Universiteit Utrecht

22/06/2020
Supervisor: F. van den Brink

The relationship between body dissatisfaction and sexual dysfunction: The mediating role of depression

L. de Groot (5672414)

Master thesis

Abstract
Sexual dysfunction, which can be referred to as decreased desire, insufficient sexual arousal, delayed or absent orgasm, or a combination of the above, is a common problem in men and women. Since sexual dysfunction can affect interpersonal relationships and lower quality of life, identifying determining factors and mechanisms that impact sexual dysfunction is important. The current study aimed to investigate the relationship between body dissatisfaction and sexual dysfunction, and the mediating role of depression in this relationship. Additionally, the moderating role of gender was taken into account.
In total, 91 participants completed an online questionnaire assessing body dissatisfaction, depression, and sexual dysfunction. Data were analyzed by means of regression and bootstrap analyses. The results revealed that higher levels of body dissatisfaction were associated with greater sexual dysfunction. However, for both men and women, depression did not mediate the relationship between body dissatisfaction and sexual dysfunction. These findings suggest that including body image interventions into the treatment of sexual dysfunctions would be valuable. Future research is needed to clarify the role of depression in the context of body image and sexual dysfunction.

Keywords: sexual dysfunction, body dissatisfaction, depression.

Introduction

Sexual dysfunction is a common problem among men and women associated with negative individual functioning, relationship difficulties, and lower quality of life e.g., (Allen & Walter, 2018). Sexual dysfunction refers to decreased sexual desire or libido, insufficient sexual arousal, such as incomplete engorgement of the penis or of the clitoris or lack of vaginal lubrication, and delayed or absent orgasm, or a combination of the above (Cassano et al., 2019). Research showed that the most frequent sexual dysfunctions for men are erectile dysfunction and premature ejaculation. The estimated prevalence of these dysfunctions in men of reproductive age ranges from 12% to 19% and from 8% to 31%, respectively (Laumann, Paik, & Rosen, 1999; Lewis et al., 2010; Mirone, Ricci, Gentile, Basile Fasolo, & Parazzini, 2004; Moreira, Glasser, & Gingell 2005; Moreira, Hartmann, Glasser, & Gingell, 2005; Parazzini et al., 2000). Among women, desire and arousal dysfunctions are the most common dysfunctions. There appears to be reasonable consensus that the prevalence of women who report at least one manifest sexual dysfunction is in the order of approximately 40% to 50%, irrespective of age (McCabe et al., 2016). In addition, a large proportion of women, more than men, experience multiple sexual dysfunctions (McCabe et al., 2016). Since sexual dysfunction can affect interpersonal relationships and is important to the quality of life (Kennedy & Rizvi, 2009; Flynn et al., 2016), identifying determining factors and mechanisms that impact sexual dysfunction is important.

The causes for sexual dysfunction are disparate and include psychiatric, neurological, endocrine, cardiovascular and pelvic conditions, as well as side effects of commonly prescribed medications (Cassano et al., 2019). An important psychological factor found to be associated with sexual dysfunction is body dissatisfaction (Van den Brink, 2017). Body dissatisfaction refers to the subjective dissatisfaction with body size and/or shape (Griffiths et al., 2016). It may be defined as an individual's negative subjective evaluation of his or her body, including body weight, shape, muscularity and tone, and typically involves a discrepancy between one's actual body and one's ideal body (Purton et al., 2018). Although studies assessing the relationship between body image and sexual functioning have been conducted mostly among women, recent research reports increasing levels of body dissatisfaction in men (Carvalheira, Godinho, & Costa, 2016; Kvalem, Markovic, & Soest; 2019). Previous research showed, both in women and men, a positive relationship between body dissatisfaction and sexual dysfunction (Carvalheira et al., 2016; Cash, Maikkula, & Yamamiya, 2004; Gil, 2007; Holt & Lyness, 2007; Peplau et al., 2009; Sanchez & Kiefer, 2007; Silva, Pascoal, & Nobre, 2016; Træen, Markovic, & Kvalem, 2016; Van den Brink et al., 2018a; Van den Brink, Vollmann, Smeets, Hessen, & Woertman, 2018b).

An explanation for the relationship between body dissatisfaction and sexual dysfunction can be found in Fredrickson and Roberts' (1997) objectification theory. Although objectification theory was originally developed to explain women's experiences, it is now considered relevant for understanding men's experiences as well given the increased cultural emphasis on men's appearance (e.g., Strelan & Hargreaves, 2005). The theory posits that the treatment of women and men as sexual objects by others and in the media, leads to men and women internalizing an observer's perspective of their own bodies; they come to view themselves as an object to be looked at and evaluated on the basis of appearance (Tiggemann & Williams, 2011). According to objectification theory, high levels of the internalization of an observer's perspective leads to negative emotional states, such as depression (i.e., loss of interest, reduction in energy, lowered self-esteem, social withdrawal and inability to experience pleasure; Manohar et al., 2017), because individuals cannot match the current societal beauty ideals (Tiggemann & Williams, 2011). The potential for objectification fosters habitual body monitoring, leaving someone with surpluses of shame and anxiety, a shortage

of peak motivational states, and scant awareness of internal bodily states. Repeated negative experiences such as these could spiral down into a depression, which in turn can interfere with the sexual response (Fredrickson & Roberts, 1997).

Confirming objectification theory, results of empirical studies showed that higher levels of body dissatisfaction are typically associated with more depressive symptoms (Bearman & Stice, 2008; Chen, Guo, Gong, & Xiao, 2015; Neumark-Sztainer, Paxton, Hannan, Haines, & Story, 2006; Sharpe et al., 2018). Subsequently, depression was found to be associated with more sexual problems, such as the lack of sexual drive, decreased sexual desire, and low libido (Baldwin, 2001; Chokka & Hankey, 2017). Depression may impair sexual functioning by diminishing the reward from engaging in a pleasurable activity, diminishing self-esteem and perception of body image, and interfering with desire to socialize and maintain personal relationships (Shapero, Mischoulon, & Cusin, 2019). Thus, according to objectification theory and results of prior studies, body dissatisfaction is positively linked to depression, which is, in turn, associated with experiencing more sexual dysfunction. Therefore, depression may explain the relationship between body dissatisfaction and sexual dysfunction and thus may serve as a mediator in this relationship.

It is important to note that, within this potential mediation, the role of gender should be taken into account, because prior research showed different results regarding the relationship between body dissatisfaction and depression in men and women. Griffiths and colleagues (2016) conducted research on gender differences in the relationship between body dissatisfaction and psychological distress, which contains the experience of various depressive and anxiety symptoms. The results revealed that for both men and women, more body dissatisfaction was associated with higher psychological distress, but this association was more pronounced in men compared to women. Thus, it appears that men with higher levels of body dissatisfaction may experience greater impairment in their psychological well-being than women (Griffiths et al., 2016). These results suggest that gender can serve as a moderator in the relationship between body dissatisfaction and depression, and therefore in the proposed mediation.

The present study aims to investigate the relationship between body dissatisfaction and sexual dysfunction, and the mediating role of depression in this relationship. Based on previous findings (e.g., Carvalheira et al., 2016; Van den Brink, 2017), a positive relationship between body dissatisfaction and sexual dysfunction is expected. In addition, based on objectification theory (Fredrickson & Roberts, 1997) and prior findings (e.g., Shapero et al., 2019; Sharpe et al., 2018), it is expected that depression serves as a mediator in the relationship between body dissatisfaction and sexual dysfunction. Third, based on findings of previous research (Griffiths et al., 2016), it is expected that gender serves as a moderator in the relationship between body dissatisfaction and depression. More specifically, it is expected that the association between body dissatisfaction and depression is stronger in men than it is in women.

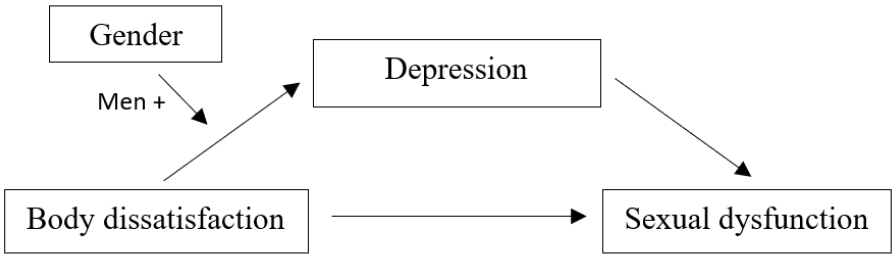

Figure 1. Schematic summary of the hypothesized relationship between body dissatisfaction and sexual dysfunction and the mediating role of depression. It is expected that the relationship between body dissatisfaction and depression is more apparent in men than in women.

Method

Participants and procedure

Participants were recruited through WhatsApp and Instagram using snowball sampling and convenience sampling. Via the social media applications, participants received a brief introduction about the study and were invited to take part in the online study "Research on sexuality, body image and depressive complaints". Inclusion criteria to participate in the study were that participants were at least 18 years old and were sexually active with a partner in the last 6 months. By clicking an anonymous link, participants could start the study. After completing an informed consent form, in which voluntary participation and anonymity were highlighted, participants filled out demographic questions (e.g., gender, age), and questions about their relationship status and sexual activity. Subsequently, questionnaires measuring sexual dysfunction, depression and body dissatisfaction were presented. On average, it took 15 minutes to complete the study.

Sample size calculations (Faul, Erdfelder, Lang, & Buchner, 2007; Fritz & MacKinnon, 2007) revealed that 71 participants would be required in order to detect medium effects (under guidelines from Cohen, 1988) with 80% power and a type I error rate of 5%. The estimated effect size was based on effects found in similar past research on the relationships between body dissatisfaction and depression (Griffiths et al., 2016) and depression and sexual dysfunction (Merwin, O'Sullivan, & Rosen, 2017). In total, 91 participants met the inclusion criteria and fully completed the questionnaires, of which 65 women and 26 men. The participants were between 20 and 65 years old, with a mean age of 26.21 (*SD* = 7.77). The highest level of completed or current education was secondary school in 5.5%, lower vocational education in 18.7%, higher vocational education in 25.3%, and university in 50.5% of the participants. Only 9 (9.9%) of the participants had a migration background, whereof 4 had a western migration background and 5 had a non-western migration background. Of all participants, 86 were heterosexual (94.5%), 5 were bisexual (5.5%) and nobody was homosexual. The majority had a romantic partner (75.8%, *n* = 69). The duration of the romantic relationship was less than 1 month in 1.4% (*n* = 1), between 1 and 6 months in 13.0% (*n* = 9), between 6 and 12 months in 4.3% (*n* = 3), between 1 and 2 years in 26.1% (*n* = 18), between 2 and 5 years in 31.9% (*n* = 22) and more than 5 years in 23.2% (*n* = 16).

Measures

Body dissatisfaction. Body dissatisfaction was measured using the Dutch version (Woertman, 1994) of the Appearance Evaluation subscale of the Multidimensional Body-Self Relation Questionnaire-Appearance Scales (MBSRQ-AS; Brown, Cash, & Mikulka, 1990). The AE subscale consists of 7 items, e.g., "I like the way I look without clothes on".

Participants responded to the items on a 5-point Likert scale, ranging from 'Disagree' to 'Agree'. Items were recoded if appropriate and averaged so that higher scores indicated more dissatisfaction with one's overall appearance (Cash, 2000). Research has supported the reliability and psychometric validity of this subscale (Vossbeck-Elsebusch et al., 2014; Roncero, Perpiña, Marco, & Sánchez-Reales, 2015). Cronbach's alpha in the current sample was .89 for women and .80 for men, which indicates good reliability (Gliem, & Gliem 2003).

Depression. The Dutch version (Sint-Augustinus Ziekenhuis Antwerpen, 2020) of the Beck Depression Inventory II (BDI-II; Beck, Steer, & Brown, 1996) was used to measure depression. The BDI-II consists of 21 items in total. One example is: "Sadness: I do not feel sad; I feel sad; I am sad all the time and I can't snap out of it; I am so sad and unhappy that I can't stand it". Participants responded on the items by choosing one out of four statements that were ranked in terms of severity and scored from 0 to 3. The statements related to common depressive symptoms, for example low mood, social withdrawal and irritability. Higher total scores indicated more severe depression. The following guidelines have been suggested to interpret the BDI-II (3): minimal range 0–13, mild depression 14–19, moderate depression 20–28, and severe depression 29–63 (Smarr & Keefer, 2011). A total score above 13 was considered as cutoff point, indicating depression. The psychometric reliability and validity of the BDI is supported by previous studies (Richter, 1998; Vossbeck-Elsebusch et al., 2014). Cronbach's alpha in the current sample was .86 for women and .68 for men, which indicates good reliability for women and acceptable reliability for men (Gliem & Gliem, 2003).

Sexual Dysfunction. To measure sexual dysfunction, the short form, clinical version of the Changes in Sexual Functioning Questionnaire for men and women was used (CSFQ-M-C, CSFQ-F-C; Clayton, McGarvey, & Clavet, 1997). As there is no validated Dutch version of the CSFQ, the back-translation method was used to assure the best possible quality and accuracy of the translated version (Brislin, 1970). The CSFQ consists of 14 items, corresponding to categories such as sexual desire/frequency, sexual desire/interest, sexual pleasure, sexual arousal/excitement and sexual orgasm/completion. An example of an item is: "How often do you desire to engage in sexual activity?". Participants responded to the items on a 5-point Likert scale, ranging from "never" to "every day", "no enjoyment or pleasure" to "great enjoyment or pleasure" or "never" to "always". Items were recoded if appropriate. Higher scores indicated more sexual dysfunction. The questionnaire is a reliable and valid measure of sexual functioning (Keller, McGarvey, & Clayton, 2006). Cronbach's alpha in the current sample was .76 for women and .76 for men, which indicates acceptable reliability (Gliem, & Gliem 2003).

Statistical Analysis

All statistical analyses were performed using IBM SPSS Statistics, version 25.
First, bivariate associations between the study variables were analyzed using Pearson correlation coefficients.

Second, a mediation analysis with body dissatisfaction as independent variable, depression as mediator and sexual dysfunction as dependent variable was conducted using model 4 of Hayes' Process Macro for SPSS (Hayes, 2018). The mediation analysis comprised three subanalyses. In the first subanalysis, the direct effect of body dissatisfaction on depression was tested using simple regression analysis. In the second subanalysis, the total and direct effect were estimated by means of a stepwise multiple regression analysis in which body dissatisfaction was entered in the first step and depression was entered in the second step. The total effect refers to the relationship between body dissatisfaction and sexual dysfunction, and the direct effect refers to the relationship between body dissatisfaction and sexual dysfunction while controlling for depression. In the third subanalysis, the indirect

effect of body dissatisfaction on sexual dysfunction through depression and its significance was determined with a bootstrap analysis containing 5000 bootstrap samples to calculate bias-corrected 95% confidence intervals (BCa 95% CI). Significance of the indirect effect was determined based on the presence or absence of the value 0 within the CIs.

Third, to test if gender served as a moderator in the indirect effect of body dissatisfaction on sexual dysfunction through depression, a moderated-mediation analysis was conducted using model 7 of Hayes' Process Macro (Hayes, 2018). In the analysis, the moderation of gender was determined by means of bootstrap analyses with 5000 bootstrap samples and bias corrected and accelerated 95% confidence intervals (BCa 95% CI). Again, significance was determined by means of the presence or absence of the value 0 within the CIs. In case gender served as a moderator, the index of moderated mediation was used to test the significance of the differences between the effects of men and women on the indirect effect. All coefficients will be reported in unstandardized form (Hayes, 2018).

Results

Descriptive Statistics and Bivariate Associations Between Body Dissatisfaction, Depression, and Sexual Dysfunction

Descriptive statistics for the study variables and bivariate correlations between these variables are reported in Table 1. Of all 91 participants, only 23 scored above the cut-off point on the BDI, indicating depression, whereof 15 of them had mild depression, 8 had moderate depression and nobody had severe depression. As expected, body dissatisfaction was positively correlated with sexual dysfunction. In addition, body dissatisfaction was positively correlated with depression and depression were positively correlated with sexual dysfunction.

Table 1

Descriptive Statistics and Bivariate Correlations Between Body Dissatisfaction, Depression and Sexual Dysfunction (N = 91).

Variable	*M* (SD)	Min.	Max.	1	2
1. Body dissatisfaction[a]	2.15 (.80)	1.00	4.29	-	-
2. Depression[b]	10.36 (7.29)	1	44	.38**	-
3. Sexual dysfunction[c]	31.85 (6.65)	16	48	.34**	.25*

Note. [a]Scale range: 1 - 5 with higher scores indicating more body dissatisfaction. [b]Scale range: 0 - 63 with higher scores indicating more severe depression. [c]Scale range: 14 - 70 with higher scores indicating more sexual dysfunction.

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

Total, Direct, and Indirect Effects of Body Dissatisfaction on Sexual Dysfunction through Depression

The simple regression analysis revealed a significant direct effect of body dissatisfaction on depression, b = 3.401, $t(89) = 3.817$, $p = .0002$, indicating that body dissatisfaction was associated with depression. A total of 14% of the variance in depression could be explained by body dissatisfaction, $F(1,89) = 14.572$, $p = .0002$.

The results of the stepwise multiple regression analysis (Table 2) showed a significant total effect of body dissatisfaction on sexual dysfunction in step 1 and a significant direct effect of body dissatisfaction on sexual dysfunction in step 2. Furthermore, in step 2, a nonsignificant direct effect of depression on sexual dysfunction was found. Body dissatisfaction and depression accounted for a significant 14% of the variance of sexual dysfunction.

The bootstrap analyses revealed a nonsignificant indirect effect of body dissatisfaction on sexual dysfunction through depression, b = .434, SE = .386, 95% CI [-.2368; 1.2832]. This indicated that, in contrast with the hypothesis, the relationship between body dissatisfaction and sexual dysfunction was not mediated by depression.

Table 2

Results of the Stepwise Regression Analysis with Sexual Dysfunction as Outcome: Total and Direct Effects of Body Dissatisfaction and Depression on Sexual Dysfunction.

Predictors	B step 1	B step 2
Step 1: adj. $R^2 = .12$, $F(1,89) = 11.962$***		
Body dissatisfaction	2.85***	2.41**
Step 2: adj. $R^2 = .14$, $F(2,88) = 6.885$**		
Depression		.13

Note. B in step 1 represents the total effect of body dissatisfaction on sexual dysfunction. B's in step 2 represent direct effects of body dissatisfaction and depression on sexual dysfunction.
*$p < .05$, **$p < .01$, ***$p < .001$.

Moderation by gender

The moderated mediation analysis revealed no significant interaction effect between body dissatisfaction and gender on depression, b = 2.324, $t(87) = .956$, $p = .342$. In addition, there was no significant indirect effect of body dissatisfaction for men, b = .2151, SE = .3508, 95% CI [-.6101; .8567], and women, b = .5115, SE = .4460, 95% CI [-.2623; 1.4582], on sexual dysfunction through depression. Being male or female did not affect the relationship of body dissatisfaction on sexual dysfunction through depression. Thus, in contrast with the hypothesis, gender did not serve as a moderator in the relationship between body dissatisfaction on sexual dysfunction through depression.

Discussion

The current study investigated the relationships of sexual dysfunction with body dissatisfaction and depression in Dutch men and women. More specifically, the mediating role of depression in the relationship between body dissatisfaction and sexual dysfunction was examined. Additionally, it was investigated if gender served as a moderator in the relationship between body dissatisfaction and sexual dysfunction through depression.

As expected, the results revealed that more body dissatisfaction was associated with higher levels of sexual dysfunction. These findings are in line with many previous studies that identified body dissatisfaction as an important predictor of dysfunctional and dissatisfying sexual experiences (e.g., Carvalheira et al., 2016; Silva et al., 2016; Van den Brink, 2017) and underline the detrimental effect a negative body image can have on sexual experiences. Also, the results showed that a positive relationship exists between body dissatisfaction and depression, which confirms preceding research that state body dissatisfaction is related to depression (e.g., Sharpe et al., 2018). Furthermore, depression was positively associated with sexual dysfunction. This replicates past studies indicating that depression interferes with sexual functioning and hinders sexual satisfaction (e.g., Chokka & Hankey, 2017).

In contrast with the expectation, the present findings did not confirm objectification theory (Fredrickson & Roberts, 1997) and previous research suggesting that depression underlies the relationship between body dissatisfaction and sexual dysfunction (e.g., Shapero et al., 2019). The results of the (moderated) mediation analysis revealed that, although significant positive bivariate associations between body dissatisfaction, depression and sexual dysfunction were found, depression did not serve as a mediator in the relationship between body dissatisfaction and sexual dysfunction. This was found in both men and women, which is in contrast with the expectation and with prior research (Griffiths et al., 2016).

One explanation for this unexpected outcome could be that not depression but the phenomenon 'sexual distress' may be relevant in the context of body dissatisfaction and sexual dysfunction. Sexual distress is characterized by negative feelings and anxiety about one's sexuality or sexual activities (Witting et al., 2008). Whereas in depression a more general, negative emotional state is experienced, in sexual distress the negative feelings specifically relate to a persons' sexual experiences and therefore, sexual distress may be more relevant than depression in the context of sexual dysfunction (Witting et al., 2008). Additionally, prior research mentions depression as well as sexual distress as factors that predominantly influence satisfaction with one's sexual experiences (Bancroft, Loftus, & Long, 2003; DeFronzo Dobkin, Leiblum, Rosen, Menza, & Marin, 2006; Peleg-Sagy & Shahar, 2013). This could mean that depression affects the subjective experience of sexual activity more than it affects the biological functions of the body during sexual activity. Therefore, a suggestion for future research on sexual problems is to focus on depression in relationship to sexual satisfaction instead of depression in relationship to the physical aspects of sexual functioning.

Another explanation for the unexpected outcome could be that the overall depression scores in the current sample were relatively low. Previous research showed that more severe depression resulted in more sexual dysfunction (Fabre & Smith, 2012; Fabre, Clayton, Smith, Goldstein, & Derogatis, 2013; Pastuszak, Badhiwala, Lipshultz, & Khera, 2013). However, in the current sample only 23 participants scored above cut-off, indicating depression, whereof none of them had severe depression. It may be that people with severe depression did not want to participate in the study or that participants with severe depression dropped out before completing the BDI, because of shame or insecurity about sharing their feelings. The resulting relatively low variation in scores on depression might have decreased the possibility of finding a relationship between depression and sexual dysfunction. Moreover, it may have lowered the possibility of finding gender differences in the relationship between body dissatisfaction and depression (e.g., Bearman & Stice, 2008). A suggestion for future research

on body dissatisfaction, sexual dysfunction and depression would be to include more men and women that suffer from severe depression.

Implications

The replication of the relationship between body dissatisfaction and sexual dysfunction in both men and women has implications for mental health practice. For instance, women more openly talk about the negative feelings they have about their bodies (Barwick, Bazzini, Martz, Rocheleau, & Curtin, 2012), while men tend to be more reserved in talking about their bodily concerns. Nevertheless, both men and women can deal with body dissatisfaction, which in turn can negatively affect sexual functioning. Since men are less likely to bring up their concerns about their physical appearance (Barwick et al., 2012), therapists should aim to address these issues equally with both men and women so that both can benefit from treatment.

Moreover, according to the results of the current study and previous studies, including body image interventions into the treatment of sexual dysfunctions seems valuable. For example, cognitive-behavioral body image therapy (body image CBT) seems to be promising in treating body dissatisfaction (Grant & Cash, 1995; Cash, Maikkula, & Yamamiya, 2004), which in turn, could improve sexual functioning. Not only group body image CBT and self-directed body image CBT, but also internet-based CBT is shown to be effective in improving sexual functioning and body image (Hummel et al., 2017). Another example for body image treatment is self-compassion meditation training. In line with the self-objectification theory (Fredrickson and Roberts, 1997), this training serves to take a more compassionate stance toward oneself, which decreases the sense of shame and other self-conscious emotions and increases body appreciation (Albertson, Neff, & Dill-Shackleford, 2015). Increasing positive feelings towards the body through these interventions could lead to more positive sexual experiences.

Limitations

Some limitations of this study should be acknowledged. First, due to the cross-sectional design of the current study, the direction of causation cannot be determined in the relationships between body dissatisfaction, depression and sexual dysfunction. Specifically, the relationships between body dissatisfaction, depression and sexual dysfunction in other directions are also possible.

Second, the current study included men as well as women in the sample, because, as mentioned before, recent research demonstrates that self-objectification and body dissatisfaction is becoming more apparent in men too (e.g., Strelan & Hargreaves, 2005). However, the present sample consisted of primarily heterosexual men and women without a migration background. This raises the question if the sample is representative of the general Dutch population. Importantly, prior research has shown that sexual and ethnic minorities in the Netherlands report problems in sexual experiences (Kuyper & Vanwesenbeeck, 2010; Vanwesenbeeck, Bakker, & Gesell, 2009). Therefore, it is suggested for future research to compose heterogeneous research samples by including more bisexual and homosexual men and women with a western or non-western migration background.

Conclusion

In conclusion, the results of the current study suggest that body dissatisfaction is an important predictor of dysfunctional sexual experiences in men as well as women. This replication has relevant implications for health practice. Although body dissatisfaction, depression and sexual dysfunction are interrelated, in both men and women the relationship between body dissatisfaction and sexual dysfunction was not explained through depression. Future research

should focus on more specific aspects of sexual functioning, e.g., sexual satisfaction, in the context of body dissatisfaction and depression. Since sexual problems as well as depression and body dissatisfaction are common among men and women in society nowadays, and since sexual dysfunction is importantly related to quality of life, expanding research on these topics is needed.

References

Albertson, E. R., Neff, K. D., & Dill-Shackleford, K. E. (2015). Self-compassion and body dissatisfaction in women: a randomized controlled trial of a brief meditation intervention. *Mindfulness, 6,* 444-454. https://doi.org/10.1007/s12671-014-0277-3

Allen, M. S., & Walter, E. E. (2018). Health-related lifestyle factors and sexual dysfunction: A meta-analysis of population-based research. *The Journal of Sexual Medicine, 15,* 458-475. https://doi.org/10.1016/j.jsxm.2018.02.008

Baldwin, D. S. (2001). Depression and sexual dysfunction. *British Medical Bulletin, 57,* 81-99. https://doi.org/10.1093/bmb/57.1.81

Bancroft, J., Loftus, J., & Long, J. S. (2003). Distress about sex: A national survey of women in heterosexual relationships. *Archives of Sexual Behavior, 32,* 193-208. https://doi.org/10.1023/A:1023420431760

Barwick, A., Bazzini, D., Martz, D., Rocheleau, C., & Curtin, L. (2012). Testing the norm to fat talk for women of varying size: What's weight got to do with it? *Body Image, 9,* 176-179. https://doi.org/10.1016/j.bodyim.2011.08.003

Bearman, S. K., & Stice, E. (2008). Testing a gender additive model: The role of body image in adolescent depression. *Journal of Abnormal Child Psychology, 36,* 1251–1263. https://doi.org/10.1007/s10802-008-9248-2

Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Manual for the Beck Depression Inventory-II.* San Antonio, TX: Psychological Corporation.

Brislin, R. W. (1970). Back-translation for cross-cultural research. *Journal of Cross-Cultural Psychology, 1,* 185-216. https://doi.org/10.1177/135910457000100301

Brown, T. A., Cash, T. F., & Mikulka, P. J. (1990). Attitudinal body-image assessment: factor analysis of the body-self relations questionnaire. *Journal of Personality Assessment, 55,* 135–144. https://doi.org/10.1080/00223891.1990.9674053

Cash, T. F. (2000). The Multidimensional Body-Self Relations Questionnaire. *MBSRQ Users' Manual* (third revision). Norfolk: Old Dominion University.

Cash, T., Maikkula, C., & Yamamiya, Y. (2004). Baring the body in the bedroom: Body image, sexual self-schemas, and sexual functioning among college women and men. *Electronic Journal of Human Sexuality, 7*. Retrieved from http://www.ejhs.org.proxy.library.uu.nl/volume7/bodyimage.html

Carvalheira, A., Godinho, L., & Costa, P. (2016). The impact of body dissatisfaction on distressing sexual difficulties among men and women: the mediator role of cognitive distraction. *The Journal of Sex Research, 54,* 331-340. https://doi.org/10.1080/00224499.2016.1168771

Cassano, P., Dording, C., Thomas, G., Foster, S., Yeung, A., Uchida, … Iosifescu, D. (2019). Effects of transcranial photobiomodulation with near-infrared light on sexual dysfunction. *Lasers in Surgery and Medicine, 51,* 127-135. https://doi-org.proxy.library.uu.nl/10.1002/lsm.23011

Chen, G., Guo, G., Gong, J., & Xiao, S. (2015). The association between body dissatisfaction and depression: An examination of the moderating effects of gender, age, and weight status in a sample of Chinese adolescents. *Journal of Psychologists and Counsellors in Schools, 25,* 245–260. https://doi.org/10.1017/jgc.2015.6

Clayton, A. H., McGarvey, E. L., & Clavet, G. J. (1997). The changes in sexual functioning questionnaire (CSFQ): Development, reliability, and validity. Psychopharmacology bulletin, 33, 731-745. Retrieved from https://www.researchgate.net/profile/Anita_Clayton/publication/13737215_The_Changes_in_Sexual_Functioning_Questionnaire_CSFQ_Development_reliability_and_validity/links/5462385d0cf2837efdaff37c.pdf

Chokka, P. R. & Hankey, J. R. (2018). Assessment and management of sexual dysfunction in the context of depression. *Therapeutic Advances in Psychopharmacology, 8,* 13-23. https://doi.org/10.1177/2045125317720642

Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences* (2nd ed.). New York, NY: Lawrence Erlbaum Associates.

DeFronzo Dobkin, R., Leiblum, S. R., Rosen, R. C., Menza, M., & Marin, H. (2006). Depression and sexual functioning in minority women: current status and future directions. *Journal of Sex and Marital Therapy, 32,* 23-36. https://doi.org/10.1080/00926230500229251

Fabre, L. F., Clayton, A. H., Smith, L. C., Goldstein, I. M., & Derogatis, L. R. (2013). Association of major depression with sexual dysfunction in men. *The Journal of Neuropsychiatry and Clinical Neurosciences, 25,* 308-318. https://doi.org/10.1176/appi.neuropsych.12010004

Fabre, L. F., & Smith, L. C. (2012). The effect of major depression on sexual function in women. *The Journal of Sexual Medicine, 9,* 231-239. https://doi.org/10.1111/j.1743-6109.2011.02445.x

Faul, F., Erdfelder, E., Lang, Albert-Georg, & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods, 39,* 175-191. https://doi.org/10.3758/BF03193146

Flynn, K. E., Lin, L., Bruner, D. W., Cyranowski, J. M., Hahn, E. A., Jeffery, D. D., … Weinfurt, K. P. (2016). Sexual satisfaction and the importance of sexual health to quality of life throughout the life course of US adults. *The Journal of Sexual Medicine, 13,* 1642-1650. https://doi.org/10.1016/j.jsxm.2016.08.011

Fredrickson, B. L., & Roberts, T. (1997). Objectification Theory: toward understanding women's lived experiences and mental health risks. *Psychology of Women Quarterly, 21,* 173-206. https://doi.org/10.1111/j.1471-6402.1997.tb00108.x

Fritz, M. S., & MacKinnon, D. P. (2007). Required sample size to detect the mediated effect. *Psychological Science, 18,* 233-239. https://doi.org/10.1111/j.1467-9280.2007.01882.x

Gil, S. (2007). Body image, well-being and sexual satisfaction: A comparison between heterosexual and gay men. *Sexual and Relationship Therapy, 22,* 237-244. https://doi.org/10.1080/14681990600855042

Gliem, J. A., & Gliem, R. R. (2003). *Calculating, Interpreting, and Reporting Cronbach's Alpha Coefficient for Likert-Type Scales.* Columbus: The Ohio State University. Retrieved from https://scholarworks.iupui.edu/handle/1805/344

Grant, J. R., & Cash, T. F. (1995). Cognitive-behavioral body image therapy: comparative efficacy of group and modest-contact treatments. *Behavior Therapy, 26,* 69-84. https://doi.org/10.1016/S0005-7894(05)80083-8

Griffiths, S., Hay, P., Mitchison, D., Mond, J. M., McLean, S. A., Rodgers, B., … Paxton, S. J. (2016). Sex Differences in the relationship between body dissatisfaction, quality of life and psychological distress. *Personal Identity and Health, 40,* 518-522. https://doi.org/10.1111/1753-6405.12538

Hayes, A. F. (2018). Introduction to mediation, moderation, and conditional process analysis (2nd ed.). New York, NY: Guilford Press.

Holt, A., & Lyness, K. P. (2007). Body image and sexual satisfaction. *Journal of Couple & Relationship Therapy, 6,* 45-68. https://doi.org/10.1300/J398v06n03_03

Hummel, S.B., van Lankveld, J.J.D.M., Oldenburg, H.S.A., Hahn, D.E.E., Kieffer, J.M., Gerritsma, M.A., … Aaronson, N.K. (2017). Efficacy of internet-based cognitive behavioral therapy in improving sexual functioning of breast cancer survivors: results of

a randomized controlled trial. *Journal of Clinical Oncology, 35,* 1328-1340. doi:10.1200/JCO.2016.69.6021

Keller, A., McGarvey, E. L., & Clayton, A. H. (2006). Reliability and construct validity of the changes in sexual functioning questionnaire short-form (CSFQ-14). *Journal of Sex & Marital Therapy, 32,* 43-52. https://doi.org/10.1080/00926230500232909

Kennedy, S. H., & Rizvi, S. (2009). Sexual dysfunction, depression, and the impact of antidepressants. *Journal of Clinical Psychopharmacology, 29,* 157-164. Doi: 10.1097/JCP.0b013e31819c76e9

Kuyper, L., & Vanwesenbeeck, I. (2010). Lesbian, gay, bisexual, and heterosexual adults: The role of sociodemographics, sexual behavior characteristics, and minority stress. *The Journal of Sex Research, 48,* 263-274. https://doi.org/10.1080/00224491003654473

Kvalem, I. L. K., Traeen, B., Markovic, A., & Soest, von T. (2019). Body image development and sexual satisfaction: A prospective study from adolescence to adulthood. *The Journal of Sex Research, 56,* 791-801. https://doi.org/10.1080/00224499.2018.1518400

Laumann, E. O., Paik, A. & Rosen, R. C. (1999). Sexual dysfunction in the United States: prevalence and predictors. *Journal of the American Medical Association, 281,* 537–544. doi:10.1001/jama.281.6.537

Lewis, R. W., Fugl-Meyer, K. S., Corona, G., Hayes, R. D., Laumann, E. O., Moreira, E. D., … Segraves, T. (2010). Definitions/Epidemiology/risk factors for sexual dysfunction. *The Journal of Sexual Medicine, 7,* 1598-1607. https://doi.org/10.1111/j.1743-6109.2010.01778.x

Manohar, J. S., Sathyanarayana Rao, T. S., Chandran, S., Maheshwari, S., George, M., Rao, S. S., & Sattar, F. A. (2017). Sexual dysfunctions in depression. *Clinical Depression, 3(3),* 1-5. doi:10.4172/2572-0791.1000125

McCabe, M., Sharlip, I. D., Lewis, R., Atalla, E., Balon, R., Fisher, A. D., … Segraves, R. T. (2016). Incidence and prevalence of sexual dysfunction in women and men: a consensus statement from the fourth international consultation on sexual medicine 2015. *The Journal of Sexual Medicine, 13,* 144-152. https://doi.org/10.1016/j.jsxm.2015.12.034

Merwin, K. E., O'Sullican, L. F., & Rosen, N. O. (2017) We need to talk: Disclosure of sexual problems is associated with depression, sexual functioning, and relationship satisfaction in women. *Journal of Sex & Marital Therapy, 43,* 786-800. https://doi.org/10.1080/0092623X.2017.1283378

Mirone, V., Ricci, E., Gentile, V., Basile Fasolo, C., & Parazzini, F. (2004). Determinants of erectile dysfunction risk in a large series of Italian men attending andrology clinics. *European urology, 45,* 87-91. https://doi.org/10.1016/j.eururo.2003.08.005

Moreira, E. D. Jr, Glasser, D. B., & Gingell, C. (2005). Sexual activity, sexual dysfunction and associated help-seeking behaviours in middle-aged and older adults in Spain: a population survey. *World Journal of Urology, 23,* 422-429. https://doi.org/10.1007/s00345-005-0035-1

Moreira, E. D. Jr, Hartmann, U., Glasser, D. B., & Gingell, C. (2005). A population survey of sexual activity, sexual dysfunction and associated help-seeking behavior in middle-aged and older adults in Germany. *European Journal of Medical Research,* 10, 434-443. Retrieved from https://www.semanticscholar.org/paper/A-population-survey-of-sexual-activity%2C-sexual-and-Moreira-Hartmann/886c3de5742e0c707edbdd8ccdeac5a614657079

Neumark-Sztainer, D., Paxton, S. J., Hannan, P. J., Haines, J., & Story, M. (2006). Does body satisfaction matter? Five-year longitudinal associations between body satisfaction and health behaviors in adolescent females and males. *Journal of Adolescent Health, 39,* 244–251. https://doi.org/10.1016/j.jadohealth.2005.12.001

Parazzini, F., Menchini Fabris, F., Bortolotti, A., Calabrò, A., Chatenoud, L., Colli, E., … Mirone, V. (2000). Frequency and determinants of erectile dysfunction in Italy. *European Urology, 37,* 43-49. https://doi.org/10.1159/000020098

Pastuszak, A. W., Badhiwala, N., Lipshultz, L. I., Khera, M. (2013). Depression is correlated with the psychological aspects of sexual dysfunction in men. *International Journal of Impotence Research, 25,* 194-199. https://doi.org/10.1038/ijir.2013.4

Peleg-Sagh, T., & Shahar, G. (2013). The prospective associations between depression and sexual satisfaction among female medical students. *The Journal of Sexual Medicine, 10,* 1737-1743. https://doi.org/10.1111/jsm.12176

Peplau, L. A., Frederick, D. A., Yee, C., Maisel, N., Lever, J., & Ghavami, N. (2009). Body image satisfaction in heterosexual, gay, and lesbian adults. *Archives of Sexual Behavior, 38,* 713-725. https://doi.org/10.1007/s10508-008-9378-1

Purton, T., Officar, C., Bullicant, B., Mitchison, D., Griffiths, S., Murray, S., & Mond, J. (2018). Body dissatisfaction, narcissism and self-esteem in young men and women: A moderated mediation analysis. *Personality and Individual Differences, 131,* 99-104. https://doi.org/10.1016/j.paid.2018.04.010

Richter, P., Werner, J., Heerlein, A., Kraus, A., & Sauer, H. (1998). On the validity of the Beck Depression Inventory. *Psychopathology, 31,* 160-168. https://doi.org/10.1159/000066239

Roncero, M., Perpiña, C., Marco, J. H., Sánchez-Reales, S. (2015). Confirmatory factor analysis and psychometric properties of the Spanish version of the Multidimensional Body-Self Relations Questionnaire-Appearance Scales. *Body Image, 14,* 47-53. https://doi.org/10.1016/j.bodyim.2015.03.005

Sanchez, D. T., & Kiefer, A. K. (2007). Body concerns in and out of the bedroom: Implications for sexual pleasure and problems. *Archives of Sexual Behavior, 36,* 808–820. https://doi.org/10.1007/s10508-007-9205-0

Shapero, B. G., Mischoulon, D., & Cusin, C. (2019). *The Massachusetts general hospital guide to depression: New treatment insights and options.* https://doi.org/10.1007/978-3-319-97241-1

Sharpe, H., Patalay, P., Choo, T., Wall, M., Mason, S. M., Goldschmidt, A. B., Neumark-Sztainer, D. (2018). Bidirectional associations between body dissatisfaction and depressive symptoms from adolescence through early adulthood. *Development and Psychopathology, 30,* 1447-1458. https://doi.org/10.1017/S0954579417001663

Silva, E., Pascoal, P. M., & Nobre, P. (2016). Beliefs about appearance, cognitive distraction and sexual functioning in men and women: A mediation model based on cognitive theory. *The Journal of Sexual Medicine, 13,* 1387-1394. https://doi.org/10.1016/j.jsxm.2016.06.005

Sint-Augustinus Ziekenhuis Antwerpen (2020). *Tinnitus vragenlijsten: BDI.* Retrieved from https://neus-keel-oor.be/nl/nko/oor/onderzoeken/tinnitus_vragenlijsten/

Smarr, K. L., & Keefer, A. L. (2011). Measures of depression and depressive symptoms: Beck Depression Inventory-II (BDI-II), Center for Epidemiologic Studies Depression Scale (CES-D), Geriatric Depression Scale (GDS), Hospital Anxiety and Depression Scale (HADS), and Patient Health Questionnaire-9 (PHQ-9). *Arthritis Care & Research, 63,* 454-466. https://doi.org/10.1002/acr.20556

Strelan, P., & Hargreaves, D. (2005). Reasons for exercise and body esteem: men's responses to self-objectification. *Sex Roles, 53,* 495-503. https://doi.org/10.1007/s11199-005-7137-5

Tiggemann, M., & Williams, E. (2012). The role of self-objectification in disordered eating, depressed mood, and sexual functioning among women: A comprehensive test of objectification theory. *Psychology of Women Quarterly, 36,* 66-75. https://doi.org/10.1177/0361684311420250

Træen, B., Markovic, A., & Kvalem, I. L. (2016). Sexual satisfaction and body image: a cross-sectional study among Norwegian young adults. *Sexual and Relationship Therapy, 31,* 123-137. https://doi.org/10.1080/14681994.2015.1131815

Van den Brink, F. (2017). *Body image in a sexual context: The relationship between body image and sexual experiences.* (Doctoral dissertation, Utrecht University, Utrecht, the Netherlands). Retrieved from https://dspace.library.uu.nl/handle/1874/350126

Van den Brink, F., Vollmann, M., Smeets, M. A. M., Hessen, D. J., & Woertman, L. (2018b). Relationships between body image, sexual satisfaction, and relationship quality in romantic couples. *Journal of Family Psychology, 32,* 466–474. https://doi.org/10.1037/fam0000407

Van den Brink, F., Vollmann, M., Sternheim, L. C., Berkhout, L. J., Zomerdijk, R. A., & Woertman, L. (2018a). Negative body attitudes and sexual dissatisfaction in men: The mediating role of body self-consciousness during physical intimacy. *Archives of Sexual Behavior, 47,* 693-701. https://doi.org/10.1007/s10508-017-1016-3

Vanwesenbeeck, I., Bakker, F., & Gesell, S. (2010). Sexual health in the Netherlands: Main results of a population survey among Dutch adults. *International Journal of Sexual Health, 22,* 55-71. https://doi.org/10.1080/19317610903425571

Vossbeck-Elsebusch, A. N., Waldorf, M., Legenbauer T., Bauer, A., Cordes, M., & Vocks, S. (2014). German version of the Multidimensional Body-Self Relations Questionnaire - Appearance Scales (MBSRQ-AS): Confirmatory factor analysis and validation. *Body Image, 11,* 191-200. https://doi.org/10.1016/j.bodyim.2014.02.002

Witting, K., Santtila, P., Varjonen, M., Jern, P., Johansson, A., von der Pahlen, B., & Sandnabba, K. (2008). Female sexual dysfunction, sexual distress, and compatibility with partner. *The Journal of Sexual Medicine, 5,* 2587-2599. https://doi.org/10.1111/j.1743-6109.2008.00984.x

Woertman, L. (1994). *Beelden van een lichaam. Mentale representaties van lichaamsbeelden.* Lisse: Swets & Zeitlinger.

Woertman, L., & van den Brink, F. (2012). Body image and female sexual functioning and behavior: A review. *The Journal of Sex Research, 49,* 184-211. http://dx.doi.org/10.1080/00224499.2012.658586