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ORIGINAL PAPER

Assessing the Propensity for Sexual Coaxing and Coercion in Relationships: Factor Structure, Reliability, and Validity of the Tactics to Obtain Sex Scale

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Abstract Although there are measures of sexual interest and sexual conflict in romantic relationships, none discriminate between sexual coaxing and sexual coercion or are sensitive to proximal changes in the propensity to use such strategies. In order to study these changes, we developed the Tactics to Obtain Sex Scale (TOSS) to assess self-reported likelihood of engaging in sexual coercion and sexual coaxing with a romantic partner. In Study 1, a sample of men and women ($N = 419$) in heterosexual relationships completed the TOSS and measures of its predicted correlates, including antisociality and mating success. An exploratory factor analysis of TOSS scores yielded a two-factor solution. As predicted, the two-factor solution identified coaxing (COAX) and coercion (COERCE) subscales. There was good internal reliability for TOSS, COAX, and COERCE scales (Cronbach alphas $> .89$). Significant correlations between COAX and self-perceived mating success and between COERCE and psychopathy provided preliminary evidence of construct validity. In Study 2, we replicated the factor structure and established the scale as a reliable and valid index of partner sexual coercion and coaxing propensity.

Keywords Sexual coercion · Sexual coaxing · Relationships · Scale development

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Introduction

Growing interest in studying sexual coercion in the context of romantic relationships is demonstrated by recent research on prevalence rates (Basile, 2002), severity of victim injuries (DeMaris, 1997; Monson & Langhinrichsen-Rohling, 1998), and causes of such behavior (Goetz & Shackelford, 2006; Lalumière, Harris, Quinsey, & Rice, 2005). Research on partner sexual coercion, defined as a strategy to obtain sex from a reluctant sexual partner by using forceful and manipulative tactics that may result in physical and emotional trauma, has been hampered because measurements for evaluating sexual conflict in relationships are composed entirely of static items (i.e., items that measure past instances of sexual coercion, coaxing, or abuse). Scales evaluating these historic events are not amenable for detecting dynamic changes in the propensity to engage in sexual coercion.

Although scales with static items have been successfully applied to predicting violent and sexual recidivism in both forensic and nonforensic populations (e.g., Hanson & Harris, 2000; Harris, Rice, & Camilleri, 2004; Quinsey, Harris, Rice, & Cormier, 2006), their clinical utility is restricted to identifying individuals who vary in long-term risk (Andrews et al., 1990) as opposed to measuring changes in risk. Researchers are now developing dynamic risk scales to measure short-term fluctuations in risk (Wong & Gordon, 2006). Proximal risk scales can measure changes in risk over rather short time frames (Quinsey, Jones, Book, & Barr, 2006). Dynamic risk scales benefit clinicians and researchers by targeting psychological characteristics that are amenable to treatment, tracking treatment progress, and providing an opportunity to identify causal mechanisms by experiment.

Currently available measures of sexual conflict in relationships include static factors or items classified as *temporally fixed dynamic variables* (i.e., once the act occurs it

cannot be changed; Quinsey, Jones et al., 2006). A popular measure, the Revised Conflict Tactics Scale (CTS2; Straus, Hamby, Boney-McCoy, & Sugarman, 1996), assesses the frequency and severity of both physical and sexual aggression in relationships over the past year. Similarly, the Sexual Coercion in Intimate Relationships Scale (SCIRS; Shackelford & Goetz, 2004) evaluates the frequency of violence, manipulation, and threats to obtain sex from a reluctant sexual partner over the past month. Other measures of sexual coercion also include static items, such as the Aggressive Sexual Behavior Inventory (Mosher & Anderson, 1986), the Coercive Sexuality Scale (Rapaport & Burkhart, 1984), Sexual Experiences Survey (Koss & Oros, 1982), and the Sexual Coercion Inventory (Waldner, Vaden-Goad, & Sikka, 1999). Gauging the presence, frequency, or degree of conflict in relationships allows for correlational research but is not conducive to understanding causal relationships. Researchers using experimental or quasi-experimental designs to determine the causes of partner sexual coercion are better equipped with a measure that is more sensitive to change.

Measures with the potential for evaluating dynamic changes in propensity for partner sexual coercion are the various rape attitude measures, such as the Rape Myth Acceptance Scale (Burt, 1980), Illinois Rape Myth Acceptance Scale (Payne, Lonsway, & Fitzgerald, 1999), Rape Empathy Scale (Deitz, Blackwell, Daley, & Bentley, 1982), and Attraction to Sexual Aggression Scale (Malamuth, 1989). There is some evidence to suggest that these attitudes can be temporarily modified through educational programs (Brecklin & Forde, 2001) but it remains uncertain whether such changes in rape attitudes result in behavioral changes as well (Camilleri & Quinsey, 2008). Also, developing valid attitude measures require adherence to the principle of compatibility (i.e., measuring specific attitudes best predicts specific behaviors; Eagly & Chaiken, 1998); many attitude measures towards general sexual aggression lack proper specificity. To our knowledge, no scales evaluating attitudes towards partner sexual coercion have been developed. Other plausible candidates for evaluating dynamic risk are penile plethysmography, Implicit Association Test, card sort, neuroimaging, and other physiological measures (for a review, see Camilleri & Quinsey, 2008). Despite the benefits of using measures that are less affected by social desirability, reliable and valid self-reports are useful alternatives to these more expensive and time consuming methods of assessment.

Though researchers have been interested in severe responses to sexual reluctance from one's partner, there are other, more pedestrian responses that require attention in the assessment literature—we refer to them as *sexual coaxing* tactics. Sexual coaxing can be defined as a strategy that uses benign, seductive tactics to obtain sex from a reluctant sexual partner. Although sexual coaxing is a more common and generally acceptable behavior in relationships, there are few instruments to measure its frequency or an individual's propensity to engage in it. In fact, we could locate only a single measure of sexual coaxing in relationships—the Sexual Signaling Behaviors Inventory (SSBI; Jesser, 1978), which is also comprised entirely of static items. There are other measures that evaluate general sexual desire, such as the Hurlbert Index of Sexual Desire (HISD; Apt & Hurlbert, 1992) and the Sexual Desire Inventory (SDI; Spector, Carey, & Steinberg, 1996), but the HISD does not evaluate particular tactics for obtaining sex and the SDI is mostly comprised of static items.

Given our concerns with available psychological measures for assessing sexual attitudes and behavior in relationships, we developed the Tactics to Obtain Sex Scale (TOSS) so that it would discriminate between sexually *coercive* and sexually *coaxing* acts, measure acts varying in *severity*, assess both *verbal* and *physical* acts, and assess *current propensity* for engaging in such acts. The TOSS can therefore be understood as an attitude measure that indexes the propensity for sexual coercion and coaxing in romantic relationships. A reliable and valid scale with these properties will give researchers a more comprehensive measure to investigate responses to, and causes of, conflicting sexual interests. In two studies, we investigated the psychometric properties of the TOSS. The first study was used to design a scale that assesses the degree to which a person might use tactics to obtain sex from a reluctant sexual partner, identify its factor structure, and evaluate its reliability and validity. The purpose of the second study was to replicate the factor structure found in Study 1 with another sample, and to provide a more extensive test of the scale's validity.

Study 1.1: Tactics to Obtain Sex Scale Development and Factor Structure

Method

Participants

In order to obtain sufficient variability in demographics, particularly for relationship type, relationship length, and participant age, participants were recruited from both a psychology department participant pool ($n = 223$) and from the community using an advertisement in the local newspaper ($n = 196$). The number of males ($n = 197$) and females ($n = 221$) were approximately the same, and the total number of participants exceeded the sample size requirement of 300 for factor analyses (Tabachnik & Fidell, 2001). For their participation, students were given course credit and community participants were given $10. All participants were in a sexually active, heterosexual relationship. A few participants chose not to complete some measures, so sample sizes varied depending on the information that was available. Participants ranged in

age from 17 to 78 ($M = 29.3, SD = 15.1$). Participants were in dating ($n = 257$), common-law ($n = 74$), or marital ($n = 86$) relationships for an average of 5.9 years ($SD = 9.9$) that ranged from .08 to 51 years. Income ranged from less than $10,000 per year to over $100,000 (mode $\leq$ $10,000). Of the community participants, 120 attended or were attending postsecondary education, 28 completed high school, and 30 did not complete high school; and 67 were employed, 33 worked and went to school, 13 were students who did not work, 47 were unemployed, and 30 were retired.

Measures

Tactics to Obtain Sex Scale (TOSS) items were selected based on behaviors described in the literature and from the authors' clinical and research experience on sexual conflict. Because we planned on using exploratory factor analysis (EFA), we made sure there were at least five times more variables than the maximum number of expected factors (Fabrigar, Wegener, MacCallum, & Strahan, 1999). Since items were selected to represent one of six categories, we expected no more than six factors to emerge—coercion, coaxing, severe, less severe, verbal, and physical—we therefore generated a list of 36 (at least 30 were needed). The order of item presentation was randomized across categories.

In order to assess current propensity for using tactics to obtain sex, we asked participants how they would respond to a hypothetical situation at the present time. We defined current propensity as the degree to which people reported that they were likely to engage in various acts and how they perceived these acts as being effective in obtaining sex from an initially reluctant partner. That is, someone with a high probability of using tactics to obtain sex should report a greater likelihood in using these acts, view these acts as being effective in actually obtaining sex, and rate many of these tactics more favorably than someone who has a low probably of using tactics to obtain sex. For each item, likelihood and effectiveness were evaluated on a 5-point Likert-type scale, ranging from 0 (*definitely not*) to 4 (*definitely*). Likelihood and effectiveness total scores were highly correlated, $r(409) = .80$, which supported the use of a composite score by summing each individual's response to the likelihood and effectiveness questions for each item. TOSS total scores were calculated by summing these composite scores. See Appendix A for the complete scale.

In addition to completing the TOSS questionnaire, participants completed measures that were used to provide initial validation of the TOSS, including a demographic questionnaire and scales assessing mating success and antisociality (see Study 1.2, Method). Demographic information included age, sex, relationship type (dating, cohabiting, common-law, or marital), and employment status (employed/student, unemployed, retired).

Procedure

Participants visited our laboratory and provided informed consent prior to their involvement. The researcher was present throughout the session to answer any questions. Participants were debriefed upon completing the survey.

Considering that items varied in severity (i.e., no harm to possible harm), act (i.e., physical or verbal), and type (i.e., coaxing or coercion) categories, EFA was used to determine the optimal factor structure of the TOSS and to identify any possible subscales. Specialists in EFA are divided in their view on the conceptual similarities and differences between common factor (e.g., maximum likelihood; ML) and principal component (PCA) methods (DeVellis, 2003; Fabrigar et al., 1999), so we first used ML because it allows for goodness of fit indexes, followed by PCA to replicate the structure because PCA is robust to the distributional assumptions affecting ML. We expected both methods to converge on the same solution because, for example, coaxing and coercion items represent different measures (determined by PCA) of different constructs (determined by ML).

Three methods were used to identify the minimal number of TOSS factors. A scree plot of the initial eigenvalues was used to obtain an initial estimate of the possible number of factors, followed by Velicer's minimum average partial (MAP) and parallel analyses, which provided more objective methods for determining the number of factors (for detailed description of these analyses, see O'Connor, 2000). Once the number of factors was estimated, we ran the EFA for each plausible solution using oblique rotation[1] to identify which solution provided the simplest structure. To ensure that the factor structure was equivalent between men and women, students and community participants, and between likelihood and effectiveness components, EFA was run separately for each group.

Results

Scree Test, Velicer's MAP, and Parallel Analysis

We first generated a scree plot using initial eigenvalues. The change in slope occurred between the third and fourth factors and the last major decline in slope occurred between factors 2 and 3, thus suggesting a two or three factor solution. A one factor solution accounted for 26.2% of the variance, two factors for 40%, with a smaller improvement for three factors, which explained 46% of the total variance in the raw data. Results from Velicer's MAP identified a three factor

[1] Fabrigar et al. (1999) suggested oblique rotation should be used first to determine if factors are correlated. If factors are uncorrelated, orthogonal rotation may then be used.

structure—the smallest average squared correlation of .012 was found in the third step. Using parallel analyses with 1,000 randomly generated data sets, we found that the fourth factor had a slightly higher eigenvalue from the observed data (1.61) than the fourth factor from both the randomly generated data (M eignevalue = 1.46) and from the mean eigenvalue calculated from eigenvalues that fell within 95% of the randomly generated eigenvalue distribution (1.50). Though a four factor solution was not consistent with the first two methods, an error of over extraction is possible when using parallel analyses (O'Connor, 2000). Overall, these procedures suggest there was a 2 or 3 factor solution.

Rotation

Factor rotation was used to identify the number of factors that provides simple structure. Forcing a two-factor solution using a maximum likelihood oblique rotation converged on a solution in five iterations (Table 1). All 12 coaxing items loaded onto Factor 1 (COAX), with factor loadings that ranged from .43 to .82. All 23 coercion items loaded onto Factor 2 (COERCE), with factor loadings that ranged from .40 to .71. Only one item, "take partner's clothes off," loaded onto Factor 1 (.43) and Factor 2 (.41). By excluding this one item, simple structure was achieved with a two-factor solution because coaxing and coercion items had loadings greater than .40 on their respective factors, with relatively small loadings on their alternative factor. This two-factor solution had marginally acceptable goodness-of-fit, RMSEA = .09, 90% CI = .08–.09, and was a substantial improvement from the goodness-of-fit for a one-factor solution, RMSEA = .12, 90% CI = .12–.13. The correlation between Factors 1 and 2, $r = .26$, suggested orthogonal rotation should be used because less than 10% of the variance was shared (Tabachnik & Fidell, 2001). Maximum likelihood varimax (i.e., orthogonal) rotation converged on the same solution in three iterations: coaxing and coercion items loaded onto their respective factors. Principal components analyses yielded the same simple structure.[2]

A three-factor solution using maximum likelihood oblique rotation converged on a solution in eight iterations (Table 1). Coaxing items remained the same, but coercion items were split into two factors: severe acts (COERCE-S) and less severe acts (COERCE-LS). Even though this solution also had acceptable goodness-of-fit, RMSEA = .07, 90% CI = .07–.08, simple structure was not achieved because seven items had similar loadings on both coercion factors, and their loadings were less than .40. Though COAX had lower correlations with COERCE-S, $r = -.06$, and COERCE-LS, $r = -.28$, a high correlation between COERCE factors, $r = .44$, suggested that orthogonal rotation was not applicable.

Not only did the two-factor solution provide simple structure, both factors were readily interpretable. The COAX subscale[3] included items that evaluated the degree to which a person might have used relatively benign and seductive tactics to obtain sex from a reluctant sexual partner, whereas the COERCE subscale included items that evaluated the degree to which a person might have used forceful tactics that may result in physical and emotional trauma. Also, the three factor solution that separated coercion items into severe and less severe factors was likely due to an artifact of item difficulty (Ten-Vergert, Kingma, & Gillespie, 1990). Thus, we evaluated reliability and validity for the total scale and its two subscales, excluding the item that loaded onto both factors from the total scores ("take partner's clothes off").

We found equivalent simple structure when separating our sample. That is, COAX items had strong loadings on the COAX factor and weak loadings on the COERCE factor. Likewise, COERCE items loaded strongly on the COERCE subscale but not the COAX subscale. A summary of these loadings are shown in Figs. 1 and 2. These results suggest a robust factor structure among each of these groups.

Discussion

The results from Study 1.1 suggest that the tactics people use to obtain sex from a romantic partner can be categorized into either coaxing or coercive tactics. Scores on either subscale should therefore vary in different ways. That is, a propensity for sexual coaxing should be related to variables associated with mating success, whereas a propensity for sexual coercion should also be related to variables associated with sexual aggression. In Study 1.2 we evaluated construct validity by testing the relationship between TOSS scores and age, self-perceived mating success, antisociality, and relationship type.

Age

Intercourse frequency in relationships decreases over time. For example, Udry (1980) found that, over a 4-year period, sexual frequency declined by 25%, with the steepest decline occurring among newlyweds. In a U.S. national survey, Call, Sprecher, and Schwartz (1995) found that age best predicted the decline of sexual intercourse among married men and women. Although researchers have not examined the frequency changes of partner sexual coercion over time, an established finding is that many sexual offenders (and

[2] The same solutions were found with and without the "take partner's clothes off" variable. Contact the corresponding author for orthogonal rotation and PCA factor loadings.

[3] Total scores were calculated for the overall TOSS, and separately for COAX and COERCE subscales.

Table 1 Factor loadings for 2- and 3-factor solutions using maximum likelihood oblique rotation

Item	2 Factors		3 Factors		
	COAX	COERCE	COAX	COERCE-LS	COERCE-S
Softly kiss ears, neck, or face	.82	–	−.81	–	–
Whisper in partner's ear	.80	–	−.80	–	–
Rub legs with partner	.77	–	−.75	–	–
Say sweet things	.74	–	−.73	–	–
Caress partner's chest/breasts	.70	–	−.67	–	–
Lie down near partner	.68	–	−.67	–	–
Play with hair	.68	–	−.70	–	–
Massage neck or back	.67	–	−.70	–	–
Massage feet/thighs	.66	–	−.66	–	–
Caress near/on genitals	.63	–	−.59	–	–
Tickle	.58	–	−.57	–	–
Use humor	.55	–	−.55	–	–
Persistently touch until partner agrees	–	.71	–	.84	–
Persistently say things	–	.69	–	.83	–
Take advantage if partner is already drunk/stoned	–	.64	–	.56	–
Block partner's retreat	–	.62	–	.53	–
Physically restrain	–	.60	–	.33	.40
Tie partner up	–	.57	–	.57	–
Threaten self-harm	–	.56	–	.31	.39
Attempt to blackmail	–	.56	–	–	.53
Suggest breaking partner's property	–	.55	–	–	.82
Explain needs should be met	–	.54	–	.71	–
Wait until partner is sleeping	–	.53	–	.49	–
Threaten to leave	–	.53	–	.48	–
Make feel bad about not having sex	–	.51	–	.54	–
Call partner names	–	.50	–	–	.38
Convince by making up story	–	.48	–	.39	–
Slap or hit	–	.48	–	–	.72
Give reasons why	–	.48	–	.64	–
Question partner's sexual orientation	–	.45	–	.35	–
Provide partner with alcohol	–	.45	–	.32	–
Provide partner with drugs	–	.41	–	.31	–
Break partner's property	–	.40	–	–	.78
Suggest harm	–	.40	–	–	–
Offer to buy something	–	.40	–	.39	–
Take partner's clothes off	.43	.41	−.38	.50	–

other criminals in general) desist as they age. We therefore expected that TOSS and subscales COAX and COERCE ratings would also decline with age.

Self-Perceived Mating Success

Researchers have shown that people who perceive themselves as successful in attracting mateships experience actual success in the mating market and exhibit higher sexual interest. For example, men who scored higher on the Self-Perceived Mating Success Scale (SPMS) had more sexual experience (Lalumière, Chalmers, Quinsey, & Seto, 1996), received more sexual invitations, and had a preference for short-term matings (Landolt, Lalumière, & Quinsey, 1995). We therefore expected that people who perceived themselves as being successful in mating, as measured by the SPMS, would also exhibit a preference for behavioral tactics that were likely to result in successful mating, as measured

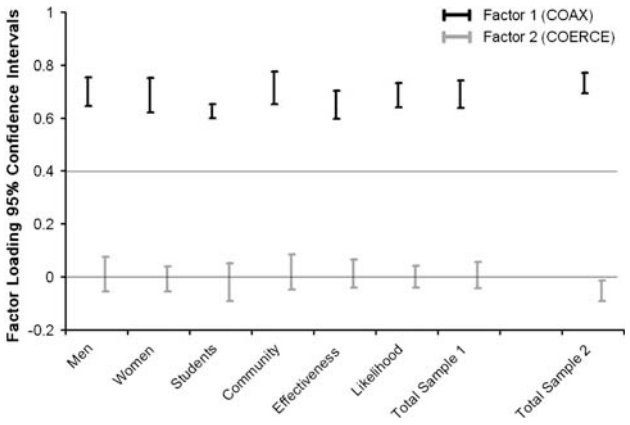

Fig. 1 Factor loading confidence intervals of COAX items on Factor 1 (COAX) and Factor 2 (COERCE) across each subgroup. Reference lines are provided at 0.40 (appropriate loadings should be greater than 0.40) and 0.00 (loadings for alternative factor should be close to 0)

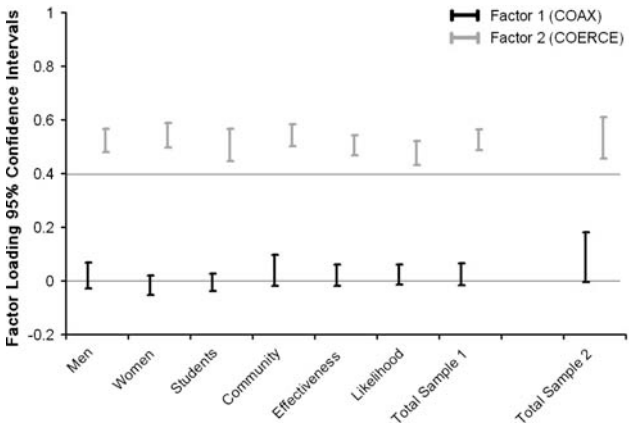

Fig. 2 Factor loading confidence intervals of COERCE items on Factor 1 (COAX) and Factor 2 (COERCE) across each subgroup

by the COAX subscale. The SPMS was found to have good internal consistency (Cronbach's $\alpha = .83$; Landolt et al., 1995).[4]

Antisociality

To assess antisociality, we used a measure of psychopathy because it is one of the most robust correlates of both violent and sexual offending. We used the revised Self-Report Psychopathy Scale III (SRP-III; Paulhus, Hemphill, & Hare, in press) because it was designed to evaluate psychopathy in nonforensic samples and an earlier version (SRP-II) correlated with both the PCL-R, $r = .54$ (Hare, 1991) and with the PCL-R Screening Version, $r = .62$ (Forth, Brown, Hart, & Hare, 1996). We predicted that participants who scored higher on psychopathy would score higher on COERCE items.

Relationship Type

Intercourse frequency varies across relationship types. Call et al. (1995) found that after controlling for age, people in cohabiting relationships had sexual intercourse more often than people in marital relationships. Call et al. did not provide operational definitions of cohabitation, so we separated our sample between those who were "living-in" and those who were legally "common-law," with the assumption that living-in was more similar to Call et al.'s "cohabiting" group and common-law was more like the marital group. If sexual frequency reflects sexual proclivity, then TOSS and COAX scores should be higher in dating or cohabiting relationships than in common-law or marital relationships. Because there is no expectation that the frequency of sexual coercion depends on the type of relationship, we did not expect any difference in COERCE scores across relationship type.

Employment Status

To ensure that the TOSS and its subscales function in expected ways, we selected employment status as a variable that should not be related to sexual propensity. There is no theoretical reason to believe that the degree to which a person uses tactics to obtain sex depends on employment status.

Study 1.2: Reliability and Validity

Method

Participants

Participants completed questionnaires for both Study 1.1 and Study 1.2 in one survey.

Measures and Procedure

To evaluate the construct validity of the TOSS and its subscales, five variables were selected to test for convergent validity, divergent validity, and sensitivity to temporal changes in sexual coercion and coaxing propensity: age, mating success (Self-Perceived Mating Success Scale; Landolt et al., 1995), psychopathy (Self-Report Psychopathy III Scale; Paulhus et al., in press), relationship type (dating, cohabiting, common-law/marital), and employment status (employed/student, unemployed). Retired participants ($n = 27$) were excluded from the analysis on employment status.

[4] All reliability estimates were provided from the original scale development sample.

Table 2 TOSS, COAX, and COERCE construct validity (Pearson correlation coefficients)

Scale	TOSS *r*(*n*)	COAX *r*(*n*)	COERCE *r*(*n*)
Men			
Age	−.17* (190)	−.29*** (190)	.03 (189)
SPMS	.19** (191)	.26*** (191)	.03 (190)
SRP	.27*** (193)	.23** (193)	.21** (192)
Women			
Age	−.23*** (214)	−.21** (214)	−.15* (212)
SPMS	.09 (216)	.11 (216)	.04 (214)
SRP	.30*** (217)	.14* (217)	.37*** (215)

Note. SPMS = Self Perceived Mating Success Scale; SRP = Self-Report Psychopathy Scale III

* $p < .05$; ** $p < .01$; *** $p < .001$

COAX and COERCE subscales determined from the factor structure analyses in Study 1.1 were investigated for their internal reliability using Cronbach's alpha. Convergent validity was tested by using Pearson correlation coefficients between overall TOSS (and its subscales) and age, self-perceived mating success, and antisociality. One-way ANOVA using least significant difference post-hoc tests were used to test for differences within relationship types and employment status on TOSS, COAX, and COERCE scores.

Results

Reliability

Internal consistency was high for TOSS, COAX, and COERCE, Cronbach's $\alpha = .91$, .92, and .89, respectively.

Age, Mating Success, and Antisociality

Age was significantly related to TOSS, $r(402) = -.20$, $p < .001$, and COAX, $r(402) = -.26$, $p < .001$, but not COERCE, $r(399) = -.08$. Similar results were found when separating the analyses by sex (Table 2). In other words, as participant age increased, ratings of tactics, particularly coaxing tactics, decreased, whereas ratings of coercive tactics did not depend on the person's age. As expected, mating success was significantly related to TOSS, $r(406) = .10$, $p = .05$, and COAX, $r(406) = .12$, $p = .02$, but had no relationship with COERCE, $r(403) = .04$. Interestingly, self-reported mating success was related to TOSS and COAX scores only among men (Table 2).

Psychopathy was significantly related to TOSS, $r(409) = .20$, $p < .001$, COAX, $r(409) = .12$, $p = .03$, and COERCE, $r(406) = .23$, $p < .001$. To determine if there was a stronger relationship between COAX and psychopathy, we used the *z* test for comparing two dependent correlations (Meng, Rosenthal, & Rubin, 1992; Reddon, 1992). The relationship between psychopathy and COERCE was significantly stronger than the relationship between psychopathy and COAX, $z = -1.93$, $p = .05$ (2-tailed). Results remained the same when separating analyses by sex (Table 2).

Relationship Type

A one-way analysis of covariance (ANCOVA) to evaluate the differences between relationship types (i.e., dating, cohabiting, common-law/marital) after controlling for age was not significant for TOSS, $F(2, 398) < 1$, or COERCE scores, $F(2, 395) < 1$. Because the homogeneity of slopes assumption was not met for COAX scores (i.e., age was not linearly related to COAX at all levels of the relationship status variable), we tested for simple main effects (see Green & Salkind, 2008). Differences between relationship types were compared at three levels of the covariate: mean age (29 years), one SD below the mean (14 years), and one standard deviation above the mean (44 years). Because our youngest participants were university students, we used 18 instead of 14 as our low age group. Participants in committed relationships had lower COAX scores than participants in dating and cohabiting relationships at age 18, $ps < .006$, and dating relationships at 29, $p = .009$ (the difference between committed and cohabiting relationships was not quite significant but in the expected direction, $p = .06$). At age 44, there were no differences between any relationship type on COAX scores, $ps > .11$. In other words, the influence of relationship type on interest in using coaxing tactics to obtain sex was found among younger participants (see Fig. 3).

Analyzing results by sex did not change the interpretation of our results. For example, both men and women in dating relationships had more interest in using coaxing tactics to obtain sex from their partner than participants in common-law or marital relationships at ages 18 and 29, $ps < .05$, but not age 44. There were no differences between cohabiting and either dating or committed relationships, except among men at ages 18 and 29, and women at age 18, where participants in cohabiting relationships had higher COAX scores than participants in committed relationships, $ps < .05$. The only inconsistent result was finding that women in cohabiting relationships at age 44 were less interested in coaxing than women in committed and dating relationships, $ps < .01$. This result, however, may be attributed to the small number of women in cohabiting relationships ($n = 16$).[5]

[5] Contact the corresponding author for a complete summary of these results.

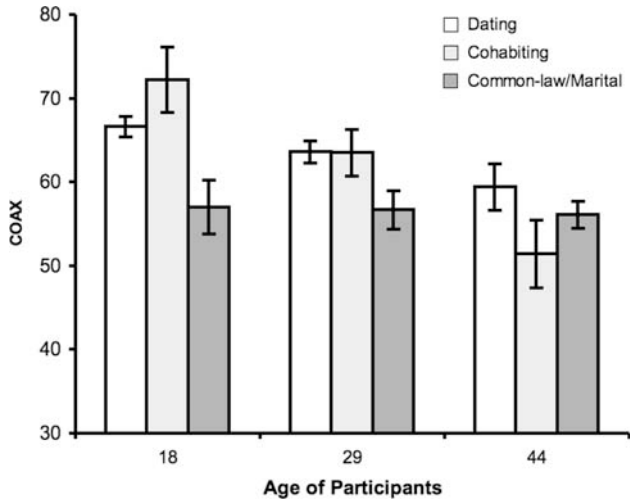

Fig. 3 Adjusted mean COAX scores (+SE) for dating, cohabiting, and common-law/marital relationships across three age levels

Employment Status

A one-way ANCOVA was conducted to evaluate the differences between employment status (i.e., employed/student, unemployed), controlling for age, on TOSS, COAX, and COERCE scores. Nonsignificant results were found for TOSS, $F(1, 371) < 1$, COAX, $F(1, 371) < 1$, and for COERCE, $F(1, 368) < 1$. Similar results were found when separating men and women, $ps > .46$.

Discussion

The purpose of this study was to develop a scale to evaluate propensity to engage in sexual coercion and sexual coaxing with a reluctant sexual partner. The TOSS originally included 36 items derived from the literature on sexual behavior in relationships. One item was removed after finding that it loaded onto more than one factor. We designed the scale to meet several criteria, and a series of psychometric analyses confirmed that the TOSS met them.

First, the scale was comprehensive because it included items that vary in three domains—severity (no harm to possible harm), act (verbal or physical), and tactic (coaxing or coercion)—meaning that TOSS total score evaluated the degree to which participants reported they would use any tactic to obtain sex. Though we can assume that people with high scores on the TOSS indicate a strong interest in using multiple tactics, a preference for a particular type of tactic is unknown for those with low to moderate scores. The only situations in which TOSS total scores should be used is if there is interest in evaluating a person's general desire for intercourse with his or her partner, regardless of the type of tactic the person intends on using.

Second, simple structure was achieved after separating items that assessed sexual coaxing from items that assessed sexual coercion. Initial validation of these subscales was confirmed by strong correlations between COERCE and antisociality, and between mating success and COAX. Though TOSS scores had excellent internal consistency and were significantly related to age, mating success, and psychopathy, using only one factor accounted for 26% of the variance of TOSS responding, whereas using two factors accounted for 40%. Also, we expected that interest in either subscale will depend on one's discipline, and so either subscale can be used alone to expedite data collection. A better approach, however, would be to measure both subscales so that divergent validity could also be assessed. For example, researchers could not only test the hypothesis that behavioral tendencies of people who are sexually compulsive are likely to engage in sexual coaxing, but can rule out sexual coercion as another plausible behavioral tendency.

Third, temporal sensitivity is an important property that other self-report scales on sexual coercion have lacked. The dynamic nature of the TOSS is, therefore, important because other scales composed entirely of static items are not conducive to experimental tests of sexual coercion and coaxing. Initial validation of TOSS's temporal sensitivity was demonstrated from finding that TOSS and COAX scores were lower among older participants and that COAX scores depended on relationship types after controlling for age. It is likely that COERCE did not vary across age because interest in coercive sex with one's partner may be better predicted from circumstances that elicit such a response or from individual difference characteristics related to antisociality. The latter possibility was supported by finding a stronger relationship between COERCE and psychopathy than between COAX and psychopathy.

Finally, initial construct validity was established by mating success having a stronger relation with COAX than with COERCE, and by psychopathy having a stronger relation with COERCE than with COAX. To provide further validation for TOSS subscales, we included multiple measures of sexual interest and antisociality in Study 2.

An important step in the scale development process is to provide a precise and detailed description of the construct being assessed (Clark & Watson, 1995). Results from our first study suggested that the TOSS assessed a person's current propensity towards using verbal and physical tactics to obtain sex from a partner who is not sexually interested. More interestingly, there were two mutually exclusive factors represented in this scale. The COAX subscale measures a person's current propensity towards using coaxing tactics to seduce a partner into sexual activity. These tactics are common and are viewed more generally as acceptable courtship behaviors that are unlikely to lead to physical or psychological harm. On the other hand, the COERCE subscale measures a person's current propensity towards using coercive tactics that not only circumvents a partner's choice, but may lead to physical or psycho-

logical harm. A second study was conducted to ensure the TOSS and its subscales have robust psychometric properties by replicating the factor structure and providing a more rigorous test of the scale's construct and criterion validity.

If the underlying factor structure is correct, we should find the same factor loadings found in Study 1.1. Also, if COAX evaluates propensity for sexual coaxing, we expect it to correlate with sexual desire and behaviors indicative of sexual interest. Likewise, if the COERCE subscale evaluates a person's current propensity for sexual coercion, not only should it correlate with measures of antisociality, as was demonstrated in Study 1.2, it should also be related to an interest in sexual aggression and actual sexually aggressive behavior in the relationship.

Study 2: Factor Structure Replication, Reliability, and Validity

Method

Participants

Since the same factor structure was found between students and community participants in Study 1, data were collected from students alone in Study 2. Participants were recruited from the university campus using the psychology department participant pool and from advertisements on campus ($N = 137$). The number of males and females were approximately equal. For their participation, students from the subject pool were given course credit whereas students recruited from advertisements were given $15. All participants were sexually active in a heterosexual relationship, with an average time of 1.61 years together ($SD = 2.03$). Ages ranged from 17 to 41 ($M = 20$; $SD = 3.87$), and the mode relationship type was a dating relationship, but there were a few participants who were either married ($n = 6$) or not married but living together ($n = 7$). All participants completed the TOSS and a subset also completed scales that tested for TOSS validity ($n = 76$).

Factor Structure Replication and Reliability

To refine the TOSS and test the COAX-COERCE factor structure in another sample, we forced a two-factor solution using a maximum likelihood oblique rotation (for more details, see Study 1.1). Reliability was evaluated by measuring internal consistency using Cronbach's alpha.

Construct Validity

COAX To properly evaluate construct validity, we required the use of scales that evaluated an interest in either sexual coaxing or sexual coercion with one's romantic partner. Since these scales do not exist, we could only use more general measures of sexual interest and antisociality. To determine COAX construct validity, we selected the Sexual Desire Inventory (SDI; Spector et al., 1996) that evaluates the degree to which a person is interested in sex. The SDI includes 14-items that evaluates general (e.g., "when you first see an attractive person, how strong is your sexual desire?"), relational (e.g., "how strong is your desire to engage in sexual activity with a partner?"), and personal (e.g., "how strong is your sexual desire to engage in sexual behavior by yourself?") sexual desire. The items are rated on an 8-point Likert-type scale (*no desire* to *strong desire*, or *not at all important* to *extremely important*) or an 8-point frequency scale (*not at all* to *more than once a day*). Higher total scores indicate higher sexual desire. The SDI was found to have good reliability (rs $> .86$).

COERCE To determine COERCE construct validity, we used general measures of antisociality and sexual aggression. Following Study 1.2, we used the SRP, but we also included a measure of interest in sexual aggression, the Revised Attraction to Sexual Aggression scale (ASA-R; Malamuth, 1998). The ASA-R includes nine questions about rape and forcing a female to do something sexual she did not want to (e.g., "Please indicate how often you have thought of trying it"). Each question has different response options (e.g., *never* to *often*; *very unattractive* to *very attractive*) that were summed to create a total score, where higher scores indicated greater attraction towards sexual aggression. An earlier version correlated with a composite score using the Rape Myth Acceptance Scale, the Acceptance of Interpersonal Violence measure, and the Adversarial Sexual Beliefs scale ($r = .41$, $p < .001$) (Malamuth, 1989). The ASA had excellent internal consistency (Cronbach's alpha $= .91$) and was validated by finding correlations with having previously forced sex, enjoying forced sex, intending to rape in the future (Malamuth, 1989), and hostility towards women (Calhoun, Bernat, Clum, & Frame, 1997).

Criterion Validity

COAX To evaluate criterion validity of COAX, we used the Sexual Signaling Behaviors Inventory (SSBI; Jesser, 1978) because it identifies the degree to which a person has signaled sexual interest to his or her partner. Participants select up to 20 behaviors they used to persuade a partner into having sex (e.g., "ask directly"; "tease"). Higher scores indicated greater variability in the types of signals used in the past. We expected a stronger relationship between COAX and SSBI than between COERCE and SSBI.

COERCE An important and practical component of the COERCE subscale is its ability to predict sexually coercive behaviors in relationships. An initial test of this property is the

feasible method of postdicting sexually coercive behaviors from COERCE scores (DeVellis, 2003). To evaluate past instances of partner sexual coercion, we used the Sexual Coercion in Relationships Scale (SCIRS; Shackelford & Goetz, 2004) and the sexual coercion subscale (CTS-SC) of the revised Conflict Tactics Scale (Straus et al., 1996). The SCIRS asked about the frequency of 34 sexually coercive acts over the past month on a 6-point scale (*act did not occur in the past month* to *act occurred 11 or more times in the past month*). The CTS-SC asked about the frequency of seven sexually coercive acts over the past year on a 7-point scale (*0* to *more than 20 times*). Both the SCIRS and CTS had good internal reliability and validity (Shackelford & Goetz, 2004; Straus et al., 1996). We also calculated a CTS subscale that tallies nonsexual conflicts (CTS-NS). We expected COERCE would best predict SCIRS and CTS-SC, but not CTS-NS. Knowing that men account for the vast majority of partner sexual assaults (e.g., Hanneke & Shields, 1985; Russell, 1990), we expected stronger relationships between COERCE and actual behavior in men than in women.

Data Analysis

Because the effect of outliers is more pronounced in smaller samples, we excluded nine participants who had discrepant Cook's D values (for details, see Cohen, Cohen, West, & Aiken, 2003). We also controlled for social desirability using the Impression Management Deception Scale, which identifies participants who provide invalid self-reports by intentionally trying to impress the test administrator (Paulhus, 1998). Ten participants were excluded from all analyses for these reasons.

Results

Factor Structure Replication

The same factor structure emerged in our replication sample: coaxing items only loaded onto the COAX factor, whereas most coercion items only loaded onto the COERCE factor. Four items that loaded onto the COERCE factor in Study 1.1 now loaded onto COAX as well: "persistently touch until partner agrees," "persistently say things," "convince by making up a story," and "give reasons why." These items were initially conceived as being less severe as other coercive tactics (e.g., hitting or slapping), which may be why participants in our follow-up sample did not have consistent interpretations. Because these four items did not load onto their expected factor, we revised the scale by removing them from both the TOSS total score and COERCE subscale score. Before checking the reliability and validity of the revised version of the scale in our new sample, we re-ran analyses in Study 1 using the original sample but with the revised TOSS and COERCE subscale. All

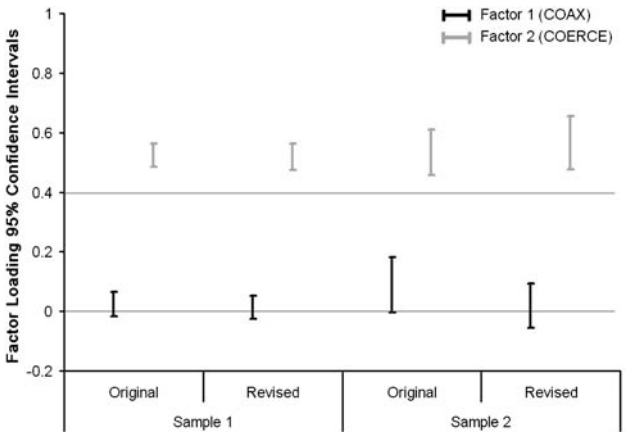

Fig. 4 Factor loading confidence intervals of the original and revised COERCE items on Factor 1 (COAX) and Factor 2 (COERCE)

results remained when using the revised versions. In both samples, the revised scale provided enhanced simple structure (Fig. 4). Because the revised scale provided better discrimination between groups, all analyses in this second study were run using the revised TOSS and COERCE subscale.

Reliability and Validity

Reliability Internal consistency was replicated by finding high values for TOSS, COAX, and COERCE, Cronbach's $\alpha = .90$, .93, and .87, respectively.

Construct Validity Convergent and divergent forms of construct validity were clearly demonstrated in Table 3. Only the COAX subscale correlated with sexual desire, as measured by the SDI, and only the COERCE subscale correlated with measures of antisociality, as measured by the SRP and ASA-R. The TOSS total score still correlated significantly with both the SDI and SRP, and approached significance with the ASA-R.

Criterion Validity The TOSS and its subscales predicted overt behaviors (Table 4). First, there was a strong relationship between COAX and the number of sexual signaling behaviors used with one's partner, and between COERCE and SSBI. Because coercive sexual interest inherently requires general sexual interest, the correlation between SSBI and COERCE was not surprising. The converse, that general sexual interest inherently requires coercive sexual interest, was not true, and was confirmed by showing a consistent relationship between COERCE and instances of partner sexual coercion as measured by the SCIRS and CTS-SC, and finding no relationship between COAX and sexually coercive acts.

The relationship between COERCE and SCIRS was found only among men, not among women. Even though both men and women might self-report an interest in sexually coercing their partner, men are more likely to coerce their partners. These results are consistent with sex differences in the

Table 3 TOSS, COAX, and COERCE construct validity (Pearson correlation coefficients)

Scale	*n*	TOSS	COAX	COERCE
SDI	76	.28*	.25*	.20
SRP	76	.30**	.17	.41***
ASA-R	76	.22[a]	.09	.36***

Note. SDI = Sexual Desire Inventory; SRP = Self-Report Psychopathy Scale III; ASA-R = Revised Attraction to Sexual Aggression Scale

[a] Alpha approaching significance, $p = .06$

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 4 TOSS, COAX, and COERCE criterion validity (Pearson correlation coefficients)

Scale	*n*	TOSS	COAX	COERCE
SSBI	76	.43***	.38***	.30**
SCIRS	76	.30**	.10	.27*
Men	38	.32[a]	.16	.44**
Women	38	.04	.08	−.03
CTS-SC	76	.23*	.16	.25*
Men	38	.33*	.26	.29
Women	38	.13	.06	.20
CTS-NS	76	.02	.05	−.05
Men	38	.12	.13	.01
Women	38	−.08	−.04	−.12

Note. SSBI = Sexual Signaling Behaviors Inventory; SCIRS = Sexual Coercion in Intimate Relationships Scale; CTS-SC = Conflict Tactics Scale, Sexual Coercion Subscale; CTS-NS = Conflict Tactics Scale, Nonsexual Conflicts Subscale

[a] Alpha approaching significance, $p = .06$

* $p < .05$; ** $p < .01$; *** $p < .001$

prevalence of partner sexual coercion (e.g., Hines & Saudino, 2003; Statistics Canada, 2004). Lastly, COERCE was only related to instances of sexual coercion, not other conflicts that may have occurred with one's partner (CTS-NS), furthering our confidence that COERCE indicates a propensity for sexual aggression, not aggression in general.

Discussion

In Study 2, we confirmed and extended the psychometric properties found in Study 1. Not only was the factor structure replicated, reliabilities in the second sample were excellent, and the scale's validity was confirmed. The COAX subscale was related to both sexual desire and sexual signaling behaviors, whereas the COERCE subscale had its strongest relationships with measures of psychopathy, attraction to sexual aggression, and was specifically related sexually coercive behaviors, but not other forms of sexual conflict in the relationship. Taken together, our findings suggest that using the TOSS is a reliable and valid way to assess current propensity for sexual coaxing and sexual coercion in relationships. An important caveat when using the TOSS, however, is that a higher interest in sexual coercion as measured by COERCE was related to actual sexual aggression only among men, not among women. Though this finding is consistent with sex differences in the frequency of this behavior and is proximately explained by sexual dimorphisms in size and physical strength, this discrepancy affects the interpretation of women's scores. We also found in Study 1.2 that women's propensity for sexual coaxing was unrelated to self-perceived mating success. These sex differences are not unique to our study—Greer and Buss (1994) found a significant relationship between effectiveness ratings of tactics that promote short-term sexual encounters and the frequency of such tactics only among men, not women. Consistent with our explanation, they suggested this discrepancy was due to the sex-specific costs associated with engaging in such behavior. For example, there may be reputational and emotional costs for women who engage in short-term mating. When the costs of behavior are low, such as what people do to appear attractive to the opposite sex, effectiveness-frequency correlations have reached over .70 for both men and women (Buss, 1988).

General Discussion

The purpose for developing the TOSS was to provide clinicians and researchers with a tool for assessing interest in using tactics to obtain sex from a romantic partner. In two studies, we generated an item pool of these tactics, devised a scale that assessed current propensity to use them, and found that tactics were separated into two subscales that evaluated mutually exclusive constructs—coaxing and coercion. We established that the scale has excellent internal reliability, provided initial evidence that it was sensitive to temporal changes in sexual interest, established construct validity through convergence and divergence with other scales, and found that our self-report measure of propensity was related to overt behavior.

The design of this scale was somewhat unusual among attitude measures. Though attitude measures typically measure thoughts, feelings, and past behaviors, the TOSS was based on the first component because sexual feelings are better assessed using physiological tools (e.g., using plethysmography) and past behaviors confound the scale with static risk. By measuring thoughts alone, the TOSS captures the cognitive components of an interest in sexual coaxing and sexual coercion. The design of this scale, therefore, makes it amenable to psychological assessment and treatment programs, particularly programs that include cognitive therapy. Also, by virtue of assessing cognition, the TOSS can be used to test causal

hypotheses linking thoughts about sexual coercion or coaxing and behavior. A limitation in our study, however, is that we used a between-subjects design to test the scale's sensitivity for proximal changes in propensity. Future research should use a within-subjects design to provide further validation of this feature.

We established that both men and women in dating, cohabiting, common-law, and marital relationships varied in terms of their interest in using both coaxing and coercive tactics to obtain sex. An extension of this research would understand the causes and consequences of this variability and to apply these findings to interventions. For example, we defined sexual coaxing as a strategy to obtain sex from a reluctant sexual partner by using benign, seductive tactics. Theoretically and clinically derived questions might be: (1) Do people who show an interest in sexual coaxing have healthy sexual relationships, unhealthy relationships, or are using a strategy to resolve sexual conflict by communicating their desires?, and (2) Are there circumstances or characteristics that moderate any of these relationships—for example, is it more practical to use this scale where conflict in relationships is known?

In terms of partner sexual coercion, we know that variability in the COERCE subscale was associated with antisocial characteristics, an attraction to sexual aggression, and to past instances of partner sexual coercion. Researchers may want to understand what circumstances might elicit such an orientation, and to see if these preferences may also reflect individual differences in sexual coercion propensity. Not only will such research allow us to identify individual difference characteristics of people who are likely to commit such offenses, it also extends the growing literature on dynamic risk assessment. By conducting experimental work with the TOSS, we may identify novel and important dynamic risk predictors of sexual coercion in relationships. This development is particularly important since understanding the causes of partner sexual coercion is gaining more attention (Goetz & Shackelford, 2006; Lalumière et al., 2005).

The relationship between coaxing and coercion can also be explored. We defined sexual coaxing as a strategy to obtain sex from a reluctant sexual partner by using benign, seductive tactics, whereas sexual coercion is a strategy to obtain sex from a reluctant sexual partner by using forceful and manipulative tactics that may result in physical and emotional trauma. We need to learn if, for example, the use of coaxing as opposed to coercion is related to the frequency or persistence of partner reluctance.

Overall, the TOSS shows promise in contributing to the unraveling of the complexity of sexual conflict in relationships by not only allowing researchers the ability contrast sexual coaxing and coercion, but also to experimentally manipulate and evaluate dynamic changes in these preferences. We hope its use will facilitate and extend discussion on the etiology, assessment, and treatment of this important social problem.

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Appendix A

Suppose you were with your partner this evening, and he/she did not want to have sex with you: Please rate **how effective** the following acts would be to persuade your partner into having sex. Remember, you may skip questions you are uncomfortable in answering.[6]

	Effectiveness of acts				
	Definitely not	Unlikely	Maybe	Probably	Definitely
Massage his/her neck or back	0	1	2	3	4
Threaten to leave	0	1	2	3	4
Try to make him/her feel bad about not having sex	0	1	2	3	4
Play with his/her hair	0	1	2	3	4
Suggest you may harm him/her	0	1	2	3	4
Offer to buy him/her something	0	1	2	3	4
Lie down near him/her	0	1	2	3	4
Tie partner up	0	1	2	3	4
Block partner's retreat	0	1	2	3	4
Tickle	0	1	2	3	4
Provide him/her with drugs	0	1	2	3	4
Call him/her names	0	1	2	3	4
Threaten self-harm	0	1	2	3	4
Massage feet/thighs	0	1	2	3	4

[6] Four items that did not consistently load onto one factor were removed from the scale: take partner's clothes off, persistently touch, persistently say things, convince by making up a story, give reasons why.

Appendix A continued

	Effectiveness of acts				
	Definitely not	Unlikely	Maybe	Probably	Definitely
Use humor	0	1	2	3	4
Say you might break partner's property	0	1	2	3	4
Wait until he/she is sleeping	0	1	2	3	4
Attempt to blackmail	0	1	2	3	4
Caress near/on partner's genitals	0	1	2	3	4
Rub leg with his/her legs	0	1	2	3	4
Whisper in his/her ear	0	1	2	3	4
Softly kiss his/her ears, neck, or face	0	1	2	3	4
Question partner's sexual orientation	0	1	2	3	4
Break partner's property	0	1	2	3	4
Say sweet things	0	1	2	3	4
Provide him/her with alcohol	0	1	2	3	4
Explain that your needs should be met	0	1	2	3	4
Take advantage of him/her if already drunk or stoned	0	1	2	3	4
Slap or hit	0	1	2	3	4
Caress his/her chest/breasts	0	1	2	3	4
Physically restrain	0	1	2	3	4

Suppose you were with your partner this evening, and he/she did not want to have sex with you: Please rate **how likely** you would engage in the following acts to persuade your partner into having sex. Remember, you may skip questions you are uncomfortable in answering.

	Likelihood you would use acts				
	Definitely not	Unlikely	Maybe	Probably	Definitely
Massage his/her neck or back	0	1	2	3	4
Threaten to leave	0	1	2	3	4
Try to make him/her feel bad about not having sex	0	1	2	3	4
Play with his/her hair	0	1	2	3	4
Suggest you may harm him/her	0	1	2	3	4
Offer to buy him/her something	0	1	2	3	4
Lie down near him/her	0	1	2	3	4
Tie partner up	0	1	2	3	4
Block partner's retreat	0	1	2	3	4
Tickle	0	1	2	3	4
Provide him/her with drugs	0	1	2	3	4
Call him/her names	0	1	2	3	4
Threaten self-harm	0	1	2	3	4
Massage feet/thighs	0	1	2	3	4
Use humor	0	1	2	3	4
Say you might break partner's property	0	1	2	3	4
Wait until he/she is sleeping	0	1	2	3	4
Attempt to blackmail	0	1	2	3	4
Caress near/on partner's genitals	0	1	2	3	4
Rub leg with his/her legs	0	1	2	3	4
Whisper in his/her ear	0	1	2	3	4
Softly kiss his/her ears, neck, or face	0	1	2	3	4

Appendix A continued

	Likelihood you would use acts				
	Definitely not	Unlikely	Maybe	Probably	Definitely
Question partner's sexual orientation	0	1	2	3	4
Break partner's property	0	1	2	3	4
Say sweet things	0	1	2	3	4
Provide him/her with alcohol	0	1	2	3	4
Explain that your needs should be met	0	1	2	3	4
Take advantage of him/her if already drunk or stoned	0	1	2	3	4
Slap or hit	0	1	2	3	4
Caress his/her chest/breasts	0	1	2	3	4
Physically restrain	0	1	2	3	4

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