Women's Sexual Satisfaction as a Predictor of Well-Being in Same-Sex Versus Mixed-Sex Relationships

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Structural equation modelling was used to assess the strengths of the links between sexual satisfaction and self-reported (a) relationship well-being, (b) mental health, and (c) physical health for women in same-sex (i.e., homosexual, n = 114) versus mixed-sex (i.e., heterosexual, n = 208) relationships. Participants came from a large-scale Internet study. Sexual satisfaction was found to be an extremely strong predictor of relational well-being, a strong predictor of mental health, and a weak to moderately strong predictor of physical health. A two-group comparison model indicated that the strength of these links was the same, regardless of whether the women were in a sexual relationship with a man or with another woman.

Elaine describes herself as being extremely sexually satisfied in her relationship with her partner Chris (i.e., she subjectively evaluates their sexual relationship very positively). Knowing this piece of information, what would be the best prediction about Elaine's relationship well-being (e.g., relationship satisfaction, love, trust), her mental health (e.g., depression, anxiety, stress), or her physical health (e.g., minor physical ailments, self-reported general health). In other words, exactly how strong are the connections between women's sexual satisfaction and other aspects of their subjective well-being? Would we expect those connections to be stronger, or weaker, if Elaine's partner Chris happened to be another woman, versus a man (i.e., is sexual satisfaction a better predictor of subjective well-being for women in same-sex relationships or in mixed-sex relationships[1])? These are the questions that are addressed in this study.

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[1]We generally prefer "same-sex relationship" to "lesbian," as not all women currently in a relationship with another woman would self-identify as lesbian (Lever, 1995). We use the term "mixed-sex relationship" for grammatical comparability to "same-sex relationship" and to avoid the assumptions of strong gender differences contained in the term "opposite-sex relationship."

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There is substantial research evidence that if Elaine were in a sexually satisfying, mixed-sex (i.e., heterosexual) relationship, then one would expect her to show relatively high scores on other aspects of her subjective well-being as well. Within mixed-sex relationships, sexual satisfaction shows strong positive correlations with aspects of relational well-being, such as relationship satisfaction (for a review, see Sprecher & Cate, 2004) and love (for a review, see Hendrick & Hendrick, 2004). Higher sexual satisfaction is also associated with fewer mental health issues, such as depression or anxiety (e.g., Frohlich & Meston, 2002; Tower & Krasner, 2006; Van Minnen & Kampman, 2000), and with better self-rated physical health (Laumann et al., 2006).

These correlations, of course, may exist for several reasons. First, a satisfying sexual relationship may lead directly to increased subjective well-being. Taking an exchange perspective on relationships (Lawrance & Byers, 1995), satisfying sexual experiences are one form of relational benefits exchanged between partners—one that could potentially contribute to positive, overall relationship well-being. There is also substantial evidence that regular sexual activity (especially the experience of orgasms) may have beneficial effects for a variety of aspects of both psychological and physical well-being (Levin, 2007).

Conversely, other aspects of well-being might lead directly to enhanced sexual satisfaction. Those in very

satisfying relationships may be motivated to learn to please their partner sexually, as one way of expressing their love (Solomon, 1981). On the negative side, physical and mental health problems could directly interfere with the optimal expression of one's sexuality (Clayton, 2007).

Finally, of course, some third variable, such as socio-economic status or a general positivity bias in self-ratings, could account for the apparent links between sexual satisfaction and other well-being variables. Experiments are not possible to definitively establish causation with these variables, and longitudinal studies are less than revealing. For example, in longitudinal studies examining the link between sexual satisfaction and relationship satisfaction, several studies (Byers, 2005; Henderson-King & Veroff, 1994; Sprecher, 2002) have shown that these two constructs do covary together over time, but there is no clear evidence that either one causes the other. Instead, the most likely explanation is that the links between these constructs are reciprocal and mutually reinforcing (e.g., Hendrick & Hendrick, 2004).

Thus, connections between sexual satisfaction and other aspects of subjective well-being are well-established for women in mixed-sex relationships. For women in same-sex relationships, however, the empirical evidence is much more sparse. There have been isolated studies showing positive correlations between sexual satisfaction and relationship quality (e.g., Bryant & Demian, 1994; Kurdek, 1991; Tracy & Junginger, 2007), or sexual satisfaction and measures of psychological well-being (e.g., Biss & Horne, 2005; Tracy & Junginger, 2007). However, none of these studies directly compared the strength of these links between women in same-sex versus mixed-sex relationships. Either data were collected only from participants within same-sex relationships (Biss & Horne, 2005; Bryant & Demian, 1994; Tracy & Junginger, 2007), or else no statistical comparisons of the strength of the links across groups were made (Blumstein & Schwartz, 1983; Kurdek, 1991).

Between-group comparisons are important because one must not assume that heterosexual norms will apply to all types of relationships. Women's sexuality may vary substantially by context (Baumeister, 2000), including the context of whether they are experiencing that sexuality with a man or with another woman. Accurate between-group comparisons are particularly useful for informing sex and relationship therapists. If sexual satisfaction were found to be particularly central to lesbian clients' subjective well-being, it makes the development of appropriate sexual treatments and interventions all the more crucial. On the other hand, if sexual satisfaction were shown to have relatively weak connections to other aspects of well-being for lesbians, then therapists could reassure clients that any sexual difficulties they are experiencing are not likely to preclude them

from having very positive relationship and life experiences in other respects.

The direction and magnitude of any potential between-group differences is difficult to predict. On the one hand, women in same-sex relationships tend to report having sex somewhat less frequently than women in mixed-sex relationships (Blumstein & Schwartz, 1983; Lever, 1995), and may at times emphasize emotional intimacy or sensuality over genital sexuality (Nichols, 2004; Rothblum, 1994). Satisfaction with their sex life *per se* might, therefore, be a relatively weak predictor of their overall well-being.

Also, physical or psychological disorders may cause or exacerbate certain sexual dysfunctions, such as problems with lubrication or with experiencing orgasms readily (Clayton, 2007), in both lesbian and heterosexual women. However, lesbian sexuality tends to de-emphasize intercourse, reducing issues of discomfort associated with a lack of lubrication; lesbian sexuality also tends to last a long time, place a strong emphasis on mutual pleasure, and incorporate a wide variety of sexual techniques (Iasenza, 2002; Lever, 1995), thereby potentially maximizing the likelihood of experiencing orgasm. Thus, even if physical and mental health disorders predict sexual dysfunction at equal rates among heterosexual and lesbian women, these dysfunctions might disrupt overall sexual satisfaction less in the latter group. These arguments suggest that links between sexual satisfaction and other aspects of well-being (relational, mental, physical) might potentially be weaker for women in same-sex relationships than women in mixed-sex relationships.

On the other hand, women generally tend to emphasize the relationship-bonding aspects of sexuality somewhat more than men (Peplau, 2003). This emphasis might potentially be accentuated when two women are in a relationship together, especially because sexual activity within a same-sex relationship cannot serve a procreative function. In addition, women tend to define themselves as lesbians when they are sexually attracted to other women. However, if a woman then finds herself unable to create a satisfying sexual relationship with another woman, she might begin to call her self-defined sexual identity into question—a threatening possibility, and one that may be less likely to occur to women in the heterosexual majority. For both of these reasons, then, sexual satisfaction might potentially be even more central to the well-being of women in same-sex relationships than women in mixed-sex relationships.

Finally, it should be noted that women in same-sex and mixed-sex relationships do not generally differ in terms of their mean levels of sexual satisfaction (Blumstein & Schwartz, 1983; Duffy & Rusbult, 1986; Holmberg & Blair, 2009; Kurdek, 1991), or of mental and physical well-being (Blair & Holmberg, 2008; Kurdek, 2004). Of course, just because groups have similar means on two variables does not necessarily

indicate that the strength of the correlation between those two variables will also be similar across groups. However, relational processes have generally been shown to work very similarly across same-sex and mixed-sex relationships in previous research, with the same variables predicting outcome measures, at approximately the same level (e.g., Blair & Holmberg, 2008; Kurdek, 2004, 2005; Lehmiller & Agnew, 2006). The most likely finding would, therefore, seem to be that sexual satisfaction will be a similarly strong predictor of subjective well-being for women in both types of relationships; however, some reasons do exist to anticipate either weaker or stronger links.

Thus, the primary purpose of this study was to directly compare the strength of the links between sexual satisfaction and (a) relationship well-being, (b) mental health, and (c) physical health for women in mixed-sex versus same-sex relationships. Because no previous between-group comparisons exist, and because a case can be made for several different outcomes, the outcome of these comparisons (i.e., stronger for women in same-sex relationships, stronger for women in mixed-sex relationships, or no difference) was left as an open research question.

In addition, no previous studies in the area have investigated all three aspects of well-being within the same sample. Thus, this study was also the first to permit a direct comparison of the effect size of each of the three links within a single model, with sampling effects controlled. Finally, the few previous studies that contained women in both same-sex and mixed-sex relationships (Blumstein & Schwartz, 1983; Kurdek, 1991) only correlated single measures of each construct, composed of one or two items of unknown reliability and validity. This study, by comparison, used well-validated, multi-item scales to assess each construct. Also, this study employed multiple indicators of each construct and used structural equation modelling to combine the scores from these multiple indicators together while controlling for measurement error. Structural equation modelling provides a more reliable estimate of the true magnitude of the relationship between underlying, latent variables than any single correlation between observed measures can provide (Kline, 2005).

Method

Participants

Individuals were recruited for a large online study using a wide variety of different methods (e.g., posters, business cards, online and magazine ads, e-mail listserv announcements, and snowball sampling from existing participants). Advertising was directed both toward media targeting gay and lesbian individuals (e.g., magazines, such as *The Advocate* and *Curve*; Web sites, such

as equalmarriage.ca; and gay/lesbian student association listservs) and media reaching a more general population (e.g., Google™ adwords, online psychology research sites, and psychological association listservs). The study was primarily focused on, and was advertised as, examining the links between social support, relationships, and physical or mental health. The sexual satisfaction measures were only one small part of the larger study, and were not emphasized in recruitment materials. All advertising directed potential participants to a Web site that described the study, eligibility, and incentives. Interested participants completed a brief demographic questionnaire and provided contact information. Eligible individuals were later sent an e-mail inviting them to take part in the study.

Missing data analyses. There were 866 individuals who registered their potential interest in the study. Of these, 518 were women $18+$ years of age and currently in a relationship (i.e., did not indicate they were currently "single" on a prescreening questionnaire), and were, therefore, eligible for this study. Of the 518 eligible women, 322 (62%) went on to complete all required measures when invited to do so (i.e., completed at least one scale from each of the four factors shown in Table 1). The 196 individuals who did not complete the full study were deleted from all analyses. These deleted individuals were compared to the 322 retained participants on the eight demographic variables shown in Table 2, as well as on relationship type (i.e., mixed-sex vs. same-sex relationship), using independent-samples t tests for continuous variables and Pearson's chi-square for categorical variables. Given the large number of comparisons, a Bonferroni correction was applied, resulting in an alpha level of .006 (i.e., .05 divided by nine comparisons). The only significant demographic difference was that those who completed the full study were more likely to be living with their partner (66%) than those who did not complete the study (51%), $\chi^2(1, N=515)=10.9$, $p < .001$. Among the 322 individuals who completed most measures, three were missing scores on a single measure. Expectancy maximization procedures were used to impute missing values for these three scores.

Demographic comparisons. Of the 322 women who completed the full study, 208 were in mixed-sex relationships, and 114 were in same-sex relationships. The two groups were compared on eight demographic variables, with a Bonferroni alpha of .006. As can be seen in Table 2, both groups were primarily Caucasian, and were primarily in serious relationships of similar duration and stage. There were some disparities in educational attainment, but both groups were highly educated overall. The age range was similar for both groups, but those in same-sex relationships were older, on average; likely due to this age difference, those in same-sex relationships were also more likely to live

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Table 1. *Descriptive Statistics for All Measures by Relationship Type*

Measure	Possible Range	α	Mixed Sex			Same Sex		
			Factor Loading	M	SD	Factor Loading	M	SD
Sexual satisfaction								
ISS[a]	1–7	.94	.85	5.5	0.97	1.00	5.6	1.00
SSI*	1–5	.91	.59	3.8	0.60	0.54	4.0	0.57
Relationship well-being								
Relationship satisfaction[a]	1–7	.87	.94	5.9	0.85	1.00	5.8	0.96
Love	1–9	.82	.61	6.8	1.10	0.47	6.9	0.99
Trust	1–7	.91	.76	5.8	0.86	0.66	5.7	1.00
Mental health								
Depression[a]	1–4	.93	.90	1.7	0.60	0.89	1.6	0.51
Anxiety	1–4	.96	.92	2.1	0.69	0.95	2.0	0.65
Stress	0–4	.91	.90	1.8	0.81	0.92	1.6	0.77
Physical health								
Physical symptoms[a]	1–4	.89	.93	1.5	0.35	0.98	1.5	0.37
General	0–100	.87	−.71	70.8	20.87	−0.76	74.4	19.20

Note. ISS = Index of Sexual Satisfaction; SSI = Sexual Satisfaction Inventory. Asterisks indicate groups are significantly different on those variables.
[a]Factor loading set to 1.0 during initial estimation for purposes of identifying model.
*$p < .005$.

Table 2. *Sample Demographics by Relationship Type*

Measure	Relationship Type	
	Mixed Sex	Same Sex
n	208	114
Age**		
M	26.0	33.6
Range	18–55	18–58
SD	6.65	9.77
Relationship duration (years)		
M	4.5	4.9
Range	.08–38	.08–29
SD	5.16	5.60
Living together**	59%	78%
Have children**	14%	32%
Relationship stage		
Casually dating	4%	3%
Seriously dating	17%	23%
Thought about marriage, but not discussed	34%	33%
Discussed marriage, but no formal plans	4%	4%
Engaged	14%	11%
Married	27%	28%
Education*		
High school	8%	8%
Some college or university	30%	30%
Bachelor's	17%	34%
Some graduate school	21%	7%
Graduate degree	25%	21%
Race or ethnicity		
Caucasian	90%	90%
Geographic location*		
Canada	73%	52%
United States	26%	47%
Other	1%	1%

Note. Asterisks indicate groups are significantly different on those variables. *$p < .005$. **$p < .001$.

together and to have children. Finally, most participants in mixed-sex relationships came from Canada, but those in same-sex relationships were equally likely to come from Canada and the United States. These between-group demographic differences were controlled for in the main analyses.

Measures

For all measures, items were reverse-scored as required so that higher numbers always indicated more of the construct in question. An average score across all items was then calculated. Possible ranges for each measure, and Cronbach's alphas within this sample, are shown in Table 1.

Sexual satisfaction. Two measures assessed sexual satisfaction. The first, the 25-item Index of Sexual Satisfaction (ISS; Hudson, 1998), measures general satisfaction with the sexual component of one's current relationship. It includes both positively and negatively worded items (e.g., "My partner is a wonderful sex mate," and "When we have sex it is too rushed and hurriedly completed"). In past research (Hudson, Harrison, & Crosscup, 1981), this measure has shown excellent reliability (i.e., $\alpha = .92$; one-week test–retest $r = .93$) and good validity (e.g., discriminated well between clients presenting with vs. without sexual problems in therapy). Hudson's suggested scoring converts raw scores to a 100-point scale, wherein higher numbers indicate greater sexual dissatisfaction. For ease of interpretation, in this study a simple average across all items was taken, after reverse-scoring as required; higher numbers indicated greater sexual satisfaction.

Although this measure has previously been used for heterosexual respondents, it appeared face valid for lesbian relationships, as all items simply referred to sex, sexual contact, or the partners' sex life, with no specific sexual activities mentioned.

The second measure of sexual satisfaction was the Sexual Satisfaction Inventory (SSI) (Whitley, 1998), designed to assess respondents' overall level of satisfaction with the particular sexual activities in which they engage. Respondents are presented with a list of 32 activities ''often engaged in before, during, or directly after the time of sexual activity'' (p. 520). Participants indicate the average level of satisfaction they derive from each activity. If participants do not engage in a particular activity ''at this time,'' they respond, ''not applicable.'' Whitley reported a Cronbach's alpha of .78.

Although the questionnaire was originally designed for use with heterosexual women, all items appeared face valid for lesbian participants. For example, an item mentioning sexual intercourse specified ''or penetration'' as an alternative; such penetration could of course be by objects other than a penis. Sample items from the SSI include ''dancing with your partner,'' ''kissing your partner,'' ''stimulating your partner's breasts or chest,'' ''oral–genital stimulation of you by your partner,'' and ''orgasms with clitoral manipulation by your partner.'' An overall score was derived for each participant by averaging across all items answered. Note that women in mixed-sex relationships responded to slightly fewer items (i.e., engaged in slightly fewer different sexual activities) than women in same-sex relationships ($M = 27.1$ vs. $M = 28.2$), $t(300) = 3.06$, $p = .002$ (degrees of freedom adjusted due to unequal variances); however, the absolute magnitude of the difference was fairly small, and most women had engaged in a large majority of the sexual activities mentioned.

Relationship well-being. There were three indicators of relationship well-being: relationship satisfaction, love, and trust. Global relationship satisfaction was assessed using S. Hendrick's (1988) seven-item Relationship Assessment Scale (e.g., ''How well does your partner meet your needs?''). Previous research (Hendrick, Dicke, & Hendrick, 1998) has reported a mean inter-item correlation of .49, Cronbach's alphas of .86, and a test–retest reliability of .85 over a six-week period. Love was measured using Rubin's (1970) 13-item Love Scale (e.g., ''I would do almost anything for my partner''). Rubin reported high internal consistency, with a Cronbach's alpha of .84. Trust was assessed using Rempel, Holmes, and Zanna's (1985) 17-item Trust scale (e.g., ''When I am with my partner, I feel secure in facing unknown new situations''). Rempel et al. reported item-total correlations ranging from .33 to .60, and a full-scale Cronbach's alpha of .81.

Mental health. There were three indicators of mental health: depression, anxiety, and stress. Depression was measured using the 20-item Centre for Epidemiological Studies Depression Scale (Radloff, 1977), which contains both characteristic and non-characteristic statements concerning depression (e.g., ''I felt that everything I did was an effort,'' and ''I enjoyed life''). Participants rate each item according to its frequency of occurrence within the last week. Radloff reported Cronbach's alpha scores ranging from .84 to .90 in various samples, a test–retest reliability of .67 over a four-week period, and strong discrimination between psychiatric in-patient and general population samples.

Anxiety was assessed using the 20-item state portion of the State–Trait Anxiety Inventory (Spielberger, 1983). Each item contains a statement associated with anxiety or calmness (e.g., ''I feel nervous,'' and ''I feel at ease''); participants indicate how they feel ''right now'' for each item. The median Cronbach's alpha for the state anxiety scale in normative (non-clinical) populations is .92 (Spielberger, 1983).

Stress was assessed using the 10-item Perceived Stress Scale, which provides an overall, subjective rating of a participant's stress level over the past month. Items include, ''In the last month, how often have you found that you could not cope with all the things that you had to do?'' (S. Cohen, Kamarck, & Mermelstein, 1983). S. Cohen et al. reported Cronbach's alphas ranging from .84 to .86, with a test–retest reliability of .85 over a two-day period.

Physical health. There were two indicators of self-reported physical health: one assessing the experience of physical symptoms and one assessing general subjective health. In the Cohen–Hoberman Inventory of Physical Symptoms (S. Cohen & Hoberman, 1983), participants rate the extent to which 33 relatively minor physical symptoms (e.g., headache, stuffy nose, stomach pains) have ''bothered or distressed'' them over the past month. Internal consistency is high, with a Cronbach's alpha of .89 (Aspinwall & Taylor, 1992). The RAND 36-item Health Survey (Hays, 1994) is a public-domain measure that assesses a variety of health-related issues. Items are rated on various scales, but a scoring key converts each item to a score ranging from zero to 100, with higher numbers indicating better health. In this study, items from the subscales *General Health, Pain, Role Limitations Due to Physical Health,* and *Social Limitations Due to Physical Health* were used and combined into one 13-item measure of general self-rated physical health. In previous research, these subscales have shown Cronbach's alphas ranging from .78 to .85 (Ware & Sherbourne, 1992).

Other measures. Respondents also completed a variety of other measures (e.g., measures related to perceived social support and social network composition) that were not relevant to this study.

Procedure

Recruitment material directed interested individuals to the study's information Web site. Individuals completed a brief demographic questionnaire and provided contact information. At a later date, eligible individuals were e-mailed a link to the study's secure Web site. Here, they provided informed consent and created a unique username and password that then allowed them to log in and complete questionnaires at their own pace over the next two weeks. For each questionnaire completed, participants were awarded points that could be entered into a variety of different prize draws. At the end of the two-week window, or when all surveys were completed, participants were e-mailed a thank-you message and a debriefing form.

Results

Descriptive Analyses

Table 1 shows the group means for each variable. Between-group differences were investigated using a series of independent-samples t tests (Bonferroni $\alpha = .005$). Only one significant difference emerged: Women in same-sex relationships scored just slightly higher on the SSI (i.e., derived slightly more sexual satisfaction from the sexual activities they engaged in) than women in mixed-sex relationships. Otherwise, the two groups of women were quite similar on all variables.

Controlling for Inter-Group Demographic Differences

Although women in same-sex and mixed-sex relationships were quite similar on the main variables to be analyzed, they did differ significantly on five demographic variables (see Table 2). It is difficult to interpret any group comparisons when such demographic confounds exist; therefore, it seemed advisable to control for significant demographic differences between groups before proceeding to the main analyses. To achieve such control, two regression equations were run in which the two measures of sexual satisfaction (i.e., the ISS and the SSI) were the criterion variables and the five demographic variables that displayed significant between-group differences were the predictor variables. The residuals from these two regression equations were then saved as new variables. These residualized variables can be thought of as "purified" measures of sexual satisfaction from which any effects of the demographic variables have been stripped away; they are the variables used in all subsequent analyses. (Note that all results remain virtually identical, whether the residualized or the original variables are used. Also note that Canadian and American respondents do not display mean differences on any of the variables in the model, and the results are not moderated by country of origin.)

The Appendix shows bivariate correlations between all measures, broken down by group. In general, the pattern of correlations was as expected and did not appear to differ markedly by group, except that physical health seemed to show somewhat lower correlations with other variables in the same-sex relationship group than in the mixed-sex relationship group.

Structural Equation Modelling

Model fit for each group separately. As a glance at the Appendix shows, it is obviously very difficult to assess just how similar or different two large correlation matrices are, simply by looking at them. Structural equation modelling provides a systematic way of testing whether the pattern of connections between variables is in fact similar or different across groups. First, a theoretical model is specified and tested within each group separately. If the same theoretical model fits the data well in both groups, then it suggests that a similar pattern of relationships between variables also applies in each group.

Accordingly, the model outlined in Figure 1 was run for each group separately, using maximum likelihood estimation in EQS 5.1. The measures shown in Table 1 were specified as indicators for each of the latent variables. All variables loaded well onto their respective factors (see Table 1 for the factor loadings for each group). The structural equation model then estimated the magnitude of the links between these latent variables. As indicated in Figure 1, sexual satisfaction was specified as a predictor variable, and the three subjective well-being variables (relationship well-being, mental health, physical health) were specified as criterion variables.[2]

As can be seen in Table 3, the specified model fit the data very well for both groups, with fit statistics in the good to excellent range (Kline, 2005). Overall, the key links specified by the model appeared to be similar for the two groups, with path coefficients always being in the same direction and generally of similar magnitude. Examining these path coefficients, it can be seen that, in both groups, better sexual satisfaction was a very strong predictor of better relationship well-being. Note that the path coefficients linking sexual satisfaction to mental and physical health are negative because higher scores on those underlying variables indicated more

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[2]Specifying sexual satisfaction as the predictor variable was primarily a matter of convenience, as it permits the assessment of separate R^2 values (i.e., measures of effect size) for each of the three well-being measures. One could, of course, just as easily reverse the paths in Figure 1 and specify the three well-being variables as predictors and sexual satisfaction as the criterion variable. If one does so, the fit statistics for the individual models shown in Table 3 remain identical. The three well-being variables together account for 48% of the variance in sexual satisfaction for women in mixed-sex relationships and 31% of the variance for women in same-sex relationships.
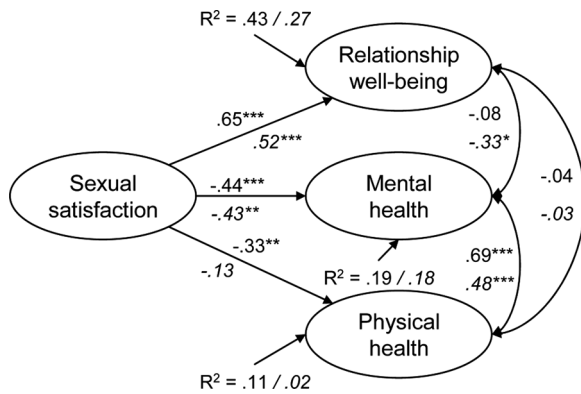
Figure 1. Structural model for the two groups. *Note.* Standardized coefficients for women in mixed-sex relationships are above or to the left, in plain text; values for those in same-sex relationships are below or to the right, in italics. $^*p < .05.$ $^{**}p < .01.$ $^{***}p < .001.$

mental and physical health problems (i.e., more depression, anxiety, stress, physical symptoms, etc.). Thus, better sexual satisfaction strongly predicted fewer mental health problems, in both groups. Better sexual satisfaction was also a moderately strong predictor of fewer physical health difficulties in the mixed-sex relationship group, but it was a weak and nonsignificant predictor in the same-sex relationship group.

Turning to the correlations among the latent outcome measures in Figure 1, as would be expected, measures of mental health and physical health were strongly correlated within both groups. Relationship well-being was not significantly correlated with physical health for either group. Relationship well-being and mental health were significantly correlated for those in same-sex relationships, but not for those in mixed-sex relationships.

Comparison model. Although the overall model did fit the data quite well for both groups, there were nevertheless suggestions of possible group differences. For example, the link between sexual satisfaction and physical health appeared to be somewhat stronger for women in mixed-sex relationships than for women in same-sex relationships. Is this difference statistically significant?

To address this issue, a two-group comparison model was run in which all factor loadings, path coefficients, and between-factor correlations were constrained to be

Table 3. *Fit Statistics for All Structural Equation Models*

Model	χ^2 (df)	CFI	GFI	RMSEA
Mixed-sex relationship group	32.17 (29)	.997	.97	.02
Same-sex relationship group	60.91 (29)	.950	.91	.10
Comparison model	115.55 (70)	.970	.94	.06

Note. CFI = comparative fit index; GFI = goodness-of-fit index; RMSEA = root mean square error of approximation. CFI and GFI scores above .90 and RMSEA scores below .10 indicate acceptable fit to the data (Kline, 2005).

equal between groups. As can be seen in Table 3, this comparison model fit the data very well, giving no indication of substantial between-group differences. Furthermore, one can free the paths, factor loadings, and correlations constrained to be equal across groups and examine whether the removal of each constraint significantly improves the fit of the model. No such tests were, in fact, significant ($\alpha = .004$, using a Bonferroni correction for 12 constraints), indicating that all paths, factor loadings, and correlations were statistically equivalent across the two groups. Thus, the model shown in Figure 1 fits the data well within each group, and there are no indications of statistically significant between-group differences.

Discussion

General Findings

As expected, based on previous research, this study showed substantial connections between women's sexual satisfaction and all three aspects of their well-being. Again, of course, correlational data such as these do not allow one to determine if better sexual satisfaction causes improved mental, physical, and relational well-being, or if improved well-being causes better sexual satisfaction. In fact, the most likely answer is not *either–or,* but rather, *both*—that is, each component feeds back into the others in a reciprocally causal and self-sustaining loop (Hendrick, Hendrick, & Adler, 1988). In any case, these results are a fitting reminder that sexual satisfaction is truly an integral component of people's lives, and should be considered in terms of how it fits into the larger context of women's ongoing relationship, life, and health issues (Clayton, 2007).

This study is the first to examine the connections between sexual satisfaction and all three aspects of subjective well-being using a single sample and a single statistical model. Therefore, it is the first to permit direct comparisons of the relative sizes of the three effects. Not surprisingly, the strongest connections are between sexual satisfaction and relationship well-being. Although the link between these constructs has been noted in other research (Sprecher & Cate, 2004), our findings emphasize the strength of these connections. Sexual satisfaction accounted for an impressive 43% of the variance in relationship well-being for women in mixed-sex relationships and 27% for women in same-sex relationships. These R^2 values translate into Cohen's d measures of effect sizes of 1.7 and 1.2, respectively (Becker, 2000), making them almost double the size of effects generally described as "large" or "strong" (J. Cohen, 1988). Such substantial links between the two constructs reaffirm that connections between relationship quality and sexual quality are very strong and likely bidirectional: Loving, satisfied, trusting

relationships tend to make for good sexual relations (Sprecher & Cate, 2004), and vice versa.

The links between sexual satisfaction and mental health were smaller but still quite impressive, translating into effect sizes of approximately 1.0—*very* sizeable for psychological measures. Even the seemingly much weaker connections to physical health are not negligible, translating into a strong effect size of 0.7 for women in mixed-sex relationships and a moderate effect size of 0.3 for women in same-sex relationships (Becker, 2000). Furthermore, the women in this sample were mostly young and healthy. Research using older samples or those with known health difficulties might well show even stronger links between physical health and sexual well-being (Clayton, 2007). Overall, the best summary statement would seem to be that women's sexual satisfaction shows extremely strong links with their relationship well-being, strong links with their mental health, and small- to moderate-sized links with their physical health.

Group Similarities and Differences

Our study is the first to allow a direct statistical comparison of the strength of the links between sexual satisfaction and subjective well-being for women in same-sex and mixed-sex relationships. Our findings suggest that the summary statements made above apply equally well to both groups. As has been found frequently in previous research (Kurdek, 2004, 2005), basic relationship processes seem to function very similarly, regardless of the gender composition of the dyad. Still, it is important to continue to examine sexuality in all types of relationships. For example, there has been relatively little research comparing factors that predict sexual satisfaction for women in same-sex versus mixed-sex relationships (Tracy & Junginger, 2007). The fact that the three well-being variables together account for almost one half of the variance in sexual satisfaction for women in mixed-sex relationships, but less than one third of the variance for women in same-sex relationships (see footnote 2), suggests that we may still be missing important pieces of the puzzle when seeking to understand lesbians' sexual satisfaction. Additional factors, such as perceived equality in the relationship (Peplau, Fingerhut, & Beals, 2004) or acceptance of one's own sexual identity, might potentially be important predictors of sexual satisfaction for these women.

It is also important to replicate this study's findings. In particular, the link between sexual satisfaction and physical health may merit further investigation. At first glance, this link certainly appeared to be considerably stronger for women in mixed-sex relationships than in same-sex relationships, with over five times more variance accounted for in the former group than the latter. Although our tests did not find the difference between

the path coefficients for the two groups to be statistically significant, the best technique for establishing statistical invariance across groups still remains an active and controversial area of research within the structural equation modelling literature (Byrne, 2006). There is a possibility that a Type 2 error (i.e., failure to detect a true between-group difference) may have been committed. Future research should re-examine this link to see if it is, in fact, somewhat weaker for women in same-sex relationships. If so, potential explanations might include (a) lesbians as a group have numerous documented health issues (Gay and Lesbian Medical Association, 2001) that might potentially overshadow any effects of sexual satisfaction; (b) physical health issues may interfere less with lesbian sexuality because, for example, lack of lubrication is a less problematic issue when coitus is less central to sexual expression; (c) additional uncontrolled demographic differences between groups could account for any differences; or (d) the measures of sexual satisfaction might be more valid for those in mixed-sex relationships.

Strengths and Limitations

This study has a number of strengths. It is the first study to allow direct between-group comparisons of the links between women's sexual satisfaction and their subjective well-being. It uses multiple, well-validated measures of each construct, and is the first to use appropriate statistical techniques to combine all constructs into one unified model. The two groups are of a reasonable size and are relatively comparable (e.g., all participants were currently in a relationship, and both groups' relationships were of similar seriousness and duration). Existing demographic differences between the groups were statistically controlled, allowing for non-confounded group comparisons. Also, in additional analyses not shown, the results seemed to generalize well to different subgroups within the overall sample (e.g., neither country of origin nor relationship duration appeared to moderate the results). The study was not advertised as focusing on sexuality, avoiding the sample self-selection biases that may affect some sexuality studies (Wiederman, 1999). The sample is geographically diverse across North America. The anonymity of online studies may allow for increased comfort levels in responding to sensitive questions for all respondents and facilitates participation in the study from respondents in same-sex relationships who are not fully "out of the closet," or who are not active in gay and lesbian settings or organizations.

Of course, there are also limitations to the study's methodology and sample. To our knowledge, the sexual satisfaction measures used here have not previously been used for women in same-sex relationships, making their suitability for this population uncertain. However, the measures seemed to perform just as well for women in

same-sex relationships as for women in mixed-sex relationships. Both measures showed strong internal consistency in both groups (αs = .89 for ISS and .94 for SSI in the mixed-sex group and .94 for both in the same-sex group). Correlations between the two measures were moderate for both groups (.51 for mixed-sex and .53 for same-sex), as would be expected given that the two measures both tap into sexual satisfaction, but at somewhat different levels of specificity. Both measures correlated as expected with other variables within the dataset, for both groups of women. Thus, although more extensive validation work should still be done, these preliminary results suggest both measures may be appropriate for assessing sexual satisfaction within same-sex, as well as mixed-sex, relationships.

As already noted, cross-sectional and correlational data such as these do not permit any assessment of causation. Also, the data are all self-reports, and thus may be subject to response biases. The sample is composed of self-selected volunteers and, therefore, generalizability is limited. The sample of lesbians was, in part, recruited through media (e.g., magazines, Web sites) aimed at those in same-sex relationships and may, therefore, be somewhat more focused on their sexual orientation or on relationship issues than either the general population of lesbians or this study's sample of women in mixed-sex relationships. The sample as a whole was disproportionately young, White, and well-educated. Such demographic biases do tend to characterize Internet studies (Gosling, Vazire, Srivastava, & John, 2004); however, these same biases apply just as strongly to samples in many other psychology studies (Gosling et al., 2004), and to other large-scale studies of respondents in same-sex relationships (e.g., Bryant & Demian, 1994; Lever, 1995) conducted using traditional methodologies. Clearly, more work must be done to reach respondents of other ages, ethnicities, and socioeconomic classes; for the moment, however, it is important to note that our results may not generalize to, for example, older women in very long-term relationships or to women of color.

Future Research

This study should be replicated in women but also extended to men in mixed- versus same-sex relationships. Gay men tend to be more accepting of sexually open relationships than other groups; non-monogamy also predicts reduced relationship well-being for heterosexuals and lesbians, but not for gay men (Kurdek, 1991). In light of these group differences, it would be interesting to explore correlates of sexual satisfaction for men in same-sex relationships. For example, sexual satisfaction with one's primary partner might potentially be less central to the well-being of gay men, as they are more likely than other groups to have accepted alternative routes to fulfill their sexual needs.

In general, more research is needed to understand exactly how a satisfying sexual life is constructed between partners in *all* types of relationships. Same-sex relationships are particularly interesting because members are perhaps less able to draw on broad-based cultural scripts (Simon & Gagnon, 1986), which tend to focus exclusively on the development of sexuality in heterosexual relationships. On the one hand, this lack of cultural scripts could pose challenges or difficulties; for example, partners in same-sex relationships do not have the option of falling easily into readily prescribed gendered roles. On the other hand, a lack of cultural scripts may be liberating, as couples are free to explore and play with a wide variety of conventional and unconventional gender roles within their relationships and their sexuality (Iasenza, 2002; Lever, 1995; Peplau et al., 2004). More qualitative or observational work is needed to understand the similarities and differences between how sexuality is negotiated in same-sex versus mixed-sex relationships. Not much research seems to have been done in this key area since Kinsey's groundbreaking study (Kinsey, Pomeroy, Martin, & Gebhard, 1953).

What we do know based on this study, however, is that regardless of how they go about achieving it, a satisfying sex life seems to be centrally linked to a variety of aspects of women's well-being, whether they are in a mixed-sex or a same-sex relationship. Returning to our opening scenario, Elaine's sexual satisfaction in her relationship with her partner, Chris, does indeed bode very well for other aspects of her subjective well-being; furthermore, it seems to bode equally well regardless of what Chris's gender happens to be.

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Appendix. *Correlations Among Measures by Relationship Type*

Variable	1	2	3	4	5	6	7	8	9	10
Sexual satisfaction										
1. ISS	—	.54**	.52**	.22	.36**	−.44**	−.33**	−.40**	−.13	.05
2. SSI	.50**	—	.25	.25	.27*	−.15	−.02	−.15	.05	−.15
Relationship well-being										
3. Relationship satisfaction	.53**	.36**	—	.47**	.66**	−.48**	−.42**	−.39**	−.09	.04
4. Love	.31**	.25**	.58**	—	.37**	−.02	.08	.08	.10	−.11
5. Trust	.42**	.36**	.71**	.46**	—	−.32**	−.30*	−.23	−.16	.07
Mental health										
6. Anxiety	−.34**	−.23*	−.26**	−.11	−.28**	—	.88**	.84**	.40**	−.30*
7. Stress	−.29**	−.21*	−.28**	−.10	−.26**	.82**	—	.81**	.45**	−.34**
8. Depression	−.38**	−.23*	−.33**	−.11	−.32**	.82**	.79**	—	.53**	−.40**
Physical health										
9. Physical symptoms	−.23**	−.19	−.18	−.07	−.17	.55**	.59**	.61**	—	−.75**
10. General health	.22*	.18	.24*	.16	.22*	−.44**	−.45**	−.46**	−.61**	—

Note. Correlations for women in same-sex relationships appear above the diagonal; correlations for women in mixed-sex relationships appear below the diagonal. ISS = Index of Sexual Satisfaction; SSI = Sexual Satisfaction Inventory.
$^*p < .005.$ $^{**}p < .001.$