

Mechanisms underlying the association between perceived discrepancy in sexual interest and sexual satisfaction among partnered older adults in four European countries

Fischer, N.; Træen, B.; Štulhofer, Aleksandar; Hald, G. M.

Source / Izvornik: **European Journal of Ageing, 2019, -**

Journal article, Accepted version

Rad u časopisu, Završna verzija rukopisa prihvaćena za objavljivanje (postprint)

<https://doi.org/10.1007/s10433-019-00541-x>

Permanent link / Trajna poveznica: <https://urn.nsk.hr/urn:nbn:hr:131:201300>

Rights / Prava: [In copyright](#)

Download date / Datum preuzimanja: **2021-02-25**



Repository / Repozitorij:

[ODRAZ - open repository of the University of Zagreb Faculty of Humanities and Social Sciences](#)



Mechanisms underlying the association between perceived discrepancy in sexual interest and sexual satisfaction among partnered older adults in four European countries 

Fischer, N^{1.}, Træen, B^{1.}, Štulhofer, A^{2.}, & Hald, G. M^{3.}

¹ Department of Psychology, University of Oslo, Oslo, Norway

² Department of Sociology, University of Zagreb, Zagreb, Croatia

³ Department of Public Health, University of Copenhagen, Copenhagen, Denmark

Corresponding author:

Nantje Fischer

Forskningsveien 3A,

0373 Oslo

nantje.fischer@psykologi.uio.no

Abstract

The ways in which the discrepancy between one's own interest in sex and that of one's partner may affect personal sexual satisfaction has rarely been systematically studied, especially among older adults. Previous research among younger adults indicates that a discrepancy in sexual desire can be detrimental in terms of several relationship outcomes, including sexual satisfaction. This study aimed to investigate a conceptual model of sexual satisfaction among coupled older adults which posits that the association between perceived discrepancy in sexual interest and sexual satisfaction is mediated by the frequency of sexual activity and emotional closeness during sex. Data from a probability-based postal survey that included 2,695 partnered heterosexual adults aged 60–75 years from four European countries (Norway, Denmark, Belgium, and Portugal) were used to test the mediation model. Due to expected gender differences in the two mediators, all analyses were carried out separately for men and women. The findings supported the proposed model, suggesting that as an individual's perception of a discrepancy in sexual interest increases, his or her levels of sexual frequency and perceived closeness during sex decrease—which in turn diminishes sexual satisfaction. The results of this study provide insights into links among sexual interest, sexual frequency, emotional closeness, and sexual satisfaction in older adults, and point to substantial similarities in the sexuality of aging men and women in this regard.

Keywords: perceived sexual desire discrepancy, sexual activity, emotional closeness, sexual satisfaction, older adults' sexuality

Introduction

Background

Many studies show that sexual satisfaction in later life is related to positive life outcomes such as greater life satisfaction, higher relationship quality, better health, and higher self-esteem (Choi et al. 2011; Heywood et al. 2018; Stroepe et al. 2015; Thompson et al. 2011; Woloski-Wruble et al. 2010). Further, more recently aspects of sexuality have been linked to successful aging (Štulhofer et al. 2018, 2019; Thompson et al. 2011; Woloski-Wruble et al. 2010). For instance, a study among older European couples found a significant association between successful aging, defined by psychological health, satisfaction with life, social connectedness, and sexual satisfaction (Štulhofer et al. 2019).

In general, it seems that considerable numbers of older adults are satisfied with their overall sex life (Beckman et al. 2008; Bucher et al. 2003; Field et al. 2013; Heywood et al. 2018; Huang et al. 2009; Stroepe et al. 2015; Træen et al. 2017a; Wang et al. 2015). Nevertheless, there are also challenges related specifically to late-life sexuality (Schwartz et al. 2014). Older age can affect sexual satisfaction and sexual well-being through poorer general health, age-related chronic diseases, diminished sexual function, and/or psychological factors (Field et al. 2013; Laumann et al. 2006; Rosen et al. 2016; Schick et al. 2010; Syme et al. 2013; Træen et al. 2017a). Moreover, the interpersonal context can also negatively interfere with individuals' sexual satisfaction, such as through partner's lowered health or sexual functioning, poor communication, and/or negative spousal interaction (Rosen et al. 2016; Scott et al. 2012; Stroepe et al. 2015; Syme et al. 2013; Træen et al. 2017a).

An issue that seems to be essential for the quality and satisfaction of older adults' sexual lives is how much couples coincide, or in other words, are not divergent in several sexual aspects. For instance, there is evidence that concepts such as sexual asynchronicity, low sexual compatibility, incongruity in the importance assigned to sex, and discrepancy in

sexual desire are negatively related to sexual and/or relationship outcomes (Gillespie 2017a, b; Offman and Matheson 2005; Orr et al. 2019; Willoughby et al. 2014). For instance, in a non-probability online survey of older adults aged 50–85 years “synchronicity in sexual desire” was significantly related to high levels of partnered sexual activity and high sexual satisfaction (Gillespie 2017a, p. 416). According to Gillespie’s (2017b) multidimensional model of sexual synchronicity, older adults’ sexual activity and sexual satisfaction is influenced by three types of sexual synchronicity (situational, behavioral, and attitudinal synchronicity) and by the openness in communication between partners. Situational asynchronicity (external factors interrupting the couple’s sexual frequency, i.e. health and/or sexual problems), behavioral asynchronicity (dissimilarities in sexual interests and sexual preferences), and attitudinal asynchronicity (incompatible attitudes towards sexuality, i.e. the importance of sex) were found to be related to low reported sexual satisfaction and low sexual frequency (Gillespie 2017b). Moreover, discrepancies in sexual interest/desire among aging adults have been found to be associated with distress and relationship conflict (Hartmann et al. 2004; Lodge and Umberson 2012).

Thus, despite knowing that age-specific circumstances might challenge sexual health in older age (Træen et al. 2017b) and the importance of the interrelational context on sexuality (Gillespie et al. 2017), to the best of our knowledge there are no studies exploring how perceived discrepancy in sexual interest between partners might affect sexual satisfaction among older adults (for an exception see Gillespie 2017a, b). Research on sexual desire discrepancy among younger adults, however, indicates negative associations between desire discrepancy and relational factors, such as lowered sexual satisfaction, relationship satisfaction, decreased quality of sexual interactions, less sexual contact, more reported couple conflicts, and less positive interpersonal communication (Bridges and Horne 2007; Davies et al. 1999; Mark 2014; Mark and Murray 2012; Willoughby et al. 2014). Using a

national probability-based sample of individuals 60–75 years old from four European countries (Norway, Denmark, Belgium, and Portugal), this study addresses the association between perceived discrepancy in sexual interest and sexual satisfaction, and explores if/how this association is mediated by sexual frequency and emotional intimacy during sex (see Figure 1 for our conceptual model).

Figure 1 (about here)

Conceptual Framework

The Interpersonal Exchange Model of Sexual Satisfaction (Lawrance and Byers 1995) may explain the reasons that discrepancy in sexual interest between partners adversely affects sexual satisfaction. According to this model, sexual satisfaction is the result of the perceived level of sexual rewards and costs that partners experience in their relationship. Furthermore, the model states that the balance of sexual rewards to costs is appraised relative to what one expects that one deserves in the relationship, and by the perceived equality between one's own sexual costs/rewards and those of one's partner. Several studies have shown that sexual satisfaction increases or decreases relative to the history of either favorable or unfavorable sexual encounters between partners (Byers and Macneil 2006; Lawrance and Byers 1995). Accordingly, greater (actual or perceived) discrepancy in sexual interest between partners may indicate that previous sexual interactions have had a higher cost and were less rewarding than expected, which in turn, decreased sexual satisfaction. This complements the findings of previous research, which has shown that a discrepancy in sexual desire adversely affects the quality and frequency of sexual interaction, as well as personal sexual satisfaction (Bridges and Horne 2007; Gillespie 2017a; Mark 2014; Mark and Murray 2012). In particular, a study which used a daily diary approach found that on days when there was a greater discrepancy between partner's interest in sex, women, perceived the sexual encounter as lower in quality (Mark 2014). Another study among women in same-sex relationships found negative

associations between problematic desire discrepancy and frequent sexual contact, and sexual satisfaction (Bridges and Horne 2007). This suggests that an increased discrepancy in sexual interest will diminish the frequency of mutually rewarding sexual interactions, which in turn decreases an individual's sexual satisfaction.

Research on factors related to women's sexuality seems to emphasize the centrality of emotional factors such as closeness, bonding, commitment, love, affection, acceptance, and tolerance (Basson 2000, 2002). For instance, according to Basson's Alternative Sexual Response Cycle (2000), a woman's sexual response cycle is retroactively strengthened by mainly non-sexual rewards, such as increased emotional closeness with her partner. The model was particularly tailored for women in long-term relationships and suggests that, compared to women, men's sexual response cycle is less dependent on contextual factors. However, Basson adds that emotional rewards are not irrelevant to men, but may be less often the core motivators prompting them to seek, or be receptive to, sexual contact. This complements the findings of previous research indicating that men's sexuality is more grounded in physical qualities such as sexual frequency and variation (Baumeister 2000; Lawrance and Byers 1995; McNulty and Fisher 2008; Peplau 2003; Regan and Bersched 1996; Sánchez-Fuentes et al. 2014). In contrast, more recent studies suggest that emotional intimacy is also important for men's sexual desire and satisfaction (Ferreira et al. 2014; Janssen et al. 2008; Mark and Lasslo 2018; Štulhofer et al. 2014). For instance, a focus group study of men aged 18–70 years indicated that feelings of emotional connectedness were central for men's sexual arousal and desire, which was particularly important among older men (Janssen et al. 2008).

Thus, according to Basson's model (2000, 2001), a history of rewarding sexual encounters in terms of sexual and/or nonsexual benefits (e.g. bonding, acceptance, commitments, affection, love and emotional closeness) in turn serve as strong motivators for

responding to and seeking sexual stimuli, and thus reinforce the positive sexual response cycle of individuals and couples. However, in the case of previous negative and disappointing experiences, such as, for example, conflicts due to discrepancy in sexual desire or negative feelings related to past sexual encounters, the couple's positive sexual response cycle may be disrupted (Basson 2001; Lee et al. 2016). Both a rejection of a partner's sexual invitations or being frequently rejected are often related to negative feelings, such as guilt, anger, anxiety, sadness, frustration, lower self-esteem, and feelings of being a sexually incompetent partner (Træen 2008). Accordingly, a perceived discrepancy in sexual interest is likely to inhibit feeling emotionally close to one's partner, which decreases sexual satisfaction and weakens the couple's sexual response cycle.

Based on the proposed theoretical rationale and previous research, three specific hypotheses are tested in this study:

Hypothesis 1: We hypothesize that there is a negative association between participants' perceived discrepancy in sexual interest and personal sexual satisfaction in both men and women.

Hypothesis 2: We hypothesize that the link between perceived discrepancy in sexual interest and sexual satisfaction is mediated by an individual's intercourse activity. The assumed mechanism behind the association is that a perceived imbalance in sexual interest between partners diminishes pleasurable and rewarding sexual intercourse, which decreases personal sexual satisfaction.

Hypothesis 3: We hypothesize that the association between the perceived discrepancy in sexual interest and personal sexual satisfaction is mediated by participants' feelings of emotional closeness to their partner during sex. We expect that perceiving an imbalance in sexual interest will be negatively related to emotional closeness during sex, which in turn will be negatively associated with personal sexual satisfaction.

Methods

Participants and Procedure

From October 2016 to February 2017, a study on healthy sexual aging was carried out using national probability-based samples of individuals aged 60–75 years from Norway, Denmark, Belgium, and Portugal. A benchmark of 700–800 individuals was set for each country with the final sample including 3,814 individuals (1,760 men and 2,054 women): 1,270 from Norway, 1,045 from Denmark, 990 from Belgium, and 509 from Portugal. Data collection in the four respective countries was conducted by the polling organization Ipsos. Potential participants were recruited by phone. Both during the recruitment interview and in the information letter it was stressed that all responses were equally important to the study, independent of whether one is sexually active/inactive or has a partner or no partner. In Norway, Denmark, and Belgium, national phone registries (landline and mobile) were used to draw the samples from each country. However, due to the non-existence of an updated and complete telephone registry in Portugal, the polling agency had to implement standard multi-stage stratified sampling, which is typically used for public opinion surveys in this country. Shortly after the recruitment interviews, self-administered questionnaires were sent out through the mail to those who agreed to participate. Due to delivery problems of the printed questionnaire to Ipsos in Lisboa, the recruitment process in Portugal was somewhat delayed. All prospective participants received an information letter in which they were informed about the project's background and purpose, the confidentiality of their responses, the voluntariness of participation, and that they should fill out the questionnaire alone without letting anyone see their responses. Reminders were sent out continuously approximately a week after the participants received their first letter. Due to a low response rate in Portugal compared to the other countries, Ipsos decided to make the reminders by phone in Portugal. Approximately 500 of the 2,000 Portuguese who had accepted to participate in the recruitment interview

could not be reached again, and of the 1,498 who had been reached again 37% declined to participate after they had seen the survey questions. The participation rates (those who agreed to participate and returned the survey) were 68.2% in Norway, 52.3% in Denmark, 56.9% in Belgium, and 25.5% in Portugal. More details about the sampling methods and data collection have been described elsewhere (Træen et al. 2018a). All analyses in this paper were restricted to individuals who reported that they were in a heterosexual committed relationship (including married/cohabiting individuals), which reduced the sample size to 1,392 men and 1,303 women.

Measures

Sexual satisfaction was measured by the following question: ‘Thinking about your sex life in the last year: All things considered, how satisfied are you with your sexual life?’ The response categories were evaluated on a 5-point scale which ranged from 1 = completely dissatisfied to 5 = completely satisfied.

Perceived discrepancy in sexual interest was measured by two separate items: ‘My partner has no interest in sex’ (Perception of partner’s interest in sex) and ‘I am not interested in sex’ (Personal interest in sex). The participants were asked to indicate their level of agreement with each statement using a scale which ranged from 1 = strongly agree to 5 = strongly disagree. To examine discrepancy in sexual interest, a new variable was constructed to represent the difference between one’s own sexual interest and perception of the sexual interest of one’s partner. Zero indicated no discrepancy. For men, the mean scoring on the discrepancy variable was negative, indicating that men tended to perceive their own sexual interest as higher than that of their partner (mean = $-.59$; $SD = 1.1$, range = -4.0 to 3.0). Contrary to men, most women tended to perceive their own sexual interest as lower than their perception of that of their partner (mean = $.17$; $SD = 1.0$, range = -4.0 to 4.0). This means that the scoring of men and women moved in opposite directions. However, in this study, we will

argue that the degree of discrepancy is the most important factor in determining satisfaction, not the direction in which men and women tend to score. For this reason, the discrepancy variable used in the multivariate analyses was calculated as the absolute scores of participants' own sexual interest and the perceived sexual interest of the partner. Responses for the new variable ranged from 0 to 4, with 0 indicating no discrepancy, and higher scores reflecting an increasing discrepancy.

Intercourse frequency was measured by the question previously used in Lee et al. (2016): 'How many times have you had or attempted sexual intercourse (vaginal, anal, or oral sex) during the past month?' The response options were 1 = none to 7 = more than once a day.

Emotional closeness during sex was assessed by the following item: 'Thinking about your relationship with your partner, how often does this apply to your situation: I feel emotionally close to my partner when we have sex together'. The response options were 1 = Always, 2 = Most of the time, 3 = Sometimes, 4 = Not very often, 5 = Hardly ever. The item was reverse scored (higher scores reflect higher levels of perceived emotional closeness during sex).

Statistical Analysis

Hayes' PROCESS, a macro for IBM SPSS statistical software package, was used to test the *parallel multiple mediation model* (Hayes 2018). In order to formally test whether there is statistical evidence of mediation, Hayes proposes bootstrapping a 95% confidence interval around indirect effects (path a_1b_1 and path a_2b_2 , respectively; see Figure 1). For cases in which the interval does not include zero, mediation is confirmed. Here, we used bootstrapping with 10,000 resamples to formally test the hypothesized mediation. Because we were exploring older adults' sexual relationships, participants who reported that they never had had any sexual activity (sexual intercourse, masturbation, petting, or fondling)

(3%) were excluded from the mediation analysis. Of the remaining 2,727 partnered respondents, 1,234 (91%) heterosexual men and 1,082 (88%) heterosexual women had data available for all variables in the mediation analysis. In total, 2% of the studied men and 3% of women had missing data on the outcome variable (sexual satisfaction), 7% had missing data on the predictor variable (perceived discrepancy in sexual interest), 2% of men and 3% of women had missing data on the mediator sexual frequency, and 5% of men and 7% of women had missing data on the mediator emotional closeness during sex. Only complete cases (CC) were included in the mediation analysis (Hayes 2018). Conducting multiple imputation (MI) for all model variables suggested no substantial differences in direction or size of the regression coefficients of most predictors and the outcome, except for the regression coefficient a_1 (both men and women), which seemed somewhat overestimated in the complete case analysis (men: $b_{CC} = -.34$ vs. $b_{MI} = -.24$; women: $b_{CC} = -.39$ vs. $b_{MI} = -.28$). All statistical analyses were carried out in IBM SPSS 24.0.

Results

Sample Characteristics

Table 1 presents the sociodemographic and partner related characteristics of the sample. Both men and women had a mean age of 67 years. With regard to the level of education, most participants reported either secondary (40% of men and 44% of women), or tertiary education (43% of men and 37% of women). Most participants, (more men than women) were retired from paid work (74% and 71%, respectively) and had been in their relationship for 30 years or more. The majority of participants reported that they had been sexually active (sexual intercourse, masturbation, petting, or fondling) in the past year (92% of men and 85% of women). However, the proportion of having had or attempted sexual intercourse (vaginal, anal, or oral) in the past month were somewhat lower with 74% of men and 67% of women reporting any intercourse activity in the past month.

The majority of surveyed individuals reported no perceived discrepancy between their own level of sexual interest and that of their partner (60% of men and 69% of women). However, more than one-third of men (37%) reported that their female partner was less interested in sex than they were. The respective proportion was substantially lower among women (10%).

Insert Table 1 about here

Table 2 presents the mean scores of sexual satisfaction, emotional closeness during sex, sexual frequency, and three sexual interest variables (personal interest in sex, perceived partners interest in sex, and perceived discrepancy in sexual interest), as well as their intercorrelations, separately for men and women. Most participants disagreed with the statement that they or their partner had no interest in sex. On average, men and women reported intercourse activity (vaginal, anal, or oral sex) between once a month, and two to three times in the past month. Most of the time, participants felt emotionally close to their partner during sex.

Insert Table 2 about here

The highest bivariate correlation found in men appeared between the perception of their partner's interest in sex and the perceived discrepancy in sexual interest ($r = -.75$; $p < .001$). In women, the highest correlation was found between the perception of the partner's interest in sex and intercourse activity ($r = .54$; $p < .001$). In men, the weakest bivariate correlation was between their personal interest in sex and the perceived discrepancy in sexual interest ($r = .07$; $p < .05$). In women, the weakest correlation was between the perception of their partner's interest in sex and the perceived discrepancy in sexual interest ($r = -.19$; $p < .001$).

Multiple mediation analysis

Multiple mediation analysis was carried out separately for men (Table 3) and women (Table 4) to test the hypothesized structure of the associations in the proposed model.

Hypothesis 1. We found a direct association between perceived discrepancy in sexual interest and personal sexual satisfaction in both aging men ($b = -.24; p < .001$), and women ($b = -.18; p > .001$).

Hypothesis 2. Sexual frequency significantly mediated the association between the perception of a discrepancy in sexual interest and personal sexual satisfaction in both men (estimate = $-.11$, 95% BCI [$-.132, -.083$]), and women (estimate = $-.12$, 95% BCI [$-.151, -.095$]). Aging men and women who perceived a discrepancy between their personal interest in sex and that of their partner experienced lower levels of intercourse activity, which in turn is negatively associated with their level of sexual satisfaction.

Insert Table 3 and 4 about here

Hypothesis 3. Emotional closeness during sex also significantly mediated the key association in both men (estimate = $-.04$, 95% BCI [$-.062, -.026$]), and women (estimate = $-.05$, 95% BCI [$-.080, -.032$]). Aging men and women who perceived an imbalance between their personal interest in sex and that of their partner experienced lower emotional closeness during sex, which in turn is negatively related to their level of sexual satisfaction.

Discussion

The aim of this study was to investigate mechanisms underlying the association between perceived discrepancy in sexual interest and sexual satisfaction among partnered older adults. We found that both intercourse activity and perceived emotional closeness during sex significantly mediated the association between perceived discrepancy in sexual interest and sexual satisfaction.

Confirming Hypothesis 1, we found that those who perceived a greater discrepancy in sexual interest had lower personal sexual satisfaction for both men and women. This finding is similar to that of Davies et al. (1999), who examined the individual's perception of a sexual desire discrepancy among young couples and found that perceived desire discrepancy was

associated with lower sexual satisfaction, which in turn diminished relationship satisfaction. Likewise, empirical support has been obtained for the detrimental impact of incompatibilities in sexual interest among older adults (Hartmann et al. 2004; Heywood et al. 2018; Lee et al. 2016). Accordingly, it has been found that the individual with higher sexual interest may experience a mismatch between the desired or expected sexual activity and the “actual” frequency, which in turn is shown to be negatively associated with sexual satisfaction in both older men and women (Heywood et al. 2018). Conversely, the person with lower interest in sex may feel obligated to accept sexual invitations or initiate sexual interaction (Hartmann et al. 2004), which in turn is shown to be associated with increased concerns about the overall sex life in older men and increased dissatisfaction in older women (Lee et al. 2016).

Pertaining to our second study hypothesis, we found that the association between perceived discrepancy and personal sexual satisfaction was mediated by the frequency of sexual activity. This confirms our second study hypothesis and indicates that when men and women perceive a discrepancy in their own interest in sex and that of their partner, the frequency of intercourse is reduced; as a result, the overall level of sexual satisfaction decreases. This corresponds well with previous research that has shown a negative relationship between the discrepancy in the partner’s sexual interest and frequency of sexual contact (Bridges and Horne 2007), as well as the quality of sexual experiences (Mark 2014). Moreover, many studies have shown a significant association between partnered sexual activity and sexual satisfaction (DeLamater et al. 2008; Fisher 2010; Heiman et al. 2011; Heywood et al. 2018; Kontula and Haavio-Mannila 2009; Lee et al. 2016; Stroope et al. 2015). Within the context of the Interpersonal Sexual Exchange Model of Sexual Satisfaction (Lawrance and Byers 1995), a couple’s discrepancy in sexual interest may reflect an unfavorable balance between sexual costs and rewards, which in turn is likely to adversely affect sexual contact and personal sexual satisfaction.

In Hypothesis 3, we proposed that as men and women perceive an increasing discrepancy between their own interest in sex and that of their partner, they feel less emotionally connected during sexual interactions, which is negatively related to their sexual satisfaction. Our data confirmed this hypothesis. The finding is consistent with previous research, which shows a negative link between reduced sexual desire and satisfaction with emotional closeness during sex (Rosen et al. 2016). For instance, Rosen et al. (2016) found that women whose partners lacked interest in sex for one month or longer reported less sexual satisfaction and less satisfaction with the amount of emotional closeness during sexual activity. Our findings are also consistent with Basson's (2001, 2002) alternative female response cycle, where previous negative sexual experiences (caused by, for example, discrepancy in sexual interest) can lead to avoidance of sexual interaction in women. Although the model proposes that emotional rewards are more central to the sexual response cycle of women than to that of men (Basson 2000), recent studies suggest that emotional factors are also relevant to men's sexual desire and sexual satisfaction (Ferreira et al. 2014; Mark and Lasslo 2018; Štulhofer et al. 2014), and that this may hold particularly true for older men (Basson 2001, 2008; Janssen et al. 2008; Træen et al. 2018b). Accordingly, the finding that the relationship between perceived discrepancy in sexual interest and personal sexual satisfaction was negatively mediated by emotional closeness during sex for both genders, supports Basson's model of the female sexual response cycle, while extending the response cycle as one that is also valid for older men.

When evaluating the study findings, some limitations have to be taken into consideration. Although our mediation model describes a causal process owing to the cross-sectional data used in the analysis, causality is not implied by our study, which was only able to establish and test non-causal associations in the proposed model (Hayes 2018). Even though during the recruitment phase it was emphasized that we were interested in all

responses independent of whether one had a sexual life or not, we can reasonably assume that older adults who were more sexually active and/or who had more liberal attitudes towards sex were more likely to participate in our study compared to those who had more conservative views of sexuality, were sexually inactive, and/or had no interest in sex (Boughner 2010). For instance, previous research has confirmed a volunteer bias in sex surveys, indicating that volunteers in sex studies generally have more sexual experience, more positive attitudes towards sexuality, more interest in new sexual experiences, and less feelings of sexual guilt than nonvolunteers (Bogaert 1996; Dunne et al. 1997; Strassberg and Lowe 1995). This volunteer bias might threaten the generalizability of the research findings and might particularly concern the Portuguese sample due to the high refusal rate of those who had initially accepted participation but then declined to answer after they had seen the questionnaire (Boughner 2010). In view of the less reliable sampling procedure in Portugal and the comparatively low response rate in the Portuguese sample, the generalizability of the findings might be problematic (Træen et al. 2018a). Finally, at the onset of the research project the selection of countries for this study was intended to depict the geographical variation of northern, southern, eastern, and western Europe. However, due to challenges in finding research collaborators from eastern Europe and restraints in terms of funding, the selection of countries is rather mirroring the country affiliations of the research group members (Štulhofer et al. 2019).

Conclusion

This study identified a significant association between perceived discrepancy in sexual interest and sexual satisfaction among partnered older adults across four European countries. Further, this association was negatively mediated by the frequency of sexual activity and perceived emotional closeness during sex. Accordingly, the findings suggest that as older adults perceive a discrepancy between their own interest in sex and that of their

partners, their level of intercourse activity is reduced, and they tend to feel less emotionally connected during sex; this, in turn, diminishes their sexual satisfaction. Moreover, the study findings support previous suggestions regarding the complexity of the sexual response of not only women but also men (Ferreira et al. 2014; Štulhofer et al. 2014). Age-related changes in sexual functioning might change the dynamics in sexual interest within aging couples' sexual relationships. Important for specialists working with older adults is that sexual satisfaction should not be seen as an individual but as a relational outcome, dependent on whether an individual is perceiving synchronicity between their own interest in sex and that of their partner.

References

- Basson R (2000) The female sexual response: a different model. *J Sex Marital Ther* 27:51-65.
<https://doi.org/10.1080/009262300278641>
- Basson R (2001) Human sex-response cycles. *J Sex Marital Ther* 27:33-43.
<https://doi.org/10.1080/00926230152035831>
- Basson R (2002) Women's sexual desire—disordered or misunderstood? *J Sex Marital Ther* 28:17-28. <https://doi.org/10.1080/00926230252851168>
- Basson R (2008) Comment on Janssen et al. (2008). *Arch Sex Behav* 37:511.
<https://doi.org/10.1007/s10508-008-9351-z>
- Baumeister RF (2000) Gender differences in erotic plasticity: the female sex drive as socially flexible and responsive. *Psychol Bull* 126:347-374. <http://dx.doi.org/10.1037/0033-2909.126.3.347>
- Beckman N, Waern M, Gustafson D, Skoog I (2008) Secular trends in self-reported sexual activity and satisfaction in Swedish 70 year olds: cross sectional survey of four populations, 1971–2001. *BMJ* 337:1-7. <https://doi.org/10.1136/bmj.a279>

- Bogaert AF (1996) Volunteer bias in human sexuality research: evidence for both sexuality and personality differences in males. *Arch Sex Behav* 25:125-140.
<https://doi.org/10.1007/BF02437932>
- Boughner RL (2010) Volunteer bias. In Salkind: NJ (ed) *Encyclopedia of research design*.
<https://dx.doi.org/10.4135/9781412961288.n492>
- Bridges SK, Horne SH (2007) Sexual satisfaction and desire discrepancy in same sex women's relationships. *J Sex Marital Ther* 33:41-53.
<https://doi.org/10.1080/00926230600998466>
- Bucher T, Hornung R, Buddeberg C (2003) Sexualität in der zweiten lebhenshälfte. *Z Sex-Forsch* 16:249-270. <https://doi.org/10.1055/s-2003-43537>
- Byers ES, Macneil S (2006) Further validation of the interpersonal exchange model of sexual satisfaction. *J Sex Marital Ther* 32:53-69.
<https://doi.org/10.1080/00926230500232917>
- Choi KB, Jang SH, Lee MY, Kim KH (2011) Sexual life and self-esteem in married elderly. *Arch Gerontol Geriatr* 53:e17-e20. <https://doi.org/10.1016/j.archger.2010.08.011>
- Davies S, Katz J, Jackson JL (1999) Sexual desire discrepancies: effects on sexual and relationship satisfaction in heterosexual dating couples. *Arch Sex Behav* 28:553-567.
<https://doi.org/10.1023/A:1018721417683>
- DeLamater J, Hyde J, Fong M (2008) Sexual satisfaction in the seventh decade of life. *J Sex Marital Ther* 34:439-454. <https://doi.org/10.1080/00926230802156251>
- Dunne MP, Martin NG, Bailey JM, Heath AC, Bucholz KK, Madden PA, Statham DJ (1997) Participation bias in a sexuality survey: psychological and behavioural characteristics of responders and non-responders. *Int J Epidemiol* 26:844-854.
<https://doi.org/10.1093/ije/26.4.844>

- Ferreira LC, Narciso I, Novo RF, Pereira CR (2014) Predicting couple satisfaction: the role of differentiation of self, sexual desire and intimacy in heterosexual individuals. *Sex Relatsh Ther* 29:390-404. <https://doi.org/10.1080/14681994.2014.957498>
- Field N, Mercer CH, Sonnenberg P, Tanton C, Clifton S, Mitchell KR, Erens B, Macdowall W, Wu F, Datta J, Jones KG, Stevens A, Prah P, Copas AJ, Phelps A, Wellings K, Johnson AM (2013) Associations between health and sexual lifestyles in Britain: findings from the third National Survey of Sexual Attitudes and Lifestyles (natsal-3). *Lancet* 382:1830-1844. [https://doi.org/10.1016/S0140-6736\(13\)62222-9](https://doi.org/10.1016/S0140-6736(13)62222-9)
- Fisher L, Anderson GO, Chapagain M, Mentenergo X, Smoot J, Takalkar A (2010) Sex, romance and relationships: AARP Survey of Midlife and Older Adults. Washington, DC
- Gillespie BJ (2017a) Correlates of sex frequency and sexual satisfaction among partnered older adults. *J Sex Marital Ther* 43:403-423. <https://doi.org/10.1080/0092623X.2016.1176608>
- Gillespie BJ (2017b) Sexual synchronicity and communication among partnered older adults. *J Sex Marital Ther* 43:441-455. <https://doi.org/10.1080/0092623X.2016.1182826>
- Gillespie BJ, Hibbert K, Sanguinetti A (2017) A review of psychosocial and interpersonal determinants of sexuality in older adulthood. *Curr Sex Health Rep* 9:150-154. <https://doi.org/10.1007/s11930-017-0117-2>
- Hartmann U, Philippsohn S, Heiser K, Ruffer-Hesse C (2004) Low sexual desire in midlife and older women: personality factors, psychosocial development, present sexuality. *Menopause* 11:726-740. <https://doi.org/10.1097/01.GME.0000143705.42486.33>
- Hayes AF (2018) Introduction to mediation, moderation, and conditional process analysis: a regression-based approach (second edition). The Guilford Press, New York

- Heiman JR, Long JS, Smith SN, Fisher WA, Sand MS, Rosen RC (2011) Sexual satisfaction and relationship happiness in midlife and older couples in five countries. *Arch Sex Behav* 40:741-753. <https://doi.org/10.1007/s10508-010-9703-3>
- Heywood W, Lyons A, Fileborn B, Hinchliff S, Minichiello V, Malta S, Barrett C, Dow B (2018) Sexual satisfaction among older Australian heterosexual men and women: findings from the Sex, Age & Me Study. *J Sex Marital Ther* 4:295-307. <https://doi.org/10.1080/0092623X.2017.1366959>
- Huang AJ, Subak LL, Thom DH, Van Den Eeden SK, Ragins AI, Kuppermann M, Shen H, Brown JS (2009) Sexual function and aging in racially and ethnically diverse women. *J Am Geriatr Soc* 57:1362-1368. <https://doi.org/10.1111/j.1532-5415.2009.02353.x>
- Janssen E, McBride KR, Yarber W, Hill BJ, Butler SM (2008) Factors that influence sexual arousal in men: a focus group study. *Arch Sex Behav* 37:252-265. <https://doi.org/10.1007/s10508-007-9245-5>
- Kontula O, Haavio-Mannila E (2009) The impact of aging on human sexual activity and sexual desire. *J Sex Res* 46:46-56. <https://doi.org/10.1080/00224490802624414>
- Laumann EO, Paik A, Glasser DB, Kang J-H, Wang T, Levinson B, Moreira ED, Nicolosi A, Gingell C (2006) A cross-national study of subjective sexual well-being among older women and men: findings from the Global Study of Sexual Attitudes and Behaviors. *Arch Sex Behav* 35:145-161. <https://doi.org/10.1007/s10508-005-9005-3>
- Lawrance K, Byers ES (1995) Sexual satisfaction in long-term heterosexual relationships: the interpersonal exchange model of sexual satisfaction. *Pers Relationship* 2:267-285. <https://doi.org/10.1111/j.1475-6811.1995.tb00092.x>
- Lee DM, Nazroo J, O'Connor DB, Blake M, Pendleton N (2016) Sexual health and wellbeing among older men and women in England: findings from the English longitudinal

study of ageing. *Arch Sex Behav* 45:133-144. <https://doi.org/10.1007/s10508-014-0465-1>

Lodge AC, Umberson D (2012) All shook up: sexuality of mid- to later life married couples. *JMF* 74:428-443. <https://doi.org/10.1111/j.1741-3737.2012.00969.x>

Mark KP (2014) The impact of daily sexual desire and daily sexual desire discrepancy on the quality of the sexual experience in couples. *Can J Hum Sex* 23:27-33. <https://doi.org/10.3138/cjhs.23.1.A2>

Mark KP, Lasslo JA (2018) Maintaining sexual desire in long-term relationships: a systematic review and conceptual model. *J Sex Res* 55:563-581. <https://doi.org/10.1080/00224499.2018.1437592>

Mark KP, Murray SH (2012) Gender differences in desire discrepancy as a predictor of sexual and relationship satisfaction in a college sample of heterosexual romantic relationships. *J Sex Marital Ther* 38:198-215. <https://doi.org/10.1080/0092623X.2011.606877>

McNulty JK, Fisher TD (2008) Gender differences in response to sexual expectancies and changes in sexual frequency: a short-term longitudinal study of sexual satisfaction in newly married couples. *Arch Sex Behav* 37:229-240. <https://doi.org/10.1007/s10508-007-9176-1>

Offman A, Matheson K (2005) Sexual compatibility and sexual functioning in intimate relationships. *Can J Hum Sex* 14:31-39. <https://search.proquest.com/docview/220809399?accountid=14699>

Orr J, Layte R, O'Leary N (2019) Sexual activity and relationship quality in middle and older age: findings from the Irish Longitudinal Study on Ageing (TILDA). *J Gerontol SerB* 74:287-297. <https://doi.org/10.1093/geronb/gbx038>

- Peplau LA (2003) Human sexuality: how do men and women differ. *Curr Dir Psychol Sci* 12:37-40. <https://doi.org/10.1111/1467-8721.01221>
- Regan PC, Bersched E (1996) Beliefs about the state, goals, and objects of sexual desire. *J Sex Marital Ther* 22:110-120. <https://doi.org/10.1080/00926239608404915>
- Rosen RC, Heiman JR, Long JS, Fisher WA, Sand MS (2016) Men with sexual problems and their partners: findings from the International Survey of Relationships. *Arch Sex Behav* 45:159-173. <https://doi.org/10.1007/s10508-015-0568-3>
- Sánchez-Fuentes MM, Santos-Iglesias P, Sierra JC (2014) A systematic review of sexual satisfaction. *Int J Clin Health Psychol* 14:67-75. [https://doi.org/10.1016/S1697-2600\(14\)70038-9](https://doi.org/10.1016/S1697-2600(14)70038-9)
- Schick V, Herbenick D, Reece M, Sanders SA, Dodge B, Middlestadt SE, Fortenberry JD (2010) Sexual behaviors, condom use, and sexual health of Americans over 50: implications for sexual health promotion for older adults. *J Sex Med* 7:315-329. <https://doi.org/10.1111/j.1743-6109.2010.02013.x>
- Schwartz P, Diefendorf S, McGlynn-Wright A (2014) Sexuality in aging. In Tolman DL, Diamond LM, Bauermeister JA, George WH, Pfaus JG, Ward LM (ed) *APA handbook of sexuality and psychology, Vol. 1. person-based approaches*. American Psychological Association, Washington DC, pp 523-551
- Scott VC, Sandberg JG, Harper JM, Miller RB (2012) The impact of depressive symptoms and health on sexual satisfaction for older couples: implications for clinicians. *Contemp Fam Ther* 34:376-390. <https://doi.org/10.1007/s10591-012-9198-2>
- Strassberg DS, Lowe K (1995) Volunteer bias in sexuality research. *Arch Sex Behav* 24:369-382. <https://doi.org/10.1007/BF01541853>

- Stroope S, McFarland MJ, Uecker JE (2015) Marital characteristics and the sexual relationships of U.S. older adults: an analysis of national social life, health, and aging project data. *Arch Sex Behav* 44:233-247. <https://doi.org/10.1007/s10508-014-0379-y>
- Štulhofer A, Ferreira LC, Landripet I (2014) Emotional intimacy, sexual desire, and sexual satisfaction among partnered heterosexual men. *Sex Relatsh Ther* 29:229-244. <https://doi.org/10.1080/14681994.2013.870335>
- Štulhofer A, Hinchliff S, Jurin T, Carvalheira A, Træen B (2019) Successful aging, change in sexual interest and sexual satisfaction in couples from four European Countries. *Eur J Ageing* 16:155-165. <https://doi.org/10.1007/s10433-018-0492-1>
- Štulhofer A, Hinchliff S, Jurin T, Hald GM, Træen B (2018) Successful aging and changes in sexual interest and enjoyment among older European men and women. *J Sex Med* 15:1393-1402. <https://doi.org/10.1016/j.jsxm.2018.08.011>
- Syme ML, Klonoff EA, Macera CA, Brodine SK (2013) Predicting sexual decline and dissatisfaction among older adults: the role of partnered and individual physical and mental health factors. *J Gerontol Ser B* 68:323-332. <https://doi.org/10.1093/geronb/gbs087>
- Thompson WK, Charo L, Vahia IV, Depp C, Allison M, Jeste DV (2011) Association between higher levels of sexual function, activity, and satisfaction and self-rated successful aging in older postmenopausal women. *J Am Geriatr Soc* 59:1503-1508. <https://doi.org/10.1111/j.1532-5415.2011.03495.x>
- Træen B (2008) When sex becomes a duty. *Sex Relatsh Ther* 23:61-84. <https://doi.org/10.1080/14681990701724758>
- Træen B, Carvalheira A, Kvaalem IL, Štulhofer A, Janssen E, Graham CA, Hald GM, Enzlin P (2017a) Sexuality in older adults (65+)—an overview of the recent literature, part 2:

body image and sexual satisfaction. *Int J Sex Health* 29:11-21.

<https://doi.org/10.1080/19317611.2016.1227012>

Træen B, Hald GM, Graham CA, Enzlin P, Janssen E, Kvaalem IL, Carvalheira A, Štulhofer

A (2017b) Sexuality in older adults (65 +)—an overview of the literature, part 1:

sexual function and its difficulties. *Int J Sex Health* 29:1-10.

<https://doi.org/10.1080/19317611.2016.1224286>

Træen B, Štulhofer A, Janssen E, Carvalheira A, Hald GM, Lange T, Graham C (2018a)

Sexual activity and sexual satisfaction among older adults in four European countries.

Arch Sex Behav 48:815-829. <https://doi.org/10.1007/s10508-018-1256-x>

Træen B, Štulhofer A, Jurin T, Hald GM (2018b) Seventy-five years old and still going

strong: stability and change in sexual interest and sexual enjoyment in elderly men

and women across Europe. *Int J Sex Heal* 30:323-336.

<https://doi.org/10.1080/19317611.2018.1472704>

Wang V, Depp CA, Ceglowski J, Thompson WK, Rock D, Jeste DV (2015) Sexual health

and function in later life: a population-based study of 606 older adults with a partner.

Am J Geriatr Psychiatry 23:227-233. <https://doi.org/10.1016/j.jagp.2014.03.006>

Willoughby BJ, Farero AM, Busby DM (2014) Exploring the effects of sexual desire

discrepancy among married couples. *Arch Sex Behav* 43:551-562.

<https://doi.org/10.1007/s10508-013-0181-2>

Woloski-Wruble AC, Oliel Y, Leefsma M, Hochner-Celnikier D (2010) Sexual activities,

sexual and life satisfaction, and successful aging in women. *J Sex Med* 7:2401-2410.

<https://doi.org/10.1111/j.1743-6109.2010.01747.x>

Figure 1. The conceptual mediator model illustrating the association between perceived discrepancy in sexual interest and personal sexual satisfaction with sexual frequency and emotional closeness during sex as parallel mediators, statistically controlling for country and age.

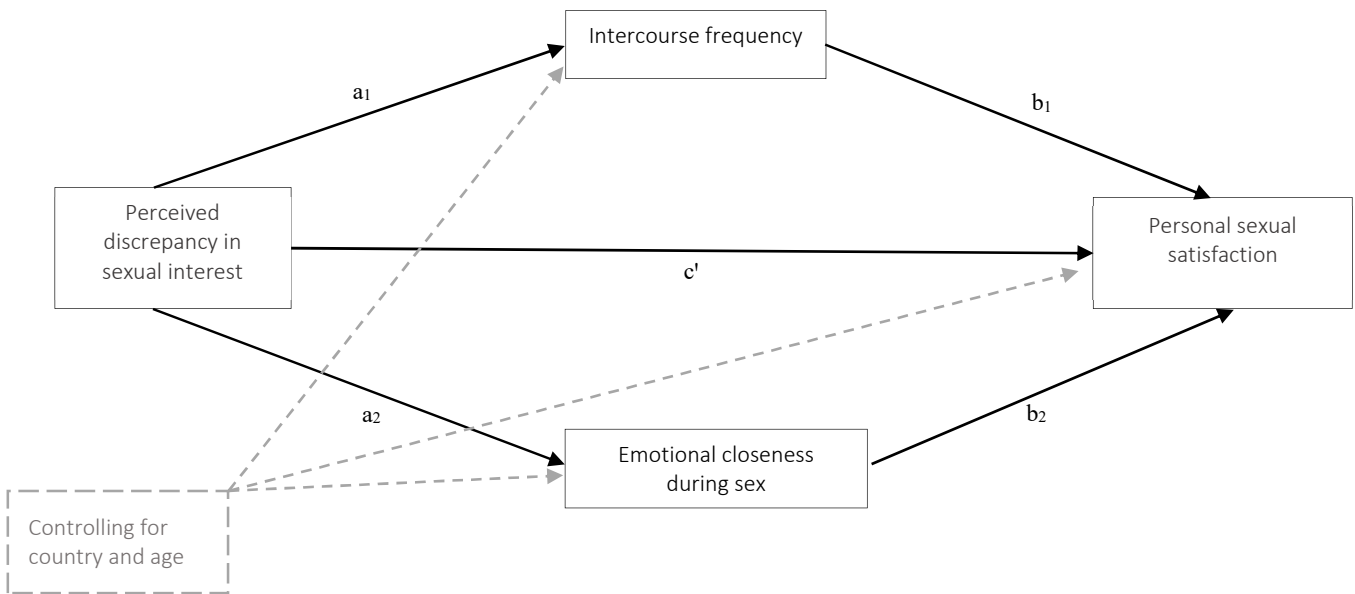


Table 1. An overview of the sociodemographic and partner related variables in partnered heterosexual men and women aged 60-75 years

		Men		Women	
		<i>n</i>	%	<i>n</i>	%
Age groups					
	60-64	418	30.0	488	37.5
	65-69	457	32.8	432	33.2
	70-75	517	37.1	383	29.4
Level of education					
	Primary	249	17.9	244	18.8
	Secondary	550	39.6	574	44.3
	Tertiary	590	42.5	478	36.9
Work status					
	Retired	1032	74.1	919	70.5
	In paid work	357	25.6	260	20.0
Relationship duration (in years)					
	≤ 1	88	6.5	69	5.5
	2-9	94	7.0	86	6.9
	10-29	222	16.5	179	14.3
	≥ 30	940	69.9	917	73.3
Sexual active in the past year ^a					
	Yes	1224	91.5	1021	84.5
	No	113	8.5	187	15.5
Intercourse frequency in the past month ^b					
	None	344	25.8	395	32.9
	Once	207	15.5	183	15.2
	2 or 3 times	339	25.5	286	23.8
	Once a week	270	20.3	217	18.1
	2 or 3 times a week	152	11.4	115	9.6
	Once a day or more	20	1.5	6	0.5
Perceived discrepancy in sexual interest					
	No perceived discrepancy	762	60.2	787	68.7
	Partner more interested	40	3.2	249	21.7
	Partner less interested	463	36.6	110	9.6

Notes. ^aIncludes sexual intercourse, masturbation, petting or fondling; ^bIncludes actual or attempted sexual intercourse (vaginal, anal, or oral sex).

Table 2. Bivariate associations between sexual satisfaction, sexual intercourse activity, emotional closeness during sex, and sexual interest variables, separately for men ($n = 1234$) and women ($n = 1082$)

		1	2	3	4	5	6	Mean	SD	min	max
1. Sexual satisfaction	Men	1						3.5	1.0		
	Women	1						3.5	1.0	1	5
2. Perceived partner's interest in sex	Men	.45***	1					3.9	1.1		
	Women	.38***	1					4.1	1.0	1	5
3. Personal interest in sex	Men	.22***	.43***	1				4.5	0.8		
	Women	.31***	.52***	1				4.0	1.1	1	5
4. Perceived discrepancy in sexual interest	Men	-.40***	-.75***	.07*	1			0.7	1.0		
	Women	-.33***	-.19***	-.45***	1			0.5	0.9	0	4
5. Intercourse activity	Men	.53***	.44***	.37***	-.24***	1		2.8	1.4		
	Women	.53***	.54***	.49***	-.26***	1		2.7	1.4	1	7
6. Emotional closeness during sex	Men	.31***	.38***	.17***	-.32***	.19***	1	4.5	0.8		
	Women	.36***	.33***	.48***	-.31***	.32***	1	4.3	1.0	1	5

Note. * $p < 0.05$ *** $p < 0.001$ (2-tailed).

Table 3. Model coefficients for the mediation analysis among partnered heterosexual men ($n = 1234$) illustrating the role of perceived discrepancy in sexual interest on sexual satisfaction via two parallel mediators (sexual frequency and emotional closeness during sex, respectively) with country affiliation and age (not presented in the table) as covariates. Unstandardized regression coefficients (b), standard errors (SE), multiple correlations squared (R^2)

Independent variables	Intercourse frequency			Emotional closeness during sex			Sexual satisfaction		
	b	SE	p	b	SE	p	b	SE	p
Perceived discrepancy in sexual interest	a_1 -0.34	.04	< .001	a_2 -0.25	.02	< .001	c' -0.24	.02	< .001
Intercourse frequency	---	---	---	---	---	---	b_1 .32	.02	< .001
Emotional closeness during sex	---	---	---	---	---	---	b_2 .17	.03	< .001
Denmark	-.17	.09	.062	.02	.05	.681	.08	.05	.143
Belgium	-.11	.11	.325	-.19	.06	.003	-.10	.06	.123
Portugal	.41	.12	.001	-.14	.07	.050	-.10	.07	.161
	$R^2 = .09^{***}$			$R^2 = .11^{***}$			$R^2 = .38^{***}$		

	Point Estimate	Boot SE	95% BCI	
			Lower	Upper
Total effect of perceived discrepancy in sexual interest on sexual satisfaction ^a	-0.39	.03	-0.439	-0.339
Indirect effects				
Intercourse frequency	-0.11	.01	-0.132	-0.083
Emotional closeness during sex	-0.04	.01	-0.062	-0.026

Note. *** $p > 0.001$; Norway is reference category; bootstrapped with 10,000 resamples; BCI = 95% bootstrapped confidence interval; ^astandard error (SE) and CI = 95% confidence interval

Table 4. Model coefficients for the mediation analysis among partnered heterosexual women ($n = 1082$) illustrating the role of perceived discrepancy in sexual interest on sexual satisfaction via two parallel mediators (sexual frequency and emotional closeness during sex, respectively) with country affiliation and age (not presented in the table) as covariates. Unstandardized regression coefficients (b), standard errors (*SE*), multiple correlations squared (R^2)

Independent variables	Intercourse frequency			Emotional closeness during sex			Sexual satisfaction					
		b	<i>SE</i>	<i>p</i>		b	<i>SE</i>	<i>p</i>	b	<i>SE</i>	<i>p</i>	
Perceived discrepancy in sexual interest	a ₁	-.39	.04	< .001	a ₂	-.32	.03	< .001	c'	-.18	.03	< .001
Intercourse frequency		---	---	---		---	---	---	b ₁	.31	.02	< .001
Emotional closeness during sex		---	---	---		---	---	---	b ₂	.17	.03	< .001
Denmark		-.08	.10	.441		-.05	.07	.477		.03	.06	.584
Belgium		-.16	.11	.149		-.17	.08	.031		-.07	.07	.304
Portugal		.07	.13	.580		-.12	.09	.214		-.10	.08	.208
		$R^2 = .07^{***}$				$R^2 = .10^{***}$				$R^2 = .35^{***}$		

	Point Estimate	Boot <i>SE</i>	95% BCI	
			Lower	Upper
Total effect of perceived discrepancy in sexual interest on sexual satisfaction ^a	-.36	.03	-.417	-.295
Indirect effects				
Intercourse frequency	-.12	.01	-.151	-.095
Emotional closeness during sex	-.05	.01	-.080	-.032

Note. *** $p > 0.001$; Norway is reference category; bootstrapped with 10,000 resamples; BCI = 95% bootstrapped confidence interval; ^astandard error (*SE*) and CI = 95% confidence interval

