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## **Does the Importance of Sex to Marital Satisfaction Decrease or Increase With Time?: A Close Replication**

Yoav Ganzach and Asya Pazy

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# Does the Importance of Sex to Marital Satisfaction Decrease or Increase With Time?

## A Close Replication

Yoav Ganzach<sup>1</sup> and Asya Pazy<sup>2</sup>

<sup>1</sup>Tel Aviv University, Ariel, Israel

<sup>2</sup>The Department of Economics and Business Administration, Tel Aviv University, Ariel, Israel

**Abstract:** Based on a representative sample derived from the MIDUS study (1,472 females and 1,415 males), we investigate temporal patterns of the relationship between sexual satisfaction and marital satisfaction and find that this relationship increases (rather than decreases) with time, and that it is primarily due to age (rather than marital duration). Theoretical and methodological implications of this finding are discussed, and in particular the importance of relying on large samples when examining moderation effects, of examining alternative explanations for observed interactions, and of conducting replications in samples drawn from different populations.

**Keywords:** marital satisfaction, sexual satisfaction, religiosity, marriage duration, age, moderating effects

A number of papers suggested that marital satisfaction increases with sexual satisfaction (e.g., Byers, 2005; Mallory, 2022; Muise et al., 2013). This is not a surprising result, since it is rather clear that satisfaction in one aspect of marital life will be associated with overall satisfaction with marriage. A somewhat more interesting question is whether the relationship between sexual satisfaction and marital satisfaction depends on time (e.g., marital duration, age). Here, also, there is an apparent answer: Because time tends to be negatively associated with interest in sex (Iveniuk & Waite, 2018; Liu, 2003; Lindau et al., 2007; Schröder & Schmiedeborg, 2015), it is reasonable to assume that the centrality of sexual satisfaction to marital satisfaction decreases with time. But to the best of our knowledge, the only study in the literature that examined this issue found that the relationship between sexual satisfaction and marital satisfaction increases with marital duration (Lazar, 2017). This result even surprised the original investigator who had hypothesized that “sexual satisfaction will contribute more to marital satisfaction at the earlier stages of the marriage in comparison with the later stages” (ibid, p. 516), yet found that “the association between sexual and

marital satisfaction was found to be stronger for longer marital duration than for shorter marital duration” (p. 513).

Given Lazar’s (2017) surprising result, the current paper aims to revisit the moderating effect of time on the relationship between sexual satisfaction and marital satisfaction and to test this effect using a different dataset: the MIDUS study (see below). Using this dataset has a number of advantages over the dataset used by Lazar (2017). First, Lazar analyzed a small ( $n = 240$ ), non-representative, convenience sample of Israeli females. While reliance on a convenience sample is not a pre-condition for scientific knowledge generation (Rothman et al., 2013), it certainly calls for replication. In this respect, Lazar was modest about the limits of his study, indicating (in the title of his paper) that his results are relevant only to Jewish women.<sup>1</sup> Yet, his results would be theoretically significant primarily if they could be viewed as a general statement about processes underlying marital satisfaction or at least about the processes underlying marital satisfaction among women. For that, additional samples are needed, and preferably

<sup>1</sup> Note that even this modest generalization is somewhat exaggerated since Lazar’s study examined only Israeli women, and even these Israeli women were not a representative sample of the Israeli population.

samples that are more representative of the populations to which they belong.

Second, effects involving marital duration should be cautiously interpreted given the high correlation between this variable and age ( $r = .86$  in Lazar's data), particularly in small sample sizes such as Lazar. Because these two variables are highly correlated, it is clear that the absence of one of them as a control makes the interpretation of any effect involving the other problematic.<sup>2</sup>

Third, given the relatively small sample size in Lazar's (2017) study, it remains an open question how robust the interaction effect between marital duration and sexual satisfaction on marital satisfaction actually is, particularly since interaction effects obtained from small sample sizes are known to be unreliable.<sup>3</sup> On the one hand, a low power of detecting interactions means a large type-II error. As Blake and Gangestad (2020, p. 1702) write, "even studies... exceeding  $N = 500$  can be woefully underpowered to detect genuine interaction effects" (see also Chaplin, 1991). On the other hand, interaction effects are also prone to type-I error (e.g., Aguinis, 2002). In particular, because when the components of the interaction are multicollinear, there is also multicollinearity between interaction and quadratic terms interaction, which, if the quadratic terms are not controlled for, may lead to type-I error in testing for two-way interactions (e.g., Beiser-McGrath & Beiser-McGrath, 2020; Ganzach, 1997). In the current work we consider these issues, and rely on large samples controlling for the quadratic terms of the components of the interactions. Furthermore, we rely in our analysis on large representative samples, both a male sample and a female sample.<sup>4</sup> Our focus is on the effect of time on the relationship between sexual and marital satisfaction, but in order to be

as close as possible to Lazar's analyses, we included religiosity, which was a focal independent variable in Lazar's work, in our models.

## Method

We conduct a close replication (Brandt et al., 2014). Furthermore, in Appendix B, we also conduct a "very close replication" (Shafir & Cheek, 2024) of Lazar's (2017) study given that our empirical design and our central measures (see below, particularly footnote 6) closely resemble Lazar's earlier study.

## Data

The data were taken from the MIDUS study (Midlife in the United States; see Ryff et al., 2017). The MIDUS study was designed to examine how individuals navigate the middle and later stages of life in the US. This is a longitudinal research project that investigates various aspects of aging, including physical health, psychological well-being, social relationships, and economic status, and aims to understand the factors that influence health and well-being as people age, including biological, psychological, and social determinants.

Participants were English-speaking adults in the continental US, aged 25–74 in 1995 when the first wave of the MIDUS surveys took place. They were recruited through a combination of random digit dialing (RDD) as well as targeted sampling methods aimed to reach specific demographic groups that may be underrepresented in the RDD sample or that are of special interest. In addition to the RDD sample, the data included four specific subsamples: (1) a national RDD (random digit dialing) sample

<sup>2</sup> There are two issues involved in separating the effect of age from the effect of marital duration. One, which already have received attention in the literature, involves separating the main effects of age on *sexual satisfaction* (which may be associated with increase in "sexual wisdom," see Forbes et al., 2017) from the main effect of marital duration (which may be associated with decline in passion, see McNulty et al., 2019). The other involves separating the effects of the interaction between age and sexual satisfaction on *marital satisfaction* from the effect of the interaction between sexual satisfaction and marital duration. It is the separation between these two latter interaction effects which is the focus of the current paper. We also note here that Lazar was careful enough in controlling for the main effect of age in estimating the main effect of marital duration, but not in controlling for the interactions involving age when estimating the interaction involving marital duration. Given that these are the interactions involving time are the crucial indicators of temporal changes in the effect of any predictor of marital satisfaction, and in particular sexual satisfaction, this omission is crucial.

<sup>3</sup> In his paper, Lazar reports about two two-way interactions and one three-way interaction. The first is the two-way interaction discussed in the body of the paper in which marital duration moderates the effect of sexual satisfaction on marital satisfaction such that the (positive) effect of sexual satisfaction on marital satisfaction is stronger in long than in short marriages. The second of the two-way interactions involves a moderation effect in which religiosity moderates the effect of sexual satisfaction on marital satisfaction such that the effect of sexual satisfaction is stronger for religious than for secular people. The three-way interaction involves a moderated moderation in which the moderation effect of marital duration on the relationship between sexual satisfaction and marital satisfaction is moderated by religiosity. The first interaction is discussed extensively in the body of the paper. The other two interactions are discussed in the appendices.

<sup>4</sup> To widen the generalizability of our analysis, we analyze not only a female sample (a sample that was analyzed by Lazar) but also a male sample. Since, except of Lazar's study, there is no work that directly examined the effect of marital duration (or age) on the relationship between sexual satisfaction and marital duration, let alone studies literature that compared females to males, our initial prediction is based on the Gender Similarities Hypothesis (e.g., Bosak & Kulich, 2023; Hyde, 2005) which suggests that, the general pattern of the relationships between our focal variables will be similar among females and males.

( $n = 3,487$ ); (2) oversamples from five metropolitan areas in the U.S. ( $n = 757$ ); (3) siblings of individuals from the RDD sample ( $n = 950$ ); and (4) a national RDD sample of twin pairs ( $n = 1,914$ ). The attrition rate from Wave-1 to Wave-2 was 30.2% in Wave-1, and 33.6% from Wave-2 to Wave-3. Attrition was higher among males, non-whites, less educated, low-income and younger participants, and among participants with less social support and more mental and physical problems (Radler & Ryff, 2010). All the MIDUS data are available at <https://www.icpsr.umich.edu/web/ICPSR/studies/4652>. Analyses scripts are available at <https://www.icpsr.umich.edu/web/ICPSR/series/203>.

Our initial samples included 2,646 females and 2,316 males from the second wave of the MIDUS study, which was conducted in 2005–2006 (the retention rate from the first wave that was conducted in 1995–1996 to the second wave was approximately 75%; see Ryff et al., 2017), of whom included in the analyses were 1,472 females and 1,415 males who had full information on all the focal variables.<sup>5</sup> On the basis of the commonly assumed small interaction effect size of  $f^2 = .02$  (see Aguinis, 2002; Aguinis et al., 2005 for a review of typical interaction sizes in the behavioral science and Cohen, 2013, for a classification of effect sizes), the power of detecting interaction effects in our sample of about 1,400 participants with  $\alpha = .01$  is .997. Note also that although sex difference received considerable attention in the literature about sexual and marital satisfaction, we chose to simplify the analyses by analyzing the two sample separately (and see also footnote 4).

Table 1 presents the essential demographics of the two samples (see also Tables 2a and 2b for additional demographic information).

## Measures

Sexual satisfaction was measured with three questions asking participants to rate the sexual aspects of their life, the control they have on the sexual aspects of their life, and the thought/effort they put into the sexual aspects of their life. Ratings were given on a 0–10 scale. Cronbach  $\alpha$  was .78 for females and .84 for males.

Marital satisfaction was measured with four questions asking participants to rate their current marriage relationship, their relationship 10 years in the future, the control they have on their relationship, and the thought/effort they put into the sexual aspects of their life. Ratings were given on a 0–10 scale. Cronbach  $\alpha$  was .88 for females and .87 for males.

**Table 1.** Essential demographics of the females and males samples

Variable	Females		Males	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Education	6.96	2.42	7.47	2.60
Income	30,311	32,319	56,313	44,484
Age	55.48	12.63	55.38	12.24
Marital duration	30.08	15.67	27.72	14.81
Number of marriages	1.35	0.68	1.34	0.66

Note. Age and marital duration are measured in years. Education is measured on a 1 to 12 scale (1 = six grades or less, 12 = PhD or professional degree). Income is measured in dollars, top coded at \$200,000.

**Religiosity:** Although the effect of religiosity was not our main issue, it was included in our models because it was included in Lazar's (2017) models. It was measured by a four-item religious identification scale asking participants how religious they are, how important religion is in their life, how important is religious instruction to children, and the extent to which they identify with their religious group. Ratings were given on a 1–4 scale. Cronbach  $\alpha$  was .87 for females and .90 for males.<sup>6</sup>

Age and Marital duration were measured by asking participants when they were born and in what year they were married.

## Results

The data were analyzed using SAS 9.4 statistical package. The code by which the data were analyzed appears at <https://osf.io/hskmt>.

Tables 2a and 2b present descriptive statistics and inter-correlations of the female and male samples, respectively. A comparison of our samples with Lazar's sample reveals that our participants are different from Lazar's (female) participants, which are on average 30.1 years old (see Table 1 for the average age in our samples). Other notable differences are that, in our samples, marital duration is positively correlated with religiosity, whereas in Lazar's it is negatively correlated (the average duration of his religious and secular females was 7.1 and 8.1 years, respectively); that the correlation between age and marital satisfaction is positive in our samples but negative in Lazar's ( $r = -.24$ ); and that the correlation between marital duration and marital satisfaction is positive in our samples but negative in Lazar's ( $r = -.22$ ). This latter difference reflects inconsistencies in the literature; see Gorchoff

<sup>5</sup> Clearly, our analysis sample is a probability sample in which participants' weights are unequal. However, our analyses are robust in that weighting has a very little effect on the results.

<sup>6</sup> Our measures of sexual and marital satisfaction are rather similar to Lazar's (examples for the items in Lazar's measures are, respectively, "I am very satisfied with the sexual aspects of my" and "In general, I am satisfied with this relationship"). With regard to religiosity, while we rely on a continuous measure of religiosity, Lazar measured religiosity by asking participants about their identification of societal groups that differ in their religious commitment (Haredi, Dati, Mesorati, or Hiloni), and coded these answers as a binary variable (0 = secular, 1 = religious).

**Table 2a.** Descriptive statistics and inter-correlations – females

Parameter	<i>N</i>	<i>M</i>	<i>SD</i>	1	2	3	4	5
1. Marital satisfaction	1,560	8.14	1.77	—				
2. Age	2,646	55.48	12.63	0.11**	—			
3. Sexual satisfaction	2,080	5.32	2.70	0.50**	-0.28**	—		
4. Religiosity	2,222	3.13	0.77	0.08*	0.17**	0.06*	—	
5. Marital duration	2,412	30.08	15.67	0.08*	0.76**	-0.23**	0.17**	—

Note. \*\* $p < .0001$ . \* $p < .01$ .

**Table 2b.** Descriptive statistics and inter-correlations – males

Parameter	<i>N</i>	<i>M</i>	<i>SD</i>	1	2	3	4	5
1. Marital satisfaction	1,483	8.32	1.48	—				
2. Age	2,316	55.38	12.24	0.17**	—			
3. Sexual satisfaction	1,758	5.52	2.49	0.39**	-0.30**	—		
4. Religiosity	1,781	2.84	0.88	0.23**	0.14**	0.04	—	
5. Marital duration	2,115	27.72	14.81	0.15**	0.73**	-0.28**	0.17**	—

Note. \*\* $p < .0001$ . \* $p < .01$ .

**Table 3a.** Models predicting marital satisfaction – females

Parameter	Model 1			Model 2		Model 3	
	<i>b</i>	<i>SE</i>	$\beta$	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Intercept	8.07571**	0.0393	0.000	8.0394**	0.0406	7.9964**	0.04073
Age	0.0366**	0.0050	0.245	0.0369**	0.0049	0.0379**	0.00487
Sexual satisfaction	0.3811**	0.0153	0.559	0.3941**	0.0157	0.3953**	0.01548
Religiosity	0.0502	0.0505	0.022	0.0511	0.0515	0.0381	0.05087
Marital duration	0.0008	0.0038	0.007	0.0012	0.0038	0.0007	0.00378
Religiosity $\times$ Sexual Satisfaction				-0.0207	0.0213	-0.0094	0.02113
Religiosity $\times$ Marital Duration				-0.0004	0.0034	0.0010	0.00341
Marital Duration $\times$ Sexual Satisfaction				-0.0048**	0.0009	0.0011	0.00131
Age $\times$ Sexual Satisfaction						-0.0107**	0.00174
$R^2$	.309			.323		.340	

Note. Independent variables are centered around their means.  $N = 1,472$ . \*\* $p < .0001$ . \* $p < .01$ .

et al., 2008; Karney & Bradbury, 1995, for positive relationships; Umberson et al., 2005; VanLaningham et al., 2001 for negative relationships).

Tables 3a and 3b present a series of regression models (with independent variables centered around their means) that examine the moderating effects of time on the relationship between sexual and marital satisfaction in both samples, respectively. The results of our main effect models are similar to the main effect model of Lazar (2017), except that we find a significant positive effect of age on marital satisfaction for both sexes whereas in Lazar's model this effect is not significant.

After estimating a main-effects model (Model 1), we first examined models that included the quadratic terms of our variables. Since these terms were not significant, we continued with models that did not include such terms (Cortina, 1993; Ganzach, 1997).

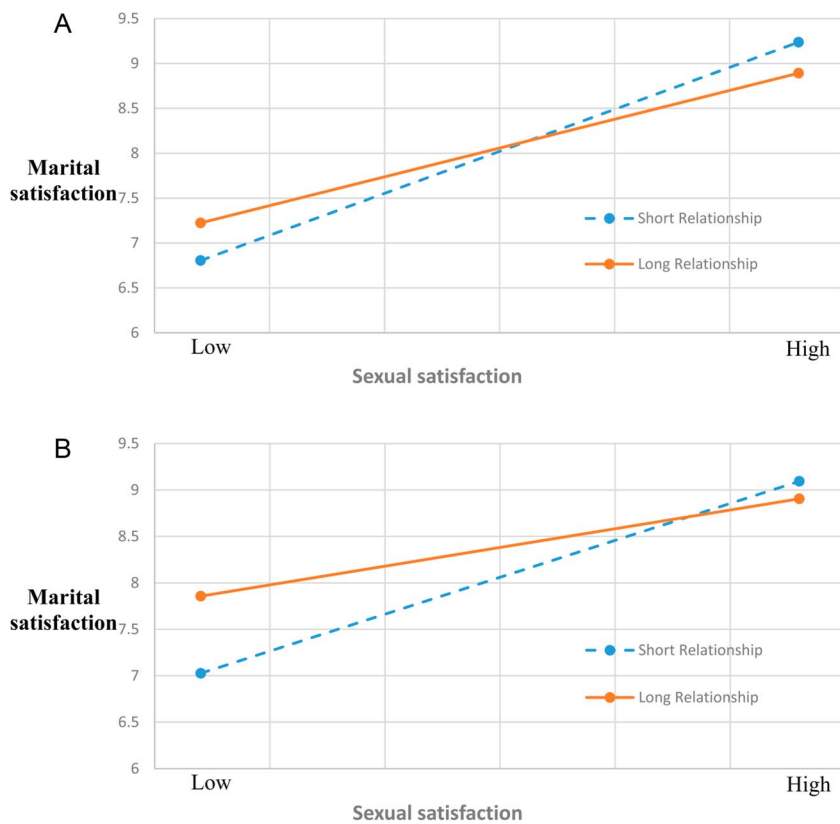
Model 2 estimates the two-way interactions of interest, in particular, the Marital Duration  $\times$  Sexual Satisfaction interaction term. Our findings suggest that, both for females and for males, sexual satisfaction is more important for marital satisfaction in short relationships than in long relationships (see Figures 1a and 1b for plots of this interaction in the female and male samples, respectively).<sup>7</sup> For short and long

<sup>7</sup> Note that the Marital Duration  $\times$  Sexual Satisfaction interaction is not likely to be driven by a ceiling effect because there is no main effect of marital duration, that is, the interaction here is a crossover interaction (see Figures 1a, 1b).

**Table 3b.** Models predicting marital satisfaction – males

Parameter	Model 1			Model 2		Model 3	
	<i>b</i>	<i>SE</i>	$\beta$	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Intercept	8.2801**	0.0340	0.000	8.2206**	0.0349	8.2046**	0.0352
Age	0.0275**	0.0041	0.225	0.0254**	0.0040	0.0274**	0.0040
Sexual satisfaction	0.2842**	0.0144	0.473	0.2996**	0.0144	0.3114**	0.0148
Religiosity	0.2936**	0.0394	0.173	0.3079**	0.0387	0.3070	0.0386
Marital duration	0.0087*	0.0032	0.089	0.0105*	0.0032	0.0090*	0.0032
Religiosity × Sexual Satisfaction				-0.0609**	0.0164	-0.0622**	0.0163
Religiosity × Marital Duration				-0.0027	0.0027	-0.0029	0.0026
Marital Duration × Sexual Satisfaction				-0.0064**	0.0008	-0.0036*	0.0012
Age × Sexual Satisfaction						-0.0048*	0.0016
<i>R</i> <sup>2</sup>	.272			.314		.318	

Note. Independent variables are centered around their means. *N* = 1,415. \*\**p* < .0001. \**p* < .01.



**Figure 1.** (A) The interaction between marital duration and sexual satisfaction in Model 3 – Females sample. Low/High and Long/Short refer to  $\pm 1$  SD below/above the mean in the sexual satisfaction/marital length scales, respectively. (B) The interaction between marital duration and sexual satisfaction in Model 3 – Males sample. Low/High and Long/Short refer to  $\pm 1$  SD below/above the mean in the sexual satisfaction/marital length scales, respectively.

relationships (one SD below and above the mean, respectively), these slopes are estimated to be, respectively, .072 and .229 for females and .201 and .012, respectively, for males. This result is the opposite of what Lazar found (i.e., that sexual satisfaction is more important in long relationships), but it is consistent with the idea that as a result of the temporal decrease in the importance of the sexual aspects

of marital relationship, the effect of sexual satisfaction on marital satisfaction decreases with marital duration.

We next ask whether the temporal decrease in the effect of sexual satisfaction on marital satisfaction is due to age rather than marital duration: Our large samples allow for distinguishing between these two alternative processes despite the high multi-collinearity between age and marital

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duration (see Tables 2a and 2b). Model 3 examined simultaneously both the Age  $\times$  Sexual Satisfaction and the marital Duration  $\times$  Sexual Satisfaction interaction terms. For females, we found that the Age  $\times$  Sexual Satisfaction interaction is highly significant, whereas the Marital Duration  $\times$  Sexual Satisfaction is no longer significant. But for males, we find that both these interactions are significant. Thus, although our results indicate that, at least for males, the Marital Duration  $\times$  Sexual Satisfaction interaction cannot be explained away by participants' age, if anything, they are also consistent with the idea that age is more important than marital duration in the temporal decrease of the importance of sexual satisfaction in marital satisfaction.

Finally, our models allow us to examine two additional findings that were reported by Lazar (2017). First, Lazar found a Significant Religiosity  $\times$  Sexual Satisfaction interaction among Jewish females. We, however, did not find such an interaction in our female sample. However, as apparent in Models 2 and 3 of Table 3a and in Figure A2 in Appendix A, we did find such an interaction in our male sample, such that sexual satisfaction has a stronger effect on marital satisfaction among males low in religiosity than among highly religious males. Thus, Lazar's idea that the importance of sexual satisfaction decreases with religiosity received some support with regard to males, but not with regard to females. We further discuss this interaction effect in Appendix A. Second, Lazar (2017) also found a three-way interaction between religiosity, marital duration, and sexual satisfaction, which was the basis for his conclusion regarding a moderated moderation process in which the moderating effect of marital duration is different for more religious in comparison to less religious individuals. We did not find such an effect in either sample. See Appendix B for our exact replication of Lazar's full model (i.e., a model that include this three-way interaction in addition to the two-way interactions discussed above).

## Discussion

In the current paper, we re-examine a result reported by Lazar (2017), a result that is inconsistent much of the research about sexual and marital satisfaction, which

suggests that, the likely effect of time on the relationship between these two variables is negative.

In the current paper we tried to improve on Lazar's (2017) study by using a large representative sample from more than one population, by exerting controls over type I error through examining higher order and possible ceiling effects (in particular, see Appendix A for the treatment of a possible ceiling effect), and by examining the effect of age, in addition to the effect of marital duration.

Yet, while it is possible that Lazar's results represent a false-positive finding, they may very well represent unique characteristics of his sample. Religious women in Israel often marry without any intimate contact with their partners (Sharabi, 2015). For these women the effect of sexual experience may be strong, very positive if enjoyable (the honeymoon effect; see Schröder & Schmiedeberg, 2015), and very frustrating if not (Prins, 2011), leading to the "reverse" moderation involving marital duration and sexual satisfaction (see Figure 2 in Lazar, 2017 study). Indeed, it seems that this reverse moderation is due primarily to a stronger effect of marital duration on the relationship between sexual and marital satisfaction among religious rather than secular women (Lazar, 2017, Figure 3, p. 519).<sup>8</sup> Thus, whatever is the reason for the difference between Lazar's results and our results, whether these difference stem from type-I error or from true differences between the populations from which the two samples were drawn, this discussion suggests that future research should be extended to additional populations, and attempt to identify moderators of the time-dependent relationships between sexual satisfaction and marital satisfaction.

Finally, we note that the results of the current study show a number of interesting differences between females and males; some of them were discussed within the context of our study. Specifically, whereas both the main effect of religiosity and its interaction with sexual satisfaction were significant among males, they were non-significant among females. In addition, whereas when the interaction between age and sexual satisfaction was controlled for, the Marital Duration  $\times$  Sexual Satisfaction interaction effect was significant for males but not for females. But as the purpose of the study is an examination the global pattern of the effect of time on the relationship between sexual satisfaction and marital satisfaction (rather than sex differences in this relationship), a detailed treatment of these sex differences is beyond the scope of the current work. They are, however, an interesting subject for future research.

<sup>8</sup> Other notable differences are that, in our sample, marital duration is positively correlated with religiosity whereas in Lazar's (2017) it is negatively correlated, and that the correlations between age and marital satisfaction and the correlations between marital duration and marital satisfaction are positive in our samples and negative in Lazar's (this latter difference reflects inconsistencies in the literature; see Gorchoff et al., 2008; Karney & Bradbury, 1995, for positive relationships; Umberson et al., 2005; VanLaningham et al., 2001 for negative relationships).

## Conclusions


Our results are rather different from Lazar's (2017) in that we found a temporal *decrease* in the importance of sexual satisfaction for marital satisfaction rather than a temporal *increase*. Furthermore, our results also indicate that age, more than marital duration, is likely to be the key factor underlying the temporal changes in the relationship between sexual satisfaction and marital satisfaction.

Finally, our study also raises the issue of generalizability with regard to the conclusions derived from research about personal relationships. It suggests that the processes underlying personal relationship may be, to a large extent, context dependent, and that conclusions drawn from research based convenience samples (as in Lazar's study), and even representative samples drawn from a specific population (as in our study) should be cautiously generalized and should be tested on samples from other populations.

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- ORCID**  
Yoav Ganzach  
 <https://orcid.org/0000-0002-9821-9785>
- Yoav Ganzach**  
Tel Aviv University  
Ariel  
Israel  
yoavgn@tau.ac.il

## Appendix A

### The Religiosity × Sexual-Satisfaction Interaction

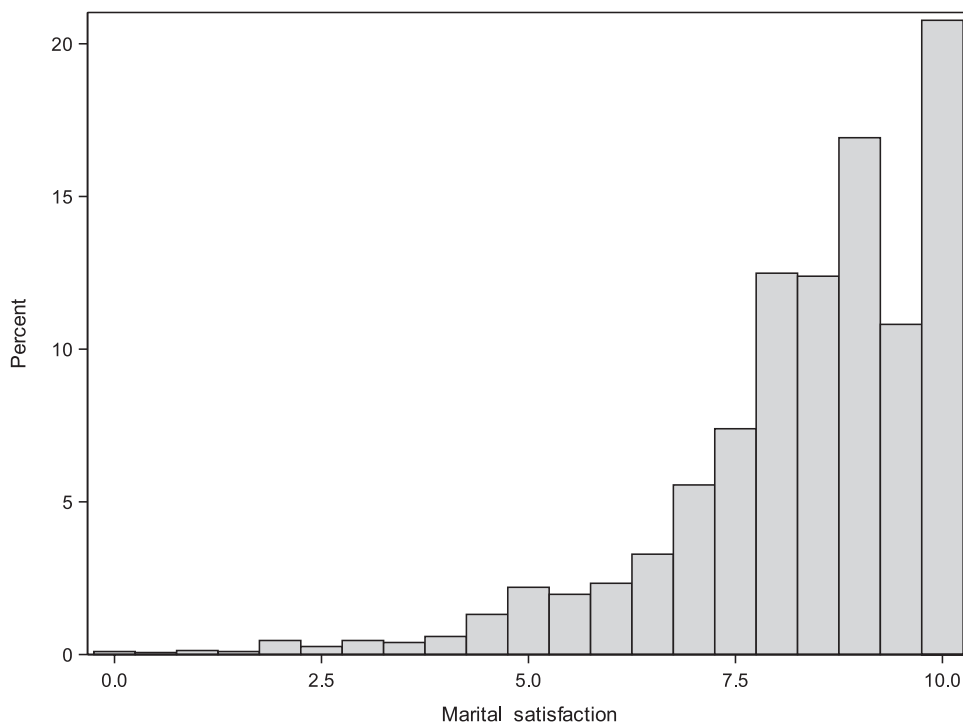
As reported in the main text (Tables 2a and 2b), the Religiosity × Sexual Satisfaction interaction effect was significant for males, but not for females (note that Lazar found a Significant Religiosity × Sexual Satisfaction interaction effect for females, but having no males in his sample, did not estimate this interaction for males). We think that both in our data and in Lazar's data this interaction may be associated with a ceiling effect, resulting from the skewed distribution of marital satisfaction (see Figure A1), which makes changes at higher values of the dependent variable more difficult than changes at lower values of this variable. Thus, the idea that the importance of sexual satisfaction decreases with religiosity among males (on the basis of our data), or among females (on the basis of Lazar's data), needs additional work.

To further explore this ceiling effect, Figure A2 plots the interaction between religiosity and sexual satisfaction for the male sample. It is clear from this figure that the ratings of marital satisfaction at the high-levels of religiosity are closer to the 10 – the ceiling of the 0–10 marital satisfaction scale – than the ratings of marital satisfaction at the low levels of religiosity. This decreases the effect of sexual satisfaction on marital satisfaction when religiosity is high, but not when it is low, which may lead to an apparent interaction between religiosity and sexual satisfaction.

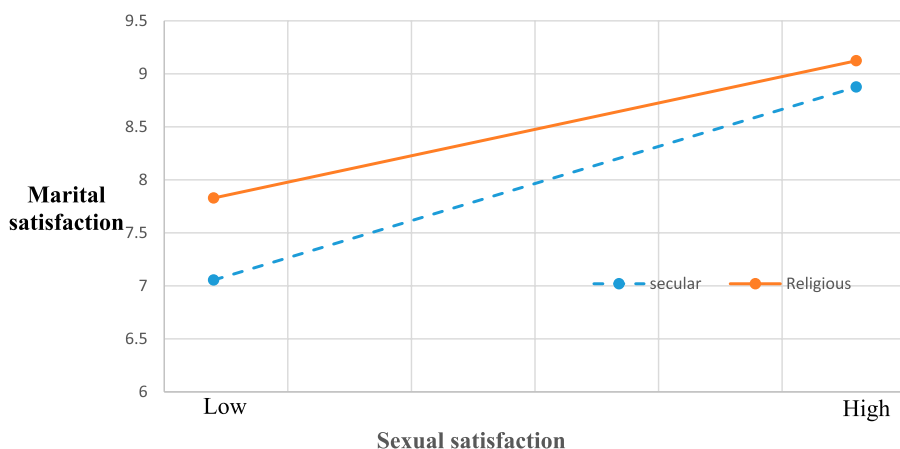
We note, however, that ceiling effects may not necessarily lead to type I error in testing interaction hypotheses. Whereas the Religiosity × Sexual Satisfaction interaction in Figure A2

may very well be due to ceiling effect that makes changes at high levels of marital satisfaction more difficult than changes at low levels (Sinković & Towler, 2019), this is not the case for the interactions between marital duration and sexual satisfaction (Figures 1 and 2 in the main text), which are cross-over interactions. If anything, ceiling effect leads only to a decrease in the power of detecting these interactions.

Finally, the influence ceiling effects may explain why we observe a Religiosity × Sexual Satisfaction interaction among males but not among females. The reason for this is that the correlation between marital satisfaction and sexual satisfaction is much stronger for females than for males ( $r = .50$  vs.  $r = .39$ ,  $Z = 4.6$ ,  $p < .0001$ ), whereas the correlation between marital satisfaction and religiosity is much stronger for males than for females ( $r = .23$  vs.  $r = .08$ ,  $Z = 4.8$ ,  $p < .0001$ ; compare Table 2a to Table 2b). While these differences are interesting by themselves, within the context of the current work we think that they may explain the difference between males and females in the Religiosity × Sexual Satisfaction interaction. For males, the strong influence of religiosity on marital satisfaction is apparent only at low levels of marital satisfaction – at high levels a ceiling effect diminishes this influence of religiosity. In other words, the Religiosity × Sexual Satisfaction interaction is the result of a ceiling effect when marital satisfaction (as well as sexual satisfaction) is high. For females, on the other hand, there is no interaction because religiosity does not influence marital satisfaction, neither at low levels of marital/sexual satisfaction nor at high levels. Thus, the apparent sex difference in the Religiosity × Sexual Satisfaction interaction may stem from a sex difference in the effect of religiosity on marital satisfaction.



**Figure A1.** Histogram of marital satisfaction.



**Figure A2.** The interaction between religiosity and sexual satisfaction in the males sample. Note. Low/High and Long/Short refer to  $\pm 1$  SD below/above the mean in the sexual satisfaction/religiosity scales, respectively.

## Appendix B

### A Very Close Replication of Lazar’s Study and the Religiosity × Marital-Duration × Sexual-Satisfaction Interaction Model

Table B1 provides estimates of Lazar’s (2017) full model – the model that includes the Three-Way

Religiosity × Marital Duration × Sexual Satisfaction Interaction – based on our data. Following Lazar (2017), age is included only as a main effect. It is clear from this table that the three-way interaction which was significant in Lazar’s (2017) study and the basis for his main theoretical argument regarding a moderated moderation was not significant in our analysis, neither for females nor for males.

**Table B1.** Replicating Lazar's model of marital satisfaction on the basis of the MIDUS data

Parameter	Females		Males	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Intercept	8.0380	0.0407	8.2225	0.0349
Age	0.0366**	0.0049	0.0255**	0.0040
Sexual satisfaction	0.3918**	0.0158	0.2949**	0.0147
Religiosity	0.0576	0.0519	0.3233**	0.0399
Marital duration	0.0011	0.0038	0.0103*	0.0032
Religiosity × Sexual Satisfaction	−0.0185	0.0214	−0.0634**	0.0164
Religiosity × Marital Duration	−0.0004	0.0034	−0.0028	0.0027
Marital Duration × Sexual Satisfaction	−0.0051**	0.0009	−0.0063**	0.0008
Religiosity × Marital Duration × Sexual Satisfaction	0.0014	0.0013	0.0015	0.0010
<i>R</i> <sup>2</sup>	.340		.319	

Note. Independent variables are centered around their means.