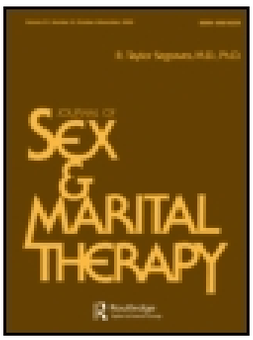

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Skills Vs. Pills: Comparative Effectiveness for Low Sexual Desire in Women

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This study compared the effectiveness of a skill-based bibliotherapy intervention and a placebo pill intervention purported to be efficacious in increasing women's sexual desire. Forty-five participants were randomized into the two groups after completing pretest measures of sexual desire and functioning. After completing their interventions, participants completed 6-week posttest and 12-week follow-up measures. Results demonstrated that when compared to the placebo pill group, the bibliotherapy group made statistically greater gains from pretest to follow-up in sexual desire and satisfaction. Nevertheless, the placebo pill group evidenced short-term improvements in sexual desire over time. Findings have implications for future research and current treatments for low sexual desire in women.

INTRODUCTION

The most common sexual complaint reported by women of all ages is absent or low sexual desire (Basson, 2007). According to research, between 20% and 52% of women will experience low sexual desire at some point in their lives (Shifren, Monz, Russo, Segreti, & Johannes, 2008; West et al., 2008). Low sexual desire is not a stand-alone problem; much research has reported that it is associated with negative psychological effects such as decreased quality of life, physical and emotional dissatisfaction, and marital distress (Brotto et al., 2008; Laumann, Paik, & Rosen, 1999; Trudel, Landry, & Larose, 1997).

A recent systematic review of the efficacy of psychosocial interventions for female sexual dysfunctions noted that despite low sexual desire being the most common problem presented to clinicians, it does not correspondingly have the highest number of researched interventions.

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Nevertheless, in a recent meta-analysis, Frühauf, Gerger, Schmidt, Munder, and Barth (2013) identified several efficacious in-person individual and group psychological treatments. Despite the availability of such treatments, many women struggling with low sexual desire (encompassing both general complaints that do not meet diagnostic criteria and issues with desire and arousal that would meet either prior or current *DSM* criteria) do not seek psychological treatment. This is not surprising given the cultural and societal taboos surrounding sex that likely act as a barrier to seeking help regarding sexual concerns. Additionally, psychological treatments for sexual dysfunctions are often not covered by insurance companies (Westheimer & Lehu, 2007), limiting the accessibility of psychological treatment for the vast majority of women. Instead, many women distressed by low sexual desire seek self-help resources (Rosen et al., 2009) or seek a pharmacological intervention from their physician (Basson, 2007).

Pharmacological interventions for low sexual desire have, in fact, been the focus of much recent discussion and debate. The focus of this controversy was the August 18, 2015 decision of the Food and Drug Administration (FDA) to approve flibanserin as a treatment for low sexual desire. While this controversy is beyond the scope of this article, what is pertinent is the considerable placebo effect found in the clinical trials of this drug. To explain, in the first four clinical trials (Clayton et al., 2009; DeRogatis et al., 2012; Goldfischer et al., 2011; Thorp et al., 2012), four doses of the medication were tested, and the placebo did not evidence greater changes than the lower doses of the medication, while higher doses did evidence greater changes than the placebo. Thus, in a fifth randomized controlled trial, only the highest dose of the drug was compared to the placebo, and the drug outperformed the placebo (Katz et al., 2013). While the difference between the medication and the placebo group was statistically significant, the actual change in the placebo group is nevertheless notable. As an example, on the Female Sexual Function Index (FSFI; Rosen et al., 2000) desire subscale, which ranges from 1.2 to 6.0, those taking the placebo increased their scores by an average of 0.7 points over the course of 24 weeks, while those taking the drug increased their scores by an average of 1.0 point over the course of 24 weeks. In short, in the clinical trials of this newly approved medication, those taking a placebo pill made significant improvements in sexual desire.

According to Bradford and Meston (2009), a "conspicuous outcome of pharmaceutical research is the finding of a reliable and often substantial response to placebo treatment among women enrolled in these trials" (p. 165). Indeed, in a review of 16 placebo-controlled pharmacological trials for women's sexual dysfunction, these authors reported that within-group effect sizes for those taking the placebo were generally in the moderate range. In other words, taking an inert placebo pill that one believes to be potentially active has a moderate effect on improving symptoms of female sexual dysfunction. Further underscoring this conclusion is the placebo response found in randomized clinical trials of nutritional supplements for low sexual desire. In a study comparing the nutritional supplement ArginMax to a placebo, Ito, Polan, and Trant (2001) reported that the supplement generally, although not consistently, outperformed the placebo. For example, on the FSFI desire subscale, those taking the placebo increased their scores from pretest to posttest by an average of 43%.

Results such as these, in trials of nutritional supplements and medications not only for female sexual problems, but also for a wide range of psychological and medical problems (e.g., pain reduction, Parkinson's disease, depression, fertility), have led many to declare that a placebo is not nothing. Some have begun to conceptualize the use of placebo medications as an active mind-body intervention in and of itself (Bialosky, Bishop, George, & Robinson, 2011; Gay & Bishop,

2014). This effect has been found when individuals know they may be receiving either an inert substance or a bona fide medication (as is the case in most placebo trials), and also even when they are told that the pill they are taking is an inert placebo, with the possible benefits of taking an inert placebo explained to them. This has led many to conclude that it is the expectation of positive change that is central in leading to a change. Despite this, few studies have conceptualized inert placebo pills as an active intervention and compared them to other psychological interventions.

The purpose of this study was to compare the effectiveness of a placebo pill that participants were told is an effective intervention for low sexual desire to a psychological bibliotherapy intervention actually shown to be effective. Based on the previously noted finding that most women struggling with low sexual desire will seek either pharmacological or self-help rather than in-person psychological treatment, the psychological intervention used in this study was a self-help book for women struggling with low sexual desire. The book used—*A Tired Woman's Guide to Passionate Sex: Reclaim Your Desire and Reignite Your Relationship*, by Laurie B. Mintz (2009)—was chosen because it has been found to be effective in three prior clinical trials: Mintz, Balzer, Zhao, and Bush, 2012; Balzer and Mintz, 2015; and Palaniappan, Mintz, and Heatherly, 2016. Thus, in this study, when participants were told that they would receive one of two interventions (pills versus a book) found to be effective in prior research, they were indeed being told the truth. Indeed, as will be detailed in the method, the only deception involved telling the participants that the pill was a nutritional supplement.

We hypothesized that both the skill-based bibliotherapy intervention and the inert placebo-pill intervention would be equally effective in the short term (i.e., immediately upon taking the pills), but that only the skill-based intervention would result in changes over time (i.e., the effects of the pills will cease upon taking them, while the effects of the skill-based intervention will hold across time). It was our hope that the results of this study could bring attention to the need for effective treatments for low sexual desire, as well as contribute substantive information to the ongoing (and often heated) dialogue about the ideal way to treat female sexual dysfunction (i.e., pills versus skills).

METHOD

Participants

Participants were 45 women who completed pretest, posttest, and follow-up measures. Twenty-two participants were in the bibliotherapy condition and 23 were in the placebo pill condition. All participants identified as heterosexual and married, and were bothered by low sexual desire despite being currently satisfied in their marital relationship. The average age of participants was 39.7 years, and average marriage length was 12.9 years. All participants were residing in the United States, and most ($n = 43$; 96%) identified as White, with one (0.02%) identifying as African American and one (0.02%) as biracial/multiracial. Most ($n = 32$; 71%) identified as Christian; other affiliations identified were nonreligious ($n = 6$; 0.1%), agnostic ($n = 2$; 0.04%), Judaism ($n = 1$; 0.02%), and atheist ($n = 3$; 0.1%), with one (0.02%) choosing "Other Religion." About five participants (11%) reported having some college experience, three (7%) an associate's degree, nine (20%) a bachelor's degree, four (9%) some graduate or professional training, 15 (33%) a master's degree, seven (16%) a doctoral degree, and one (2%) reported a vocational

degree. Household incomes were reported as follows: less than $15,000 ($n = 1$; 2%); $25,000 to $50,000 ($n = 7$; 16%); $50,000 to $75,000 ($n = 17$; 38%); $75,000 to $100,000 ($n = 6$; 13%); $100,000 or more per year ($n = 14$; 31%). Additionally, about 26 (58%) participants had children currently living at home.

Measures

The Female Sexual Function Index (FSFI; Rosen et al., 2000) is a 19-item self-report measure that was used as a primary measure of desire (two items), as well as five related aspects of female sexual functioning (i.e., arousal—four items, lubrication—four items, orgasm—three items, satisfaction—three items, and pain—three items). Rosen et al. (2009) report good ($r = .88$) two- to four-week test–retest reliability for the total scale and individual domains ($r = .79$–$.86$), as well as very good internal consistency for both the total scale ($\alpha = .97$) and the individual domains ($\alpha = .89$–$.96$). In this study, the internal consistency (α) for the pretest, posttest, and follow-up respectively was as follows: FSFI desire ($\alpha = .90, .88, .96$); arousal ($\alpha = .88, .96, .82$); lubrication ($\alpha = .94, .96, .97$); orgasm ($\alpha = .93, .96, .95$); satisfaction ($\alpha = .41, .69, .46$); and pain ($\alpha = .94, .97, .99$).

The Hurlbert Index of Sexual Desire (HISD; Apt & Hurlbert, 1992) was used as the secondary measure of sexual desire. This 25-item self-report measure assesses an individual's level of reported sexual desire as defined by its emotional, behavioral, and cognitive components, with items primarily reflective of desire in a heterosexual, partnered context. Beck (1995) reports that the HISD had good internal consistency ($\alpha = .86$), test-retest reliability ($r = .86$), and concurrent, construct and discriminant validity. The internal consistency in this study was $\alpha = .94$ at pretest, $\alpha = .96$ at posttest, and $\alpha = .96$ at follow-up.

Conditions

Bibliotherapy Condition

The bibliotherapy condition involved reading a 237-page self-help book, *A Tired Woman's Guide to Passionate Sex* (Mintz, 2009). This book was chosen due to prior research demonstrating its effectiveness in increasing sexual desire and other aspects of sexual functioning in three prior clinical trials. To explain, one compared the book to a wait-list control group (Mintz et al., 2012), one compared the book to both a wait-list control group and another similar book (Balzer & Mintz, 2015), and one compared the book to an erotic fiction book (Palaniappan, Mintz, & Heatherly, 2016). The book contains three foundational chapters covering the author's personal experience with low sexual desire (chapter one), the causes of low sexual desire (chapter two), and the many benefits of sexual activity (chapter three). Next, the book contains five chapters providing a psychoeducational, cognitive-behavioral approach to treating low sexual desire.

Placebo Pill Condition

Participants randomized to the placebo pill condition were told that they would take a nutritional supplement found to be effective in increasing low sexual desire in prior research once

daily for six weeks. These participants were mailed a six-week supply of the pills in a white bottle. The information on the label included the name, address, and phone number for dispensing pharmacy, the study's protocol number, and information specific to the pills (e.g., expiration date, number of pills). These pills were clear and made of cellulose (Avicel), an inert substance that is a common filler in food. If participants asked about the pill ingredients, potential drug interaction effects, possible side effects, or any other information related to the pills prior to debriefing, the researchers responded that there were no known interaction effects with other prescribed or over-the-counter medications. They also said that they could not reveal anything about the pill ingredients because research has shown that expectations affect responses to medications and, therefore, knowledge of the pill's ingredients could affect responses to the pill. In such cases, researchers reminded participants that if they were uncomfortable with taking the pill under these circumstances, they were free to discontinue their participation in the study at any time.

Procedure

Following the receipt of Campus Institutional Review Board (IRB) approval, participants were recruited through flyers, newspaper, and radio advertisements in two large U.S. Southern and Midwestern university towns. These ads stated that researchers were seeking heterosexual married women who had access to e-mail and reported being generally happy in their marriages yet experiencing low sexual desire to participate in a study that involved either reading a book or taking a nutritional supplement. Importantly, the recruitment ad and the informed consent both specifically stated that both the book and the pills had previously been found to be effective in boosting desire.

The first 78 participants who contacted the researchers and met the inclusion criteria were accepted into the study. They were then e-mailed a link to an informed consent and the pretest survey, which included a demographic survey and the two aforementioned measures (FSFI and HISD) presented in a counterbalanced order. Of these 78 participants to whom the pretest survey was sent, 64 participants completed it and also provided a valid mailing address (i.e., for their books or pills to be sent). These 64 participants were randomized to either the bibliotherapy condition ($n = 34$) or the placebo pill condition ($n = 30$), using a random number generator. Participants were then mailed the book or the pills with instructions to read the book over the course of six weeks or to take one pill daily for six weeks. Participants were told that they would receive a link to the second (posttest) survey in six weeks. Six weeks after the study materials were sent, all participants received a link to the posttest survey, which included the measures of interest in a counterbalanced order followed by a question asking if they had done anything to address their low sexual desire besides completing the intervention in the past six weeks. At the end of the survey, participants were reminded that they would receive the link to a final follow-up survey in six weeks. Finally, six weeks later (12 weeks after the pretest), participants were sent the final follow-up survey, and were asked about their compliance to the intervention and if they had done anything since finishing the pills or reading the book to address their low sexual desire. Upon filling out the final survey, all participants were fully debriefed and provided with additional resources in the community for sexual concerns. Those participants in the placebo pill condition were also mailed a copy of the book used in the bibliotherapy

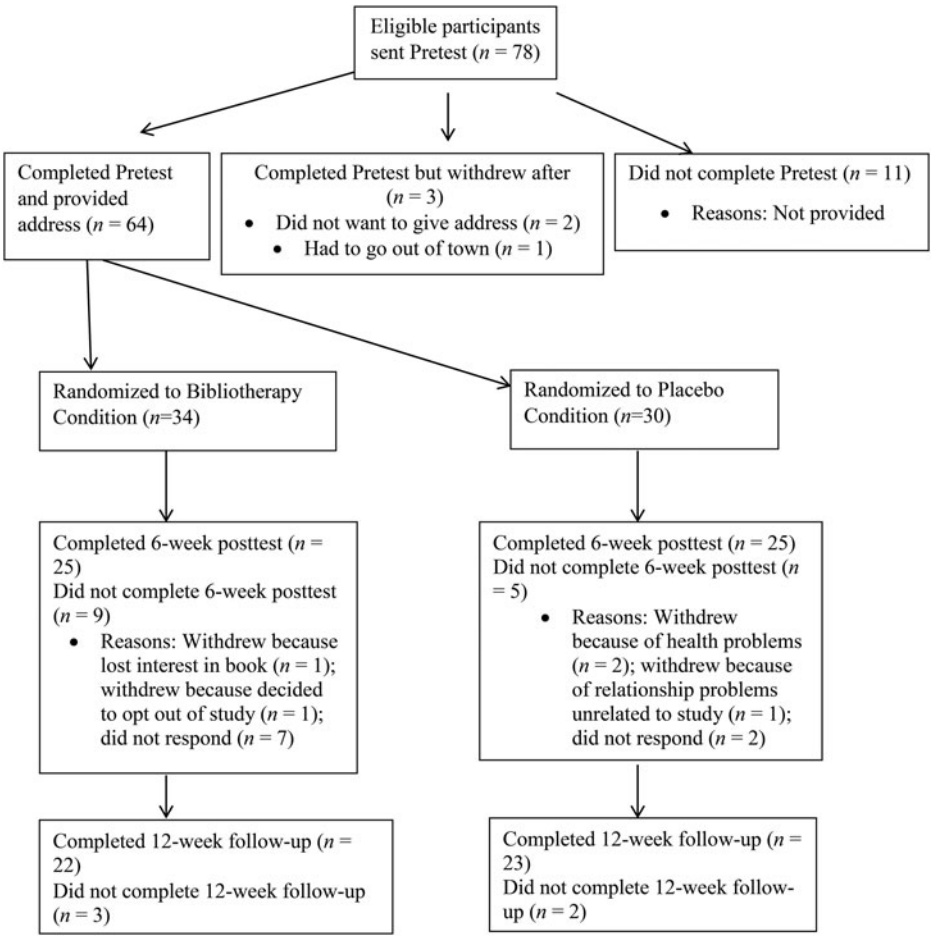

FIGURE 1 Flowchart of participants in the bibliotherapy condition and placebo condition throughout the study.

condition. All participants who completed the study received a $10 gift card from Amazon.com or Starbucks.

All surveys were hosted on Qualtrics, a Web-based survey software. Participants who did not complete any survey with five days were e-mailed up to three reminders, each spaced five days apart. Sixty-four participants completed the pretest, and 50 participants completed the 6-week posttest. Only participants completing the 6-week posttest were allowed to complete the 12-week follow-up measures. The final sample included the 45 participants who completed the pretest, 6-week posttest, and 12-week follow-up (bibliotherapy condition = 22, placebo pill condition = 23). Fourteen participants did not complete the six-week posttest (bibliotherapy condition: $n = 9$; placebo pill condition: $n = 5$), and five participants did not complete the 12-week follow-up (bibliotherapy condition: $n = 3$; placebo pill condition: $n = 2$). See Figure 1 for the flow of participants through the study.

Data Analysis

A priori power analyses suggested that approximately 45 participants were needed to detect a medium effect size with .80 power between the two groups as significant at the 5% level. For exploratory students where new treatments are being explored, using multiple univariate tests rather than a multivariate test followed by univariate tests has been recommended (Huberty & Morris, 1989). Further, many statisticians recommend that the most conservative method is to conduct univariate *F* tests on each outcome variable while applying Bonferroni corrections (Enders, 2003; Huberty & Morris, 1989; Jaccard & Guilamo-Ramos, 2002). We thus conducted Bonferroni-corrected, repeated-measures ANOVAs using pretest, posttest, and follow-up scores on the dependent measures. Given that comparative changes over time (pretest to posttest, posttest to follow-up, pretest to follow-up) across groups (bibliotherapy vs. placebo pill) was the question under investigation, we examined the Group × Time interaction. We followed significant Group × Time interactions with Bonferroni-corrected planned contrasts. Additionally, because effect sizes represent a simple way of quantifying the size of the difference between two groups, and thus for intervention studies can be defined as " … a standardized, scale-free measure of the relative size of the effect of an intervention" (Turner & Bernard, 2006, pp. 42–55), we also calculated Hedges's *g* effect sizes for these contrasts. Finally, we interpret effect sizes with Cohen's (1988) cautious rule of thumb: .20 = small, .50 = medium, .80+ = large.

RESULTS

Prior to conducting analyses, we examined the data for all requisite assumptions (e.g., sphericity, normality) and all were met. Table 1 presents the ANOVA results, as well as the means

TABLE 1
Mean, Standard Deviations, and Repeated-Measures ANOVAs on Seven Dependent Variables

	Bibliotherapy Condition						*Placebo Condition*							
	Pretest		*Posttest*		*Follow-up*		*Pretest*		*Posttest*		*Follow-up*			
Measure	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*	*p*
HISD**	38.50	14.07	49.06	12.74	52.68	15.61	26.48	10.42	35.83	16.86	30.83	14.95	6.74	.003
Desire**	2.24	0.91	3.08	0.83	3.55	1.01	1.62	0.91	2.69	1.05	2.17	0.95	7.07	.002
Sat**	3.04	0.79	4.33	1.08	4.07	1.38	3.44	0.87	3.50	1.24	3.37	1.03	5.98	.005
Arousal	2.66	1.31	3.76	1.48	3.64	1.75	2.74	1.01	3.31	1.37	2.66	1.60	2.06	.089
Lub	3.05	2.06	4.09	1.91	4.00	2.16	3.91	1.24	4.19	1.64	3.86	2.07	1.32	.278
Org	2.80	1.92	3.98	1.98	3.78	2.17	3.36	1.46	3.58	1.82	3.32	1.98	2.19	.125
Pain	3.41	2.35	4.51	2.17	3.76	2.56	4.57	1.71	4.94	1.61	3.72	2.54	1.41	.255

Notes. $N = 45$ for all analyses. For all measures, higher scores indicate higher-level aspects of sexual functioning. HISD = Hurlbert Index of Sexual Desire (range 0–100); Desire = Female Sexual Function Index (FSFI) desire subscale (range 1.2–6); Sat = FSFI satisfaction subscale (range 0–6); Arousal = FSFI arousal subscale (range 0–6); Lub = FSFI lubrication subscale (range 0–6); Org = FSFI orgasm subscale (range 0–6); Pain = FSFI pain subscale (range 0–6). $^{*}p < .05$. $^{**}p < .01$. $^{***}p \leq .001$.

and standard deviations of each variable across groups. As can be seen in Table 1, significant Group × Time interactions were found for the HISD, FSFI Desire, and FSFI Satisfaction, $F(2, 42) = 6.74$, $p = .003$; $F(2, 42) = 7.07$, $p = .002$; and $F(2, 42) = 5.98$, $p = .005$. The text below presents the planned contrasts results and effect sizes for these three variables.

Hurlbert Index of Sexual Desire

In the bibliotherapy condition, planned contrasts indicated that there was a significant increase in mean scores from pretest to posttest, $p = .002$; Hedges's $g = .75$. Absolute mean scores increased slightly from posttest to follow-up, although this change was not significant. Pretest and follow-up mean scores differed significantly, $p < 0.001$; Hedges's $g = .91$. In the placebo pill condition, planned contrasts indicated that there was a significant increase in mean scores from pretest to posttest, $p = .006$; Hedges's $g = .64$. While the absolute mean score decreased from posttest to follow-up, this change was not significant. Likewise, the increase in mean scores from pretest to follow-up was not significant. These results indicated that both those taking the pills and reading the book increased their level of desire from pretest to posttest (i.e., immediately after the intervention), with the effect of the intervention being in the medium range for those taking the pill and large for those reading the book. However, for those taking the pills, the gains were lost by follow-up, whereas among those reading the book, the gains were maintained at follow-up, with the long-term effect of the intervention being large (Hedges's $g = .91$). This differential pattern of change is depicted in Figure 2.

FSFI Desire

In the bibliotherapy condition, planned contrasts indicated that there was a significant increase in mean scores from pretest to posttest, $p = .001$; Hedges's $g = .92$. Absolute mean scores

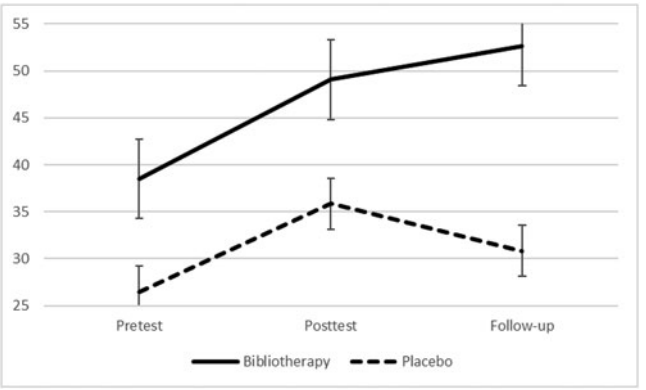

FIGURE 2 Changes in desire (HISD) across three time points (i.e., pre-, post-, and follow-up) for bibliotherapy condition and placebo condition.

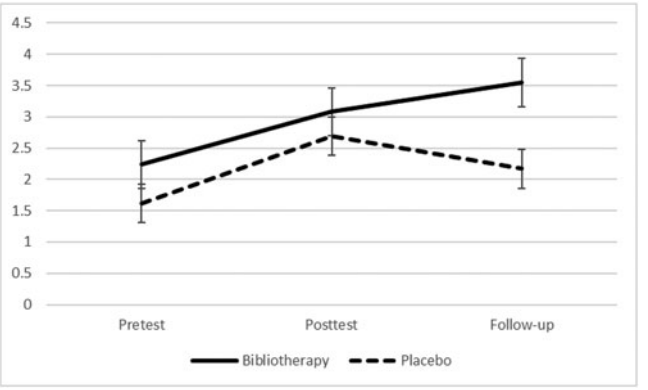

FIGURE 3 Changes in desire (FSFI desire subscale) across three time points (i.e., pre-, post-, and follow-up) for bibliotherapy condition and placebo condition.

increased slightly from posttest to follow-up, although this change was not significant. The pretest and follow-up mean scores differed significantly, $p < 0.001$; Hedges's $g = 1.31$. In the placebo pill condition, planned contrasts indicated that there was a significant increase in the mean score from pretest to posttest, $p < 0.001$; Hedges's $g = 1.04$, and a significant decrease from posttest to follow-up, $p = .028$, Hedges's $g = .50$. The pretest and follow-up mean scores differed significantly, $p = .024$; Hedges's $g = .57$. These results indicated that both those taking the pills and reading the book increased their level of desire from pretest to posttest (i.e., immediately after the intervention), with effect of the intervention being large for both groups. However, for those taking the pills, some of these gains were lost at follow-up, leaving the long-term effect of the intervention in the medium range (Hedges's $g = .57$). On the other hand, among those reading the book, the gains were maintained at follow-up and long-term effect of the intervention was large (Hedges's $g = 1.31$). This differential pattern of change is depicted in Figure 3.

FSFI Satisfaction

For the bibliotherapy condition, planned contrasts indicated that there was a significant increase in mean scores from pretest to posttest, $p < 0.001$; Hedges's $g = 1.31$, with no significant changes from posttest to follow-up. The pretest and follow-up mean scores also differed significantly, $p = .002$; Hedges's $g = .88$. For the placebo pill condition, planned contrasts indicated there were no significant changes in mean scores from pretest to posttest, or from posttest to follow-up. Likewise, the difference between pretest and follow-up mean scores were not significant. These results indicate that taking the pills had no impact on levels of satisfaction. On the other hand, among those who read the book, there was a significant increase in satisfaction post-intervention and these gains were maintained at follow-up, with the long-term of the intervention being large (Hedges's $g = .88$). This differential pattern of change is depicted in Figure 4.

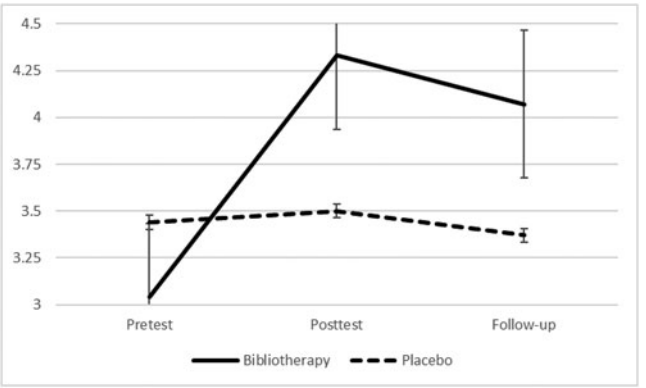

FIGURE 4 Changes in satisfaction (FSFI satisfaction subscale) across three time points (i.e., pre-, post-, and follow-up) for bibliotherapy condition and placebo condition.

DISCUSSION

Based on prior research finding bibliotherapy effective for women struggling with low sexual desire, as well as a substantial placebo effect found in drug studies for low sexual desire, this is the first study to compare bibliotherapy (i.e., a skill-based approach) and a placebo pill. We hypothesized that both would be equally effective in the short term but that the skill-based approach would be more effective in the long run. With respect to the main outcome measure, desire, this hypothesis was generally supported, although some nuances prevent declaring full support for this hypothesis.

In terms of the main outcome of desire, two measures of this construct produced slightly different results. Specifically, when examining the HISD (a 25-item measure), both those reading the book and those taking the pill increased from pretest to posttest (i.e., during the active intervention phase), although the book resulted in larger changes during this phase than did the pill. However, at follow-up (i.e., six weeks after the pills were ceased to be taken or the book was to have been read), all gains were lost among those taking the pills but were maintained among those who had read the book. On the second measure of desire (FSFI-desire), however, a different pattern of results was found. On the FSFI-desire subscale (a two-item measure), both those reading the book and those taking the pills increased from pretest to posttest (i.e., during the active intervention phase), with the magnitude of the change similar in both groups. At follow-up (i.e., six weeks after the pills were ceased to be taken or the book was to have been read), some (but not all) of these gains were lost among those taking the pills whereas none of the gains were lost among those reading the book. Why the two measures performed differently is unclear, although one hypothesis is that the two scales are tapping into slightly different aspects of sexual desire. The HISD seems to be tapping into a more global desire construct, encompassing issues such as fantasy, masturbation, and partnered sex, whereas the FSFI desire subscale assesses one's self-assessed level of desire more specifically. Additionally, no time frame is given for the HISD whereas the FSFI-desire subscale asks about the previous four weeks. It thus appears that the book may have had long-lasting effects on both a global and encompassing desire construct (including

self-assessment, fantasy, and masturbation) and on a narrower self-assessment of so-called sexual desire across a four-week time span, whereas the pills had only long-lasting effects on the latter. Still, future studies should more closely examine both measures in terms of what aspect of desire they are tapping into.

Nevertheless, when taking the results of both measures together, we can still conclude that both the pills and the book resulted in substantive changes during the active intervention phase (when participants were taking the pills or reading the book), but that at follow-up, the effects of the pills decreased, either partially or completely. This is in line with our hypothesis, which was based on the perhaps obvious notion that the effects of the pills would last only so long as the pills were being taken, whereas the effects of skills would stand the test of time (i.e., skills by their very nature are designed to be used over time). However, alternate explanations are also possible, especially considering that on one measure of desire (FSFI-desire), the pills still had long-lasting effects, albeit of a lesser magnitude than the book. Perhaps the pills had positive effects on desire even after participants ceased to take them based on the clinical notion that engaging in sexual activity itself leads to increased desire and more sexual activity (i.e., sex leads to more sex; Mintz, 2009). This may have been the case for both those reading the book and those taking the pills, with those reading the book also gaining other sexually-based skills and attitudes, thus accounting for the greater changes over time. Similarly, both the book and pill intervention provided women with validation, normalization, and hope for improvement of their low sexual desire. Indeed, it is therefore possible that both interventions were efficacious in the short term because they empowered women to embrace their sexual desires and pleasures, thus providing a feeling of being in control of one's own desire.

The gains for those in the pill condition could be explained by the daily pill serving as a reminder to the participants of their intention to enhance their sexual desire. This inequivalence is a limitation of this study, as the participants in the book condition did not have such a reminder. However, perhaps explaining the greater gains over time for those in the book condition, it is key to realize that access to the book during the follow-up phase remained, whereas no such access to the pills remained (i.e., the book was still in the participants' possession but the pills were all gone). Those reading the book may have continued to read it and/or refer to it during the follow-up phase. In fact, our results indicate that several individuals continued to read the book during this phase, in that at posttest seven individuals indicated they were almost but not completely done reading the book whereas at follow-up, all but two were completely done reading it. Although allowing for participants in the book condition to have unlimited access to the book and participants in the pill condition to have the pill serve as a daily reminder is a naturalistic design, this is certainly a design flaw in our study. It will be important for any future studies comparing medicine-based and skill-based interventions to correct for this by comparing only those who complete the interventions at the same point in time.

Given that the book has positive and long-lasting effects on both desire and satisfaction, and that these changes were greater than the placebo's effects, it can be concluded that the effects of the book were due to the content of the book itself (i.e., the skills and attitudes taught) rather than simply the effect of doing something to help oneself. These findings add confidence to the recommendation for health-care providers to recommend self-help materials to those struggling with low sexual desire (Balzer & Mintz, 2015; Mintz, 2009). Nevertheless, the results also add weight to the conclusion that when it comes to enhancing desire, placebos are effective. Clearly, believing something will have a positive effect on desire seems to result in such a positive effect.

A similarly strong placebo effect in studies of several medical conditions has led to increased attention to the mechanisms underlying the placebo effect. For example, placebo response rates have been found in excess of 30% among clinical trials for restless legs syndrome (Fulda & Wetter, 2008), irritable bowel syndrome (Patel et al., 2005), and ulcerative colitis (Garud, Brown, Cheifetz, Levitan, & Kelly, 2008). Likewise, high placebo response rates have also been reported in chronic fatigue syndrome (20%, Cho, Hotopf, & Wessely, 2005), migraine headaches (21%, Macedo, Banos, & Farre, 2008), epilepsy (9%–16%, Burneo, Montori, & Faught, 2002), Parkinson's disease (16%, Goetz et al., 2008), and neuropathic pain (15%–26%, Quessy & Rowbotham, 2008). Such large placebo effects have spurred theorizing regarding the mind-body connection, leading several leading researchers to conclude that placebo expectations can induce biochemical changes (Wang, 2012).

Such findings and theorizing, together with the results of this study as well as prior findings of a strong placebo response for sexual dysfunctions, have significant clinical implications. While a skill-based approach may be the treatment of choice for women struggling with low sexual desire, physicians might be wise to consider prescribing a placebo to women who indicate not having the time, the desire, or the energy resources necessary for engaging in skill building. The American Medical Association states that placebos can be given if the patient is informed and agrees to its use (Bostick, Sade, Levine & Stewart, 2008). Given the adverse events found in medication trials for low sexual desire (including the most recent flibanserin trials), perhaps physicians could consider a stepped-care approach in which those rejecting skill-based approaches be first given a placebo and only if that does not work, then an actual medication. Certainly, to further examine this recommendation, a randomized controlled trial examining the effect of such a known-placebo on sexual desire should be undertaken. Another potentially useful study would involve comparing the Mintz book (2009), flibanserin, a placebo pill purported to be an effective substance, and a placebo pill described as an inert substance that is purported to decrease symptoms via a mind-body healing effect. An additional interesting aspect to such a study would be warning those in the active drug and two placebo conditions about possible side effects to examine what researchers have termed the nocebo effect, or an increase in described side effects even for an inert substance (Barsky, Saintfort, Rogers, & Borus, 2002). Nevertheless, until such studies are conducted, based on this study, it can still be concluded that both a skill-based approach and a placebo-based approach can improve sexual desire, with the former more potent and long-lasting than the latter.

Despite this conclusion, this study suffered from methodological shortcomings. As outlined by van Lankveld (2009), the effects of pretreatment assessment may have influenced the results, leading both interventions to perform better in this study than they may have in a naturalistic context. Further, the current study did not investigate the book group participants' adherence to the skills taught in the book. This information should be gathered in future studies, as it could optimize the creation and utilization of bibliotherapy interventions. Also, as is the case with most studies on bibliotherapy (van Lankveld, 2009), the sample size was small and diversity was lacking; as noted, however, the former was mitigated by use of Hedges's g effect sizes. Additionally, as is also the case with most bibliotherapy studies, there was attrition over time. Still, by the end of the study, the sample sizes in the two conditions were roughly equivalent, leading to the conclusion that both the book and placebo pill were well received or held equal attention among participants over the course of the study. Nevertheless, future studies should provide additional incentives for study enrollment and completion. Future studies should also employ a similar methodology

(skill-based versus placebo-based interventions) for the treatment of additional sexual concerns such as sexual pain, inorgasmia, and arousal-related difficulties.

Sexual issues, including low sexual desire, are a concern for countless women in North America. While some argue that these issues are exaggerated or even created by drug companies for profit (Pollack, 2015), others point to the very real suffering of women with sexual concerns (Thorp et al., 2012). While, again, this issue is beyond the scope of this study, it does have implications for this debate. That is, when it comes to low sexual desire, skill-based approaches outperform pill-based approaches, but pill-based approaches can indeed be effective, even when that pill is an inert substance.

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