)	10	4-point: ‘Often’ to ‘Never’	“In the past year, how often have you felt that being gay, homosexual or queer is a personal shortcoming?”

Note: For all scales above, higher scores represent higher levels of the characteristic under consideration. To achieve this, appropriate items within each scale were reverse-scored prior to computing the composite score.

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Table 4

Correlations of Power Imbalance in Couples Scale (PICS) with known survey instruments used in dyadic research (95% confidence intervals)

Masculine Gender Role Stress	.21 (.09, .33)*
Relationship Satisfaction	-.55 (-.65, -.45)*
Commitment	-.43 (-.54, -.32)*
Quality of Relationship Alternatives	.22 (.12, .31)*
Internal Control	-.35 (-.42, -.27)*
Depression	.46 (.36, .56)*
Mutual Constructive Communication	-.66 (-.72, -.60)*
Mutual Avoidance and Withholding	.46 (.37, .56)*
Dyadic Trust	-.60 (-.68, -.52)*
Anxiety	.34 (.22, .47)*
Conceptions of Masculinity: As Physical Appearance	.05 (-.07, .17)
Conceptions of Masculinity: As Sexual Behavior	.14 (.05, .23)*
Conceptions of Masculinity: As Social Behavior	.35 (.25, .45)*
Social Dominance Orientation	.01 (-.16, .18)
Lifetime Discrimination	.13 (.01, .24)*
Outness	-.22 (-.35, -.10)*
Internalized Homophobia	.42 (.30, .55)*

Notes: N = 434. Correlations were estimated using full-information maximum likelihood (FIML) estimation in *Mplus* 7.3. Confidence intervals were computed using a robust variance estimator to account for the non-independence of individual respondents nested within couples.

* : Statistically significant at $p < .05$