

**The Effect of Sexual Creativity on Sexual and Relationship Functioning in Long-term
Couples – a Randomized Controlled Trial**

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Abstract

A decline in sexual functioning is often observed in long-term relationships. The main problem couples face is sexual boredom resulting from habituation and familiarity as a function of relationship length. Increasing sexual creativity has been proposed as an effective way to improve sexual and relationship satisfaction in long-term relationships. The current study tested the effectiveness of an online sexual creativity intervention on sexual and relationship satisfaction and sexual boredom. Participants (N=230) were between the age of 18 and 60 and in heterosexual monogamous long-term (< 18 months) relationship. The study had two parallel groups to which the participants were randomly allocated to: the intervention condition (n=98) included weekly creative sexual tasks, while the control condition (n=132) consisted of weekly neutral sexual tasks. Small increases in sexual novelty and sexual satisfaction were observed over time. However, no differences were found between the groups in sexual satisfaction or sexual novelty, suggesting that the intervention was not effective. Further, no significant effects were found on relationship satisfaction or sexual boredom. Future interventions should target couples with high levels of sexual boredom and sexual dissatisfaction and focus on the role of communication and prioritizing sexual relationship.

Keywords: sexual creativity, sexual satisfaction, relationship satisfaction, sexual boredom, long-term relationships

The Effect of Sexual Creativity on Sexual and Relationship Functioning in Long-term Couples – a Randomized Controlled Trial

“Does sex in every long-term relationship lack excitement? Or is it just mine?”

(Kuburic, 2021). This question posed to a therapist during an online information session about sex and relationships illustrates one of the most prevalent issues long-term couples experience. Indeed, many studies report a decline in sexual frequency associated with relationship duration (Murray et al., 2014; Sims & Meana, 2010; Tunariu & Reavey, 2003, 2007). Sexual boredom and habituation are thought to be contributing factors to this decline in sexual functioning in long-term couples (Sims & Meana, 2010). Sexual boredom is characterized by diminished interest, enjoyment, and excitement towards sex with one’s partner (Tunariu & Reavey, 2007). Sexual boredom can also give rise to increased interest in extradyadic sexual partners. Some of the most commonly cited sources of sexual boredom include complacency, lack of communication, overfamiliarity with partner and sexual patterns, and factors from domestic life (Murray et al., 2014; Tunariu & Reavey, 2003, 2007). Sexual boredom and lack of creativity in sex are frequently reported to be significant causes of sexual dissatisfaction. As sexual satisfaction has consistently been shown to predict relationship satisfaction (Fallis et al., 2016; Sprecher, 2002; Yeh et al., 2006), sexual dissatisfaction can give rise to many negative consequences in the relationship, such as affairs, breakups, or divorce (Morton & Gorzalka, 2015; Træen, 2010). Clearly, loss of pleasure and excitement associated with sexual activity with one’s partner can have detrimental consequences for the relationship and finding ways to increase sexual and relationship satisfaction in long-term couples is vital.

To tackle these issues in long-term relationships, many sources suggest increasing novelty. Engaging in novel activities together as a couple can promote relationship satisfaction and cohesion (Aron et al., 2000). Similarly, novel sexual activities are perceived

important for sexual satisfaction. This notion is based on the observed habituation to familiar sexual stimuli seen in both men and women (Both et al., 2011; Dawson et al., 2013). When exposed repeatedly to the same sexual stimulus, men and women reported decreased sexual arousal, however, arousal was increased again when the stimulus was replaced with a novel one (Dawson et al., 2013). Although these laboratory studies do not accurately represent typical real-life sexual behavior in long-term relationships, they provide an indication of the habituation processes underlying exposure to sexual stimuli and arousal. Furthermore, evolutionary theories suggest that partner novelty is associated with increased sexual desire (Morton & Gorzalka, 2015). From an evolutionary perspective, this is important as short-term mating has multiple advantages, especially for men, that are potentially lost in long-term monogamous relationships. Higher sexual arousal associated with novelty can encourage people to seek short-term relationships with more adaptive benefits (Morton & Gorzalka, 2015). In studies examining conceptions of sexual novelty, people often express a desire for variable and experimental sex as opposed to familiar, routine-like sex (Matthews et al., 2018). Some evidence also suggests that sexual activities that are experienced less often are perceived more arousing than activities that are experienced more frequently (Hoon & Hoon, 1982). Taken together, these findings show that novelty is important for sexual arousal and desire in general, but little to no research has directly manipulated sexual novelty in long-term relationships.

Morton (2016) conducted a series of studies investigating the effect of novelty on sexual functioning in long-term couples. Couples in long-term monogamous relationships took part in an online intervention where they were instructed to compile a list of 10 novel sexual activities, i.e. sexual activities deviating from their normal routine. The couples then created a detailed plan to engage in the activities over a period of four weeks. The analysis showed that the number of novel sexual activities was correlated with increased sexual desire

and sexual satisfaction. These findings indicate that increasing novelty could be beneficial for sexual functioning in long-term relationships. However, the main analysis showed no significant findings for the effect of the intervention on desire and satisfaction (Morton, 2016). Importantly, some limitations should be considered while interpreting these findings. The study suffered from high attrition rates as well as low adherence; 55% of the couples engaged in less than two novel sexual activities during the intervention and only 4% engaged in more than six activities, which might have contributed to the findings. Another major limitation of the intervention was that there was a gap of four weeks between the assessments during which only some reminders were sent to the participants. In addition, the couples had to create a plan for the whole duration of the intervention during the first assessment. As a consequence, couples taking part might have lost interest in or forgotten about the intervention. Furthermore, as the procedure required the couples to create and agree on a number of sexual activities, some couples might have experienced trouble with sexual communication leading to difficulties implementing the intervention or further sexual dissatisfaction or other negative experiences.

The current study aimed to partially replicate the intervention by Morton (2016) and to examine the effect of a sexual creativity intervention on sexual and relationship satisfaction in long-term couples. We propose a new concept of sexual creativity which includes and builds upon the notion of sexual novelty. The standard definition of creativity requires novelty and effectiveness (Barron, 1955; Stein, 1953). Thus, we define sexual creativity as novel and useful sexual ideas or activities that are also regarded as such by the partner. By choosing to assess sexual creativity, we broaden the focus from mere originality and novelty to also include appropriateness perceived by both partners. Further, to address the limitations present in Morton (2016) and prevent attrition, our intervention consisted of

weekly sexual tasks based on broad sexual themes and detailed instructions that were aimed at facilitating sexual communication within the couple.

This study primarily aimed to answer if the sexual creativity intervention led to an increase in relationship satisfaction, sexual satisfaction, and a decrease in sexual boredom in comparison to the control group. Additionally, the study explored whether the observed effects may be dependent on relationship length. Finally, exploratory analyses were employed to examine the role of sexual novelty in the intervention, and its associations with the main outcome variables.

Method

Participants

A total sample of 720 participants (360 couples) was recruited through online social media advertisements (Facebook, LinkedIn) and locally distributed flyers and posters in the Netherlands. Recruitment took place over a pre-determined seven-day period in January 2022. Recruitment was targeted for couples interested in enhancing their sexual relationship. All participants who signed up for the study within the one-week period were randomly allocated to two parallel groups with 1:1 ratio using computerized random numbers and couple as the unit of randomization (i.e., both members of the couple were allocated to the same group). Blinding was not used and participants were informed about which intervention condition they were in at the start of the study to minimize disappointment and prevent attrition especially in the control group as the study progressed.

Out of the 720 participants who signed up for the study, 611 participants filled in the initial pre-intervention questionnaire. Eligible participants were required to be between the age of 18 and 60, currently in a long-term (± 18 months) monogamous relationship. Participants who did not fill these criteria were removed from the analysis ($n=98$). The initial inclusion criteria required participants to be cohabiting or spending at least four nights of the

week together with their partner. However, this criterion was removed prior to the start of data analysis, as the cut-off point was deemed artificial and lacking theoretical significance, thus all participants who reported spending less than four nights together were retained in the sample ($n = 79$). Participants were between the age of 18 and 60, ($M = 29.21$, $SD = 8.20$). The average relationship length was 6.10 ($SD = 6.29$) years, ranging from one to 40 years. 442 participants reportedly lived together with their partner (72%), while 169 did not (28%). Only 123 participants indicated having children (20%), with the majority of 488 participants did not have children (80%). The study was approved by the Ethics Committee of the Behavioral and Social Sciences at the University of Groningen (ECP: PSY-2122-S-0124), and informed consent was obtained from all participants.

Measures

The study consisted of seven assessments: pre-intervention questionnaire, four weekly questionnaires administered seven days apart, post-intervention questionnaire seven days after the intervention, and follow-up questionnaire 21 days after the intervention. For an illustration of the assessment schedule, see Figure 1. All questionnaires were available in English, German, and Dutch language.

Figure 1

Illustrated Schedule of All Measurement Points



Primary outcome measures

Global Measure of Sexual Satisfaction (GMSEX; Lawrance et al., 2020). The GMSEX is a measure of overall sexual satisfaction. Participants rate their sexual relationship (e.g. “Overall, how would you describe your sexual relationship with your partner?”) on five dimensions: *good-bad, pleasant-unpleasant, positive-negative, satisfying-unsatisfying, valuable-worthless*. These dimensions are rated on a scale ranging from 1 to 7, where higher scores indicate more sexual satisfaction. The GMSEX has a high internal reliability as indexed by the Cronbach’s alpha ($\alpha = .90$) and high test-retest reliability ($= .84$ at two weeks). In the current sample, reliability was high ($\alpha = .93$). Sexual satisfaction was measured in all seven assessments during the study; pre-and post-treatment questionnaires as well as the follow-up measured sexual satisfaction in the last seven days and overall, while the weekly questionnaires assessed sexual satisfaction in the last seven days. To assess sexual satisfaction in the last seven days, items were modified accordingly (e.g. “Thinking about the last seven days, how would you describe your sexual relationship with your partner?”). Weekly questionnaires were rated similarly as the overall measure.

Global Measure of Relationship Satisfaction (GMREL; Lawrance et al., 2020). The GMREL scale is identical to GMSEX except that it measures overall relationship satisfaction. The items are rated on the same 1 to 7 scale as GMSEX. The GMREL also has high internal validity ($\alpha = .91$) and high test-retest reliability ($= .81$ at two weeks). The current internal consistency was high ($\alpha = .93$). Relationship satisfaction was assessed at all measurement points, identical to sexual satisfaction.

Sexual Boredom Scale (SBS; Watt & Ewing, 1996). The Sexual Boredom Scale (SBS) is an 18-item measure of boredom experienced within the sexual domain of one’s life. The scale consists of two subscales; sexual monotony that pertains to sexual routine and tedium (e.g. “I often get bored having sexual intercourse with the same partner”), and sexual

stimulation that relates to sexual excitement and constraint in relationships (e.g. “*I would not stay in a relationship that was sexually dull*”). For the purposes of the current study, only the 9-item sexual monotony subscale was included. Participants rate the items on 7-point Likert scales ranging from 1 = *strongly disagree* to 7 = *strongly agree*, with higher scores indicating more sexual boredom. The SBS has been validated and shown to have high reliability between .92 to .95. In this study, internal consistency was acceptable ($\alpha = .75$). Sexual boredom was measured in the pre- and post-treatment assessments as well as in the follow-up assessment.

Secondary outcome measures

Demographics. This is a 14-item measure assessing demographic information, including age, gender, sexual orientation, relationship type, relationship length, cohabitation, number of nights spent together with partner in a week, children, the effect of children on sexual relationship, presence of diagnosed sexual dysfunction, and use of prescribed medicine.

Dyadic Sexual Communication Scale (Catania, 2011). The Dyadic Sexual Communication Scale (DSCS) is 13-item scale measuring perceptions of communicating sexual matters with one’s partner. Participants rate items (e.g. “*My partner rarely responds when I want to talk about our sex life*”) on a 5-point Likert scale ranging from 1 = *strongly disagree* to 5 = *strongly agree*. The DSCS has high reliability ($\alpha = .81$) and high test-retest reliability ($= .89$). The DSCS was assessed in the pre- and post-treatment questionnaires.

Partner Specific Sexual Liking and Wanting Scale (PSSLW; (Krishnamurti & Loewenstein, 2012). The PSSLW is a 15-item scale measuring sexual liking and wanting in a relationship. The scale consists of two distinct subscales; sexual liking (10 items, e.g. “*Sex is fun for my partner and me*”) and sexual wanting (5 items; “*When you think about your primary sexual partner, how often does this result in physical sexual arousal?*”) For the

purposes of the current study, only the sexual wanting subscale was included. Furthermore, the wording of the items was modified to assess sexual wanting overall, instead of the original time span of the last month. Sexual desire was assessed in all measurements. For the weekly assessment, the items were modified to reflect on the last seven days, e.g., “*Thinking about the last seven days, how often have you had sexual thoughts about your primary sexual partner when you were not engaging in sexual activity?*”. The PSSW subscale has high reliability ($\alpha = .87$). In the current sample, internal validity was good ($\alpha = .83$). Sexual wanting was measured in all seven assessments including the weekly ones.

Sexual novelty. Sexual novelty withing the relationship was measured using a single item (“*My partner and I often try new things in bed*”). The item was extracted from the Sexual Novelty Scale (Matthews et al., 2018) and chosen based on the highest factor loading (= .93). The item is rated on a 7-point scale that ranges from 1 = *strongly disagree* to 7 = *strongly agree*. Sexual novelty was measured in the pre- and post-intervention and follow-up assessments.

Importance of sex. A single item (“*How important to you is your sex life?*”) measure assessing the perceived importance of sex in one’s life. The item was extracted from the World Health Organization Quality of Life (WHOQOL-100) questionnaire (The WHOQOL Group, 1998). Participants gave a response on a 5-point scale from 1 = *not at all important* to 7 = *extremely important*. Importance of sex was assessed in the pre-and post-intervention questionnaire as well as in the follow-up.

Sexual Frequency. In the pre-and post-intervention questionnaires measurement of sexual frequency consisted of two items, designed by the researchers, assessing frequency of sexual activity in the relationship overall and in the past seven days. Weekly questionnaires included an item assessing sexual frequency in the past seven days.

Reflection-screener on the procedure.

Participants were asked weekly to indicate whether they had engaged in the instructed task of the week. If yes, participants reported how many times they completed the task and rated their satisfaction with the task. If no, participants were asked to provide a reason for not engaging in the task. In addition, participants were asked whether they answered all questions honestly during the study to assess the reliability of the data. Furthermore, participants were asked if they felt discomfort during the study. An open follow-up question designed to allow participants to elaborate on their experience was directed to participants who indicated having experienced discomfort and they were offered the possibility to contact the researchers. Finally, four open questions were included in the post-intervention assessment designed to gather feedback from participants.

Procedure

Experimental group

Participants in the experimental group received a four-week intervention aimed at increasing sexual creativity. In the weekly instructions, participants in the experimental group were asked to engage in a creative sexual activity together with their partner. The sexual activity was chosen by the participants together with their partner, but it was based on a theme given by the researchers. The four themes included location, type of sex, senses, and accessories. Some examples of possible activities were given each week along with the themes to facilitate the participants in choosing an activity (See Appendix). However, the participants were not restricted by the examples given but were encouraged to think independently and to step out of their comfort zone. Participants were instructed to choose an activity that was new and pleasurable, i.e. creative, for both participants in the couple. Participants were instructed to set a specific date and time for the activity to enhance adherence to the task.

Control group

The control group did not receive a sexual creativity intervention. Participants in the control group were instructed to schedule a specific date and a time for sexual activity with their partner. The instructions emphasized that they were expected to engage in sexual activity as usual at the set time, thus discouraging creativity related to the sexual activity. This design was aimed at providing control over several possible confounding variables, including the time participants spent together as a couple, sexual communication, and frequency of sexual activity.

General procedure

Participants signed up for the study together with their partner by providing their email addresses. The study in total lasted seven weeks, while the intervention lasted four weeks. The study schedule was fixed for all participants; all participants received the questionnaires on the same day (Figure 1). The pre-intervention questionnaire was sent to the participants via email on the first day of the study. After the participants completed the questionnaire, they received an email with instructions for the sexual task they were expected to engage in during the upcoming seven days. The instructions were available as text and as video in English, German, and Dutch. The next questionnaire was sent after seven days. Again, participants filled in the questionnaire and received new instructions afterward. This procedure was repeated for four weeks. On the fifth week, participants received an email with the post-intervention questionnaire but did not receive any new instructions. Two weeks after, a link was sent to the follow-up questionnaire. After filling in the follow-up questionnaire, participants were invited to take part in a sex toy lottery (30 prizes) and a sex workshop as a reward for participation. Participants were fully debriefed at the end of the study. See Figure 2 for the study design including measures used.

Data reduction and analysis

To prepare the data for the analysis for the purposes of the current thesis, data from the pre-intervention, the post-intervention, and the follow-up measurements were used, and the responses of the couples were matched based on the couple codes. When a participant or their partner had one or more missing responses, they were excluded ($n = 326$). Lastly, all participants in homosexual relationships were excluded ($n = 6$) from the analysis. Therefore, the sample was reduced to a final sample of 230 individuals. For a description of the path of participants, see Figure 3.

Figure 2

Study Design Including Measures Used

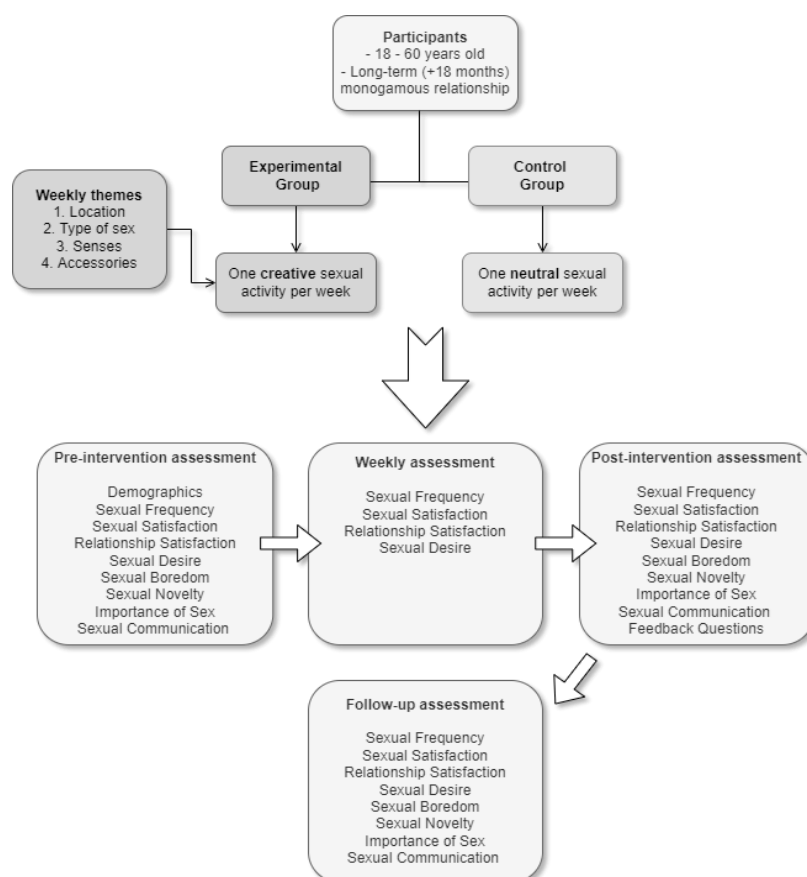
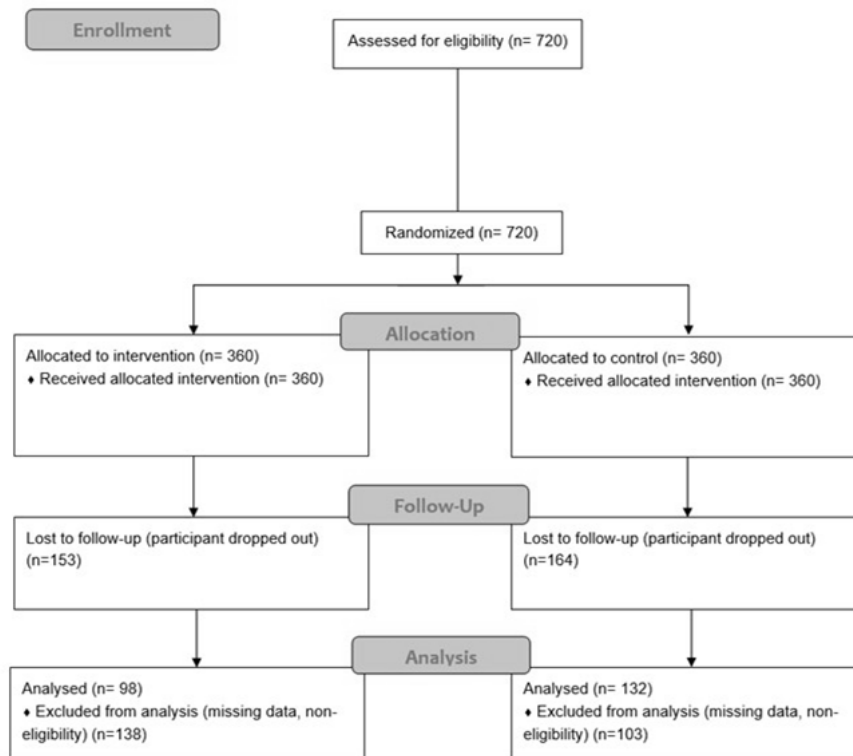


Figure 3*Path of Participants*

Sexual desire was measured with items that had different response scale ranges, thus all items of the PSSW scale were brought to a 9-point scale before summing the items together.

Further, one item measuring sexual boredom was removed due to a translation error. Mean scores were calculated for sexual satisfaction, relationship satisfaction, sexual boredom, and sexual novelty by summing all items together and dividing the sum by the number of items.

The participants took part in the study as couples, but each participant responded to the questionnaires individually at multiple time points, meaning that the data collected in this study consists of nested levels: couple, individual, time. The optimal way to analyze this type of data is to use Multilevel Modeling (MLM) that can account for the nested structure of the data. However, MLM was considered to fall out of the scope of a bachelor's thesis that the current study represents. Thus, an alternative approach was adopted for the data analysis

where the individual data was aggregated to a mean score for each couple. Additionally, a difference score was calculated for each couple by subtracting the male score from the female score to index discrepancies within the couples.

Preliminary analysis included assumption checks and the examination of demographic characteristics of couples included in the analysis. Levene's test indicated that the assumption of homogeneity of variance was met for all dependent variables ($p > .05$). Preliminary analysis of the data also revealed that the normality assumption was violated according to the Shapiro-Wilk test for sexual and relationship satisfaction at all three measurement points. However, no severe violations of normality were observed in a visual inspection of the Q-Q plots. Further, the robustness of ANCOVA is not affected by violations of normality (Norman, 2010), thus the data was not transformed. Sphericity assumption was violated as the variances of difference scores between repeated measures were significantly different ($p < .001$), thus Greenhouse-Geisser correction was used to adjust for the violation for sexual satisfaction, relationship satisfaction, and sexual boredom. The assumption of homogeneity of regression was met as no significant interaction effect between the covariate and group were found. No violations of the assumption of linearity between the covariate and the dependent measures were found.

For the primary analysis, repeated measures ANCOVA model with time as within-subject factor, group as the between-subject factor, and relationship length as a covariate was used. The test of between-subjects effects contrasted the control and experimental group to determine the effect of the intervention on relationship satisfaction, sexual satisfaction, and sexual boredom. The tests of within-subject effects and pairwise comparison were employed to determine whether there was a significant difference between the three timepoints for relationship satisfaction, sexual satisfaction, and sexual boredom. As sexual novelty has been identified important in increasing sexual satisfaction and decreasing sexual boredom,

exploratory analyses were used to examine the associations of sexual novelty with the main outcome variables, and the effect of the intervention on sexual novelty. Further, exploratory methods were used to illustrate discrepancies between the members of the couples by analyzing the difference scores calculated for couples.

Results

Main analysis

Table 1 includes the demographic characteristics of couples in the intervention and control group included in the analysis. The means of sexual satisfaction, relationship satisfaction, and sexual boredom for both groups at three measurement points are presented in Table 2. There were no significant differences in the baseline group means of sexual satisfaction ($t(113) = .81, p = .42$), relationship satisfaction ($t(113) = .38, p = .71$), or sexual boredom ($t(113) = -.71, p = .48$).

Table 1

Demographic Characteristics of Participants in the Intervention (n=96) and Control (n=132) Conditions

	Intervention		Control	
	Men	Women	Men	Women
Age				
M	29.88	28.57	32.19	30.48
SD	7.95	7.78	10.07	9.53
Relationship length				
M		6.83		7.65
SD		5.61		7.91
Cohabitation				
Yes		37 (75.5%)		48 (72.7%)
No		12 (24.5%)		18 (27.3%)
Children				
Yes	9 (18.4%)	9 (18.4%)	18 (27.3%)	17 (25.8%)
No	40 (81.6%)	40 (81.6%)	48 (72.7%)	49 (25.8%)
Negative effect of children on sexual relationship				
Yes	8 (88.9%)	8 (88.9%)	9 (50.0%)	10 (58.8%)
No	1 (11.1%)	1 (88.9%)	9 (50.0%)	7 (41.2%)

Table 2

Levels of Sexual Satisfaction, Relationship Satisfaction, and Sexual Boredom at Pre-Intervention, Post-Intervention, and Follow Up Measurements

	Intervention			Control		
	Pre	Post	Follow up	Pre	Post	Follow up
Sexual Satisfaction						
M	5.65	5.85	5.97	5.80	5.91	5.99
SD	1.15	1.07	1.01	.88	.88	.75
Rel. Satisfaction						
M	6.29	6.38	6.44	6.33	6.33	6.34
SD	.68	.67	.59	.66	.57	.56
Sexual Boredom						
M	3.16	3.08	3.08	3.07	3.04	3.01
SD	.76	.73	.73	.76	.78	.073

A repeated measures ANCOVA was conducted to test the effect of the intervention on sexual satisfaction. In contrast with expectations, there was no significant interaction between time and intervention condition ($F(1.50, 168.34) = 0.86, p = .40, \eta^2 = .01$). The absence of interaction appeared independent of relationship length as evidenced by the absence of a three-way interaction between time, group, and relationship length ($F(3.00, 168,17) = 0.27, p = .85, \eta^2 = .01$). No significant main effect of relationship length was observed ($F(1, 112) = .3.04, p = .08, \eta^2 = .02$). There was, however, a small significant main effect of time ($F(1.50, 168.34) = 3.54, p = .04, \eta^2 = .03$), indicating that there were significant differences in the level of sexual satisfaction at pre-intervention, post-intervention, and follow up measurements. Post hoc pairwise comparisons indicated that sexual satisfaction was generally lower at the pre-intervention measurement compared to post-intervention ($- .16, p = .01$) and the follow up ($- .25, p < .001$). Further, sexual satisfaction was lower at post-intervention measurement compared to the follow up ($- .09, p = .01$). Table 3 shows the pairwise comparisons of sexual satisfaction at different time points.

Table 3*Pairwise Comparison of Estimated Marginal Means of Sexual Satisfaction*

Contrast	<i>Difference</i>	<i>SE</i>	<i>p</i>
Pre – post	-.16	.06	.01
Pre – follow up	-.25	.06	.01
Post – follow up	-.09	.04	.01

A repeated measures ANCOVA was also conducted to examine the effect of the intervention on relationship satisfaction. Contrary to expected, there was no significant interaction between time and group ($F(1.52, 169.84) = 1.60, p = .21, \eta^2 = .01$). The absence of interaction appeared independent of relationship length as no significant interaction effect was observed between time, intervention group, and relationship length ($F(3.03, 170.05) = 0.35, p = .79, \eta^2 = .01$). The main effect of relationship length was not significant ($F(1, 112) = 1.06, p = .30, \eta^2 = .01$). No significant main effect was found for time on relationship satisfaction ($F(1.52, 169.84) = 0.81, p = .45, \eta^2 = .01$), indicating that there were no differences between the three measurement points.

A repeated measures ANCOVA was conducted for sexual boredom with time as within-subject factor, intervention group as between-subject factor, and relationship length as covariate. In contrast with expectations, no significant interaction effect was observed between time and treatment group ($F(1.80, 200.18) = 0.31, p = .74, \eta^2 = .00$). No significant main effect was found for time on sexual boredom ($F(1.80, 200.18) = 1.04, p = .35, \eta^2 = .01$), suggesting that there were no significant differences in the level of sexual boredom across the three measurement points. Further, no significant effect was observed for the interaction between time, intervention group, and relationship length ($F(3.61, 200.30) = 0.177, p = .94, \eta^2 = .01$). The main effect of relationship length was not significant ($F(1, 112) = .82, p = .37, \eta^2 = .01$).

Exploratory analysis

Exploratory analyses were employed to examine the associations of sexual novelty with sexual satisfaction, relationship satisfaction, and sexual boredom. In line with expectations, pre-intervention sexual novelty was significantly correlated with more sexual satisfaction ($r = .56, p < .001$) and less sexual boredom ($r = -.33, p < .001$), but not relationship satisfaction ($r = .18, p = .05$). Further, post-treatment sexual novelty was significantly correlated with increased post-treatment levels of sexual satisfaction ($r = .48, p < .001$) and relationship satisfaction ($r = .30, p < .001$), and decreased sexual boredom ($r = -.26, p = .005$). These results support previous evidence of the positive association between sexual novelty and sexual satisfaction, as well as the negative relationship between sexual novelty and sexual boredom.

To investigate whether the intervention influenced the level of sexual novelty a repeated measures ANOVA was conducted. No significant interaction was observed between time and intervention group ($F(2, 224) = 1.59, p = .21, \eta^2 = .01$), suggesting that the intervention condition did not have an effect on sexual novelty. The analysis indicated that there was a small main effect of time on sexual novelty ($F(2, 224) = 7.37, p < .001, \eta^2 = .01$). Post hoc pairwise comparison indicated that pre-intervention level of sexual novelty was lower compared to the post-intervention ($r = -.298, p = .00$), and the follow up ($r = -.236, p = .02$). Post-intervention and follow-up levels of sexual novelty did not differ significantly.

Difference scores were calculated for each couple to examine variance within the couple. Table 4 shows mean differences for sexual satisfaction, relationship satisfaction, and sexual boredom. Repeated measures ANOVA was used to study the effects of treatment group and time on the difference scores for sexual satisfaction. No significant effect was observed for time ($F(1.68, 190.54) = 1.99, p = .15, \eta^2 = .01$) or group ($F(1, 113) = 1.37, p = .24, \eta^2 = .01$). A similar repeated measures ANOVA was also performed with the

Table 4*Mean Differences Between Female and Male Scores Within a Couple*

	Intervention			Control		
	Pre	Post	Follow up	Pre	Post	Follow up
Sexual Satisfaction						
M	.03	.03	.19	.21	.25	.35
SD	.88	1.10	1.02	1.01	1.02	1.00
Rel. Satisfaction						
M	.10	.14	.09	.17	.24	.21
SD	1.02	.78	.80	.89	.91	.79
Sexual Boredom						
M	.38	.20	.27	-.00	-.01	-.10
SD	1.01	1.17	1.15	1.12	1.18	1.26

difference scores for relationship satisfaction. No significant effects were found for time ($F(1.75, 197.16) = 0.27, p = .75, \eta^2 = .00$) or treatment group ($F(1, 113) = 0.47, p = .49, \eta^2 = .00$). Finally, a repeated measures ANCOVA was performed to examine the effect of time and treatment group on difference scores in sexual boredom. No significant effects were found for time ($F(1.85, 206.58) = 1.38, p = .25, \eta^2 = .01$) or treatment group ($F(1, 113) = 3.44, p = .07, \eta^2 = .03$). These results suggest that the differences between male and female participants within a couple were similar in both treatment groups and remained consistent throughout the intervention.

Discussion

This study aimed to examine the effect of an online sexual creativity intervention on sexual satisfaction, relationship satisfaction, and sexual boredom in long-term couples. Although a small increase in sexual satisfaction over time was observed, there was no difference between the intervention and the control group in the levels of sexual satisfaction, suggesting that engaging in creative sexual activity was not effective in significantly increasing sexual satisfaction compared to the control group. Also, with regard to other main outcome variables, the intervention appeared unsuccessful to produce significant effects.

Moreover, it was hypothesized that relationship length might moderate the effect of the intervention as increased familiarity is thought to lead to sexual boredom and sexual dissatisfaction (e.g. Sims & Meana, 2010), but no significant interactions were observed. The role of sexual novelty was examined more closely in the exploratory analysis. Sexual novelty was positively associated with sexual and relationship satisfaction, and negatively associated with sexual boredom. These findings support the previous research evidence about the role of sexual novelty in maintaining sexual satisfaction and combating sexual boredom. Further, a small increase was observed in the levels of sexual novelty for couples, but this effect was observed independent of the treatment group.

The results of the study generally do not support the role of the current sexual creativity intervention in improving sexual and relationship functioning. The findings are in contrast with previous research evidence that suggests that increasing sexual novelty can be an effective strategy for improving sexual and relationship quality in long-term couples (Both et al., 2011; Dawson et al., 2013; Matthews et al., 2018; Sims & Meana, 2010). Nevertheless, the findings in this study are in line with the findings of Morton (2016), where no significant effects of the intervention were found on sexual functioning. The discrepant findings might be due to limitations in intervention design, as the design of the current intervention was based on Morton (2016). The findings suggest that the intervention was not effective in manipulating the levels of sexual novelty in the experimental group compared to the control. Couples in the control group were instructed to schedule a time for sexual activity weekly similar to the couples in the intervention group to control for possible differences between the groups in the time the couple spent together and communicating about sex. The main difference between the conditions was that the intervention group scheduled a sexual activity that was novel, while the control group was tasked to engage in familiar sexual activity at the scheduled time. It is possible that scheduling sexual activity was a new activity to some

couples in the control group, resulting in increased novel sexual experiences during the study for these couples in the control group. Furthermore, some couples in the control group might have been encouraged to engage in novel sexual activities simply as a function of taking part in the study, albeit that they were explicitly instructed to engage in familiar sexual activities. Finally, as no blinding was used, participants were aware of being in the control group and might have been encouraged to engage in sexual activity outside the instructions. Thus, it could be that simply taking part in the study, independent of treatment condition, led to an increase in sexual novelty evidenced by the significant main effect of time. This slight increase in sexual novelty might also in part explain the observed change in sexual satisfaction over time. It should also be considered that the effects observed in sexual satisfaction and sexual novelty might be a result of other factors that were improved as a consequence of the intervention, e.g. improved sexual communication or increased attention to sexual relationship. Taking part in a study like this inevitably encourages the couple to confront their sexual relationship, to devote more attention to it, and to communicate about sex. The role of communication and prioritizing one's sexual life in this type of interventions should be examined more closely in the future.

It is possible that the findings of the current study were limited by other methodological weaknesses. Previous studies implementing online interventions have suffered from high attrition rates and thus, measures were taken to prevent that. For example, participants were engaged weekly throughout the intervention, instead of only at the start and end of the intervention period, and frequent reminders were sent to participants. Despite the attempts to reduce attrition rates, the drop-out rate was high for both groups. Almost 50% of the participants were lost by the follow up. Furthermore, because of the analysis requirements, no missing data was allowed, thus only about a third of the participants assigned to each condition were included in the final analysis. This selection might have

influenced the characteristics of the participants in the final sample. As full compliance with the measurements was required from participants included in the analysis, it could be that couples who encountered difficulties during the study were not included as they might have dropped out earlier.

It should also be noted that while the study recruitment was targeted to couples wanting to boost their sexual relationship, the levels of sexual and relationship satisfaction were already high at the pre-intervention measurement, with group averages ranging from 5.65 in the intervention group to 5.80 in the control group for sexual satisfaction and, respectively, from 6.29 to 6.33 for relationship satisfaction. As sexual and relationship satisfaction were rated on a 7-point Likert scale, these scores generally indicated that most couples taking part in the study were satisfied with the quality of their sexual and overall relationship. Perhaps for this reason no changes were observed in relationship satisfaction and only a small change was found in sexual satisfaction as there was little room for improvement within the couples in the current sample. The high levels of satisfaction in the sample might also explain why no significant effect of relationship length was found. Although couples in the current sample had been together for 7 years on average, presumably long enough for familiarity and habituation to set in, sexual and relationship satisfaction were still high among the couples. It is possible that increasing sexual creativity is most beneficial in improving the sexual relationship in long-term couples with high levels of sexual boredom and dissatisfaction. However, couples who are dissatisfied with their sexual or overall relationship might be discouraged from participating in this type of intervention and they might also be more likely to drop out during the course of the study. This might be especially problematic in online interventions as contact with the participants is minimal and providing support is challenging. In the future, studies should more clearly target long-term couples with high levels of sexual dissatisfaction and sexual boredom to see if these couples benefit

more from the intervention. Alternatives to the online format of the intervention could also be considered where communication between the couples and the researchers is enhanced and providing support during the intervention is easier.

Further, the study results might be limited by decisions taken regarding the response mode and analysis. While participants responded to the questionnaires independently, the responses of each member of the couple are not independent as they participated in the study as a couple, i.e. completed the weekly tasks together. When assessing sensitive information such as sexual satisfaction, independent responses have the advantage of allowing participants to answer questions without influence from their partner. However, the nested structure of the data brings some challenges to data analysis. In the current thesis, an approach was adopted where the responses of both members of the couple were aggregated into an average score. This method made it possible to conduct the analysis on the couple level. However, because information about the differences between members of the couple might be lost when aggregating the scores, a difference score was also calculated. The analysis generally indicated that the differences between the couples stayed consistent across groups and time points. However, these methods do not adequately address the nested structure of the data. This limits the reliability of the results found in the current analysis. The preferred analysis for this type of nested data would be Multilevel Modeling (MLM). Future disseminations of this study, and those dealing with similarly structured data, should use MLM to analyze the data.

Conclusion

The results of this study generally do not lend support to the effectiveness of an online sexual creativity intervention in increasing sexual and relationship satisfaction and decreasing sexual boredom. Although small increases were observed in sexual satisfaction and sexual novelty, these effects were independent of the treatment group. Still, correlational evidence

obtained from the current study is consistent with the notion underlying the current intervention that sexual novelty is associated with increased sexual satisfaction and decreased sexual boredom. Future interventions should focus on the role of sexual communication and prioritizing the sexual relationship in long-term couples facing difficulties with sexual boredom and dissatisfaction.

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Appendix

Example of Weekly Instructions for Participants in the Intervention Condition

This week's theme is: **SENSES**.

Here are some of our ideas related to this week's theme:

Blindfolding (you can also use stockings, a scarf, tie etc.),
Flavored lubricant or condoms,
Use food as stimulants,
Hot & cold stimuli (ice, hot wax or oil),
Touching other sensitive areas of the body than genitals,
Using a brush/a feather/etc. to touch your partner,
Give each other a massage,
Whisper (dirty talk) or moan in your partner's ear,
Shower before having sex & make yourselves smell nice,
Listen to music that you like while having sex,
Read or listen to an erotic story (e.g. <https://www.bellesa.co/story/all>)
Watch porn together (e.g. www.bellesa.co),
Use candles or essential oils to make the room smell nice,
Looking each other in the eyes for a long time (tantra exercise:
<https://www.healthline.com/health/eye-gazing#eye-gazing-exercise>)

Take some time to think about possible activities relating to this theme first individually. After you have a list of creative ideas, share them with your partner. Compare your ideas and pick one that sounds pleasurable to both of you. Make sure you have not done it together before.

Remember to schedule a time for the activity to make sure you can try out this activity by the end of the week! Please put it into your agenda, so that you do not forget about it.