**Sexual Well-Being in Older Men and Women: Construction and Validation of a Multi-Dimensional Measure in Four European Countries**

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**Abstract**

Different forms of sexual expression can be beneficial to health and quality of life of older adults. While research on sexual well-being and aging has focused primarily on negative dynamics, this approach may not fit well the sexual reality of aging men and women. We used data from a probability-based survey carried out in 2016 among men and women aged 60+ years from four European countries to develop and validate a measure of sexual well-being. This multi-dimensional measure included items on sexual satisfaction, physical intimacy, emotional closeness during sex, sexual compatibility and distress related to problematic sexual function, was characterized with a good fit to the data, partial scalar invariance across gender and configural invariance across country. The measure was consistently associated with emotional intimacy, frequency of sexual intercourse and masturbation. No systematic gender differences in sexual well-being were observed. Higher sexual well-being corresponded to better self-reported health and being partnered or married. Given the lack of information about successful sexual aging and the absence of sexuality education for older adults, this study’s findings about the facets of sexual well-being in aging men and women may assist health workers and other professionals working with this population.

**Key Words:** Sexual well-being; aging; gender; cross-cultural assessment

**Sexual Well-Being in Older Men and Women: Construction and Validation of a Multi-Dimensional Measure in Four European Countries**

Traditionally, sexual health research has predominantly focused on problematic sexual behavior and related negative outcomes or on sexual problems (dysfunctions) and their treatment. Recently, there has been growing interest in a more positive sexual health framework and in constructs such as sexual satisfaction (Neto, 2012), sexual self-esteem, sexual pleasure (Anderson, 2013) and sexual well-being (Graf & Patrick, 2014). Sexual well-being has been defined as the perceived quality—i.e., the emotional and cognitive appraisal—of an individual’s sexuality, sexual life and sexual relationships (Graf & Patrick, 2014). Neto (2012) considered sexual well-being as comprising both affective and cognitive dimensions and referred to sexual satisfaction as an individual’s cognitive evaluation of his or her sex life. Rosen and Bachmann (2008) proposed sexual well-being to encompass positive aspects of one’s sexual life and operationalized it as a combination of sexual interest, sexual functioning and sexual satisfaction in personal and relational contexts. Overall, the construct of sexual well-being has been used in the literature as an umbrella term for positive aspects of sexuality, but its conceptual underpinnings, structure, and operationalization remain unclear.

**Sexual Function, Sexual Health and Sexual Well-Being**

 Research on sexual well-being has focused primarily on sexual function and frequency of sexual activity, rather than on other components of sexual well-being. The use of sexual function as a proxy for sexual well-being is in line with a sexual health perspective in which the absence of sexual dysfunction and a certain level of sexual satisfaction are considered to indicate sexual well-being (Anderson et al., 2016; Bell & Reissing, 2017; Pazmany, Bergeron, Verhaeghe, Van Oudenhove, & Enzlin, 2014; Rosen & Bachmann, 2008; Wylomanski et al., 2015). Other researchers have proposed a broader assessment that would include emotional and cognitive aspects of sexual function, primarily satisfaction with (Laumann et al., 2006; Muise et al., 2010) and distress about one’s sexual (dys)function (Bell & Reissing, 2017; Pazmany et al., 2014; Stephenson et al., 2010). Research suggests that these two aspects are at least partially independent and that they should be considered as separate indicators of sexual well-being (Althof et al., 2006; Lief, 2001; Stephenson et al., 2010). Distress seems to be directly, and satisfaction indirectly (i.e., through relational and other variables) linked to sexual function. For example, Stephenson et al. (2010) found that in women measures of distress showed greater change after treatment for sexual problems than did measures of satisfaction. The associations between distress related to and satisfaction with sexual function were also different in women with and without sexual problems.

**Sexual Relationships, Physical Intimacy, and Sexual Well-Being**

Healthy sexuality seems to be inseparable from a relational dimension, the context in which most sexual activity occurs (Dewitte, 2014; Pascoal, Narciso, & Pereira, 2014). One of the core concepts in studies of committed romantic relationships is intimacy, which has been associated with general well-being (Sneed, Whitbourne, Schwartz, & Huang, 2011; Sprecher & Hendrick, 2004). Sexual and physical intimacy, representing narrower aspects of intimacy, have been recognized as important predictors of sexual satisfaction and sexual well-being (Birnie-Porter & Lydon, 2013; Heiman et al., 2011; Moret, Glaser, Page, & Bargeron, 1998). Surprisingly, literature on sexual well-being has paid little attention to these interpersonal characteristics (Heiman et al., 2011). An exception is a study by Bancroft et al. (2011) that measured sexual well-being by asking women about the quality of both their “own” sexuality and the quality of their current sexual relationship.

Previous conceptualizations of sexual well-being that included emotional aspects of sexuality or some of its features have focused mainly on the feeling of closeness with one’s partner, emotional pleasure and the frequency of physical behaviors like kissing, cuddling, or caressing. In the Female Sexual Well-Being Scale, Rosen et al. (2009) emphasized the interpersonal domain, with 6 of the 17 scale items reflecting satisfaction with closeness, general closeness, emotional connection, enjoyment, emotional satisfaction, and sexual attraction. A novel and brief pictorial assessment of sexual closeness was recently proposed by Frost et al. (2017) to take into account the role that perceived discrepancy in sexual closeness may play in individual reports of orgasm frequency and sexual satisfaction.

Perceived sexual compatibility is another facet of the relational dimension (Hurlbert, Apt, Hurlbert, & Pierce, 2000). Considering that a majority of older individuals lives with their partner for years, perceived sexual compatibility is likely to play an important role in their sex lives, regardless of whether the perception is simply a reflection of the time spent together, an acknowledgment of mutual erotic skills that evolved through repeated sexual interaction, or the recognition of the importance of emotional closeness for sustained sexual interest and pleasure.

**Aging and Sexual Well-Being**

A notable feature of previous research on sexual well-being has been a predominant emphasis on sexual well-being in pre-menopausal women (Anderson et al., 2016; Bancroft et al., 2011; Chevret-Méasson et al., 2009; De Visser et al., 2007; Muise et al., 2010; Öberg et al., 2002; Pazmany et al., 2014; Rosen et al., 2009; Stephenson et al., 2010). There is a paucity of research on sexual well-being in older adults (65+). Qualitative studies on aging men’s sexual experiences and sexual quality of life are especially sparse (Sandberg, 2013). The focus on sexual function, noted above, is particularly problematic for understanding sexual well-being in aging men and women. According to a recent overview of sexuality in aging individuals, men and women older than 65 years of age may remain happy and content with their sexuality despite experiencing general or more specific (sexual function-related) health problems (Træen, Carvalheira, et al., 2017; Træen, Hald, et al., 2017). This suggests that applying a narrow sexual health perspective when assessing older individuals’ sexual well-being is problematic.

Recently, three large-scale surveys addressed sexual health and well-being issues among older men and women: The Interdisciplinary Longitudinal Study of Adult Development carried out in Germany (Müller, Nienaber, Reis, Kropp, & Meyer, 2014), the English Longitudinal Study of Ageing (ELSA) (Lee, Nazroo, O’Connor, Blake, & Pendleton, 2016; Lee, Vanhoutte, Nazroo, & Pendleton, 2016), and the Australian Sex, Age, and Me study (Fileborn et al., 2017; Fileborn, Thorpe, Hawkes, Minichiello, & Pitts, 2015). Müller and colleagues followed up men and women at three time points (at 63, 67, and 74 years of age). Although men and women reported similar priorities, sexual activity and affection were more important for men than for women. However, when assessed at the age of 74, affection was given a higher priority than sexual activity in both genders. Interestingly, there were no changes in levels of sexual satisfaction across the three time points, although at the first two women reported a higher satisfaction than men.

In the ELSA study, Lee et al. (2016; 2016) examined associations between sexual behavior and function and positive subjective well-being—conceptualized as consisting of aspects such as self-worth, autonomy, control, and purpose of life. Sexual activity and sexual function were associated with subjective well-being, with some key differences between men and women: desire and frequency of sexual activity appeared more important for women and sexual function problems were more important for men. The Australian Sex, Age and Me project included qualitative interviews with men and women aged 60 and over about their experiences of sex, sexual pleasure, and the importance of sex (Fileborn et al., 2017, 2015). The findings highlighted the diversity of older men’s and women’s experiences and priorities. Both women and men discussed the importance of intimacy and bonding as an integral component of sex. For some men, the meaning of sex changed as they aged and some repositioned the importance of sex, particularly penetrative.

**Conceptualizing Sexual Well-being in Older Adults**

There are reasons to expect that sexual well-being should perhaps be conceptualized differently for older adults compared to younger populations and, relatedly that current measures of sexual well-being (most of which focus on sexual activity and sexual function) may be less well-suited for older men and women. As discussed above, priorities regarding sex as well as activities may change with aging. Müller et al. (2014) argued that physical closeness, being in an intimate relationship and the feeling of being “cared for” become more important to aging individuals than sexual activity. Qualitative studies of men (e.g., Sandberg, 2013) suggest that for men in particular, intimacy and touch may become more significant than penetrative sex. In that respect, a recent study’s modeling of sexual well-being as a latent construct composed of sexual interest, sexual satisfaction and frequency of sexual activity (Frost et al., 2017; Graf & Patrick, 2014) may not be applicable to aging individuals.

According to our reading of the literature on sexuality and aging, a measure aiming to encompass important facets of aging men’s and women’s sexual well-being needs to address physical intimacy and emotional closeness during (any type of) sexual activity—in addition to sexual satisfaction and sexual function. Given that aging individuals appear to be less focused on and less troubled by their declining sexual function than men and women in their 40s and 50s, a measure of sexual well-being to be used in older population should include an indicator of distress about sexual function rather than a direct assessment of the functionality.

**Study Aims**

Although the body of research dealing with sexuality in aging men and women is growing, little information is available on sexual well-being among older men and women. To date, there is no validated questionnaire to measure sexual well-being in older adults. Apart from the Female Sexual Well-Being Scale, Rosen et al. (2009), which was developed in a sample of women aged 21-72 and never validated among men, several measures that are conceptually close to or overlapping with sexual well-being have been proposed (cf. Williams, Thomas, Prior, & Walters, 2015): the Sexual Quality of Life questionnaire (Symonds, Boolell, & Quirk, 2005), the Quality of Sexual Life Questionnaire (Costa et al., 2003), the Sexual Life Quality Questionnaire (Woodward, Hass, & Woodward, 2002) and the Index of Sex Life (Chevret, Jaudinot, Sullivan, Marrel, & Gendre, 2004). Each of these measures was developed using a sample of individuals with sexual dysfunction (or their partners) and none were validated in older adults.

To address this gap, we aimed to develop a specific, multi-dimensional measure of sexual well-being in aging men and women and validate it using a population-based sample of older individuals (60+) from four European countries. Guided by the literature on the process of sexual aging (Træen, Carvalheira, et al., 2017; Træen, Hald, et al., 2017), we conceptualized older individuals’ sexual well-being as multi-faceted, including components related to physical intimacy, emotional closeness, sexual health and sexual satisfaction. A measure of sexual well-being in aging men and women, we would argue, should include aspects of both emotional and physical intimacy, as well as evaluative elements related to sexual function and sexual satisfaction. Finally, taking into account that a majority of older coupled individuals have spent years together with their partner/spouse, we were interested in the role of perceived sexual compatibility in aging men’s and women’s sexual well-being.

METHOD

METHOD

**Participants and Procedure**

Data used in this study were collected in 2016, as part of a larger mixed-methods project on aging and sexuality that was carried out in four national probability-based samples of men and women aged 60-75 years (for details about the survey sampling and procedures see (Træen et al., 2018). National phone registries were used to draw a random sample of aging individuals in Norway, Denmark and Belgium, and due to the lack of a national phone registry, multi-stage stratified sampling was employed in Portugal. Non-participation rates varied from 74.5% in Portugal to 31.8% in Norway. In total, 2,461 individuals (56% of female gender) were included in this study (835 Norwegians, 631 Danes, 720 Belgians, and 275 Portuguese). Almost two thirds (61.1%) reported being in a relationship or married at the time of the survey.

**Questionnaire and Measures**

The questionnaire used in the current study included slightly over 200 items. It was first developed in English and then translated into local languages by native speakers—all members of an international research team that developed this research project.

*Sexual Well-Being*

Based on the above described conceptualization, the proposed sexual well-being measure included items indicating emotional and sexual intimacy, sexual compatibility, sexual distress and sexual satisfaction (for the complete list of items see Appendix A).

The frequency of cuddling and caressing was assessed by two items (*r* = .46-.56): *Over the past 4 weeks, how often have you been sexually touched and caressed by your partner?* (answers ranged from 1 = not at all to 5 = almost daily) and *My partner and I kiss and cuddle each other…* (1 = seldom, 2 = often) developed in a study that focused on sexual satisfaction among midlife and older couples (Heiman et al., 2011). The two items were multiplied, with higher scores reflecting more frequent cuddling and caressing.

Sexual intimacy was indicated by the following question: *I feel emotionally close to my partner when we have sex together.* Responses, which ranged from 1 = strongly agree to 5 = strongly disagree, were reverse-coded, so that higher scores denote higher sexual intimacy.

Perceived sexual compatibility was assessed using two strongly correlated items (*r* = .62-.81) from the NATSAL-SF tool (Jones et al., 2015): *My partner and I share the same level of interest in having sex* and *My partner and I share the same sexual likes and dislikes*. The items, which were measured on a Likert-type scale, were summed so that higher scores denote higher sexual compatibility.

Distress over sexual function was indicated by a modified version of the NATSAL-SF (Jones et al., 2015). For each of eight listed sexual difficulties, if experienced *in a period of three or more months during the past year*, the participant was asked about the level of associated distress (from 1 = no distress to 4 = severe distress). Distress scores were then reverse-coded and summed into a composite indicator, with higher scores indicating lower distress over one’s sexual function.

Sexual satisfaction was measured by two strongly related items (*r* = .68-.80): *Thinking about your sex life in the last year, how satisfied are you with your sexual life?* and *How satisfied are you with the current level of sexual activity in your life, in a general way?* The second item scores were reverse-coded, so that higher composite scores (answers to both questions were anchored using a 5-point scale) indicate higher satisfaction. The indicator had satisfactory reliability (Cronbach’s *α* ranged from .77 to .81).

*Constructs Conceptually Related to Sexual Well-Being*

Feeling intimate with one’s partner was assessed using the 5-item (e.g., *I can share my deepest thoughts and feelings with this person*and *This person cares deeply for me*) Emotional Intimacy Scale (Sinclair & Dowdy, 2005). A Likert-like 5-point scale (1 = agree strongly, 5 = disagree strongly) was used to anchor answers. The composite indicator had a high reliability in all four national samples (Cronbach’s *α* = .90-.91). Higher scores denote higher intimacy. The frequency of sexual intercourse and masturbation in the past month was assessed by single-item indicators, measured on a 7-point scale ranging from 1 = none to 7 = more than once a day.

*Sociodemographic indicators* were age, education (categorized into primary, secondary and tertiary education), relationship status (single versus in a relationship or married), and self-reported health status (Schnittker & Baćak, 2014), which was measured using a 5-point scale ranging from 1 = excellent to 5 = poor.

**Analytical Strategy**

 To minimize bias introduced by missing information, all structural models were performed on the full sample using model-based full information maximum likelihood approach to estimate missing values (Arbuckle, 2013; Graham, 2012). Confirmatory factor analysis (CFA) was employed to assess the fit of sexual well-being models. Prior to CFA, all variables were z-transformed. The following cut-off values were considered to indicate adequate model fit (Byrne, 2010): comparative fit index (CFI) ≥ .90 (acceptable fit) and ≥ .95 (excellent fit) and the root mean square error of approximation (RMSEA) index of parsimony ≤ .08 (acceptable fit) and ≤ .05 (excellent fit). Taking into account that large samples inflate chi-square values, chi-square test was not used for evaluating model fit. When testing for gender and country invariance of the final model, the standard chi square difference test was replaced with sample size insensitive CFI difference test (∆CFI) between the baseline (unconstrained) and progressively more constrained models (van de Schoot, Lugtig, & Hox, 2012). Values ≤ .01 pointed to equally fitting models, which indicated a certain level of invariance (Cheung & Rensvold, 2002). Taking into account gender- and country-specific norms that regulate sexuality, at least partial scalar invariance was required for the assumption of gender and country invariance to be accepted (Byrne, Shavelson, & Muthén, 1989).

 Next, construct validity of the best fitting sexual well-being model was evaluated using several constructs (emotional intimacy, frequency of sexual intercourse and masturbation) that have been found to be related to sexual satisfaction in aging men and women (cf. Heiman et al., 2011; Laumann et al., 2006; Lee, Nazroo, et al., 2016). The validity was assessed by partial correlations, with each relationship controlled for the contribution by the other two indicators. Finally, using path analysis with sexual well-being as latent outcome, we explored the contribution of basic sociodemographic indicators (age, education, relationship status and self-rated health) to explained variance in sexual well-being. As in the validation assessment, the analysis was carried out by country, separately for male and female participants. All statistical analyses were performed in IBM AMOS 22 statistical software package (Arbuckle, 2013).

RESULTS

 Basic sociodemographic characteristics of the four countries sample are shown in Table 1. A number of country-specific characteristics are apparent. For example, tertiary education was more than twice as prevalent in the Norwegian compared to the Portuguese sample. High religiosity, defined by a weekly or more frequent attendance of religious services, was most prevalent among Portuguese participants (about a quarter of surveyed women belonged to the high religiosity group), followed by participants from the Belgian sample. Rural residence was reported by about a third of Danish and only 17% of Portuguese participants, while residing in the country’s largest urban community characterized roughly a third of the Portuguese sample and only about 5% of participants in the Belgian sample.

 Expectedly, more male (75.1%) then female participants (50.2%) reported being partnered. The exception was the Danish sample, where no significant difference was observed. In contrast to a majority of older women in the other three countries, only a third of female participants in the Belgian sample were partnered at the time of the survey.

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TABLE 1 ABOUT HERE

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**Confirmatory Factor Analysis of Sexual Well-Being in Aging Individuals**

 The fit of an initial 5-dimensional Confirmatory Factor Analysis (CFA) model of sexual well-being (Model A)—which included indicators of frequency of cuddling, emotional closeness during sex, and perceived sexual compatibility with one’s partner, (absence of) distress over one’s sexual (dys)function and sexual satisfaction—was problematic due to the upper level of RMSEA 90% confidence interval exceeding .08 (see Table 2). Omitting distress over sexual function (Model B) or any other dimension from the model failed to improve its fit. Next, we used modification indices (in a sample without missing values), which suggested a covariance between emotional closeness during sex and sexual satisfaction error terms (Model C). This respecification, which is conceptually grounded by previous findings that affection plays an increasingly important role in aging adults’ sexual life (cf. Müller et al., 2014), resulted in excellent fit (*χ2*(4) = 6.89, CFI = .99, RMSEA = .034 (90% CI = .000-.075).

The assessment of model invariance required multi-group CFA, with gender and country as groups, respectively. Compared to the baseline or unconstrained model (*χ2*(8) = 35.82, CFI = .98, RMSEA = .038 (90% CI = .026-.051), which is shown in Figure 1, a model constrained to represented partial scalar gender invariance fitted the data equally well (ΔCFI = .007). In the case of country invariance, the procedure resulted with empirical support for only metric invariance (ΔCFI = .004). Taken together, the invariance testing (see Table 2) suggested that the model of sexual well-being had similar measurement characteristics in men and women. In contrast, only the validity of conceptual invariance was established across country, preventing direct comparisons of country levels of sexual well-being.

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FIGURE 1 ABOUT HERE

TABLE 2 ABOUT HERE

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**Levels of Sexual Well-Being by Gender**

 Following the procedure outlined by Byrne (2010), latent means of sexual well-being in men (reference group) and women were inspected by country. Only in Denmark did we observe a significant gender difference, with women reporting a lower mean sexual well-being than men (*M* = -.26, S.E. = .11, *p* < .05). Although the same trend was present in Norway and Belgium, the difference in means did not reach statistical significance. Between-country comparisons were precluded by inadequate measurement invariance.

**Validation of the Model of Sexual Well-Being**

 Next, we evaluated convergent validity of the final model of sexual well-being (Model C). As presented in Table 3, sexual well-being was consistently and strongly associated with emotional intimacy and the frequency of sexual intercourse, across gender and country. Interestingly, relationships between sexual well-being and sexual activity were stronger among aging men than women. Negative associations between sexual well-being and the frequency of masturbation were significant in most groups (non-significant relationships in the Portuguese sample were likely due to insufficient power). The correlation signs—sexual well-being was positively related to emotional intimacy and sexual intercourse, while negatively to solitary sex—

were in accordance with the literature (Heiman et al., 2011; Laumann et al., 2006; Lee, Nazroo, et al., 2016).

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TABLE 3 ABOUT HERE

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**Sociodemographic Correlates of Sexual Well-Being**

Gender- and country-specific associations between sexual well-being and basic sociodemographic characteristics, including self-rated health, are shown in Table 4. General health and being in a relationship or being married were consistently and significantly associated with sexual well-being—with the exception of participants in the smallest national sample (Portugal). It should be noted that in Portuguese men and women there were associations between sexual well-being and health (but not relationship status), which were of similar size compared to those observed in other countries. Being in a relationship or married was positively, and reporting worse health negatively, associated with the outcome. Age and education did not appear to have an important role in aging Europeans’ sexual well-being.

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TABLE 4 ABOUT HERE

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DISCUSSION

Addressing the paucity of information on sexual well-being among older men and women, the current study proposed a multi-dimensional measure of the construct to be used in future research. In a large-scale cross-cultural sample of aging individuals from four European countries, the 5-faceted model of sexual well-being was found to fit the data well. The model included cuddling frequency, sexual intimacy, perceived sexual compatibility, the absence of distress over sexual function and sexual satisfaction. The sexual well-being measure was found reasonably invariant across gender, enabling direct comparisons between women and men. Pointing to likely culture-specific influences, the multi-dimensional measure was only conceptually invariant across the four countries, precluding direct comparisons across country comparisons.

Confirming its convergent validity, the proposed measure was consistently and significantly associated with emotional intimacy, frequency of sexual intercourse and masturbation frequency. Unlike the frequency of sex, masturbation was negatively associated with sexual well-being scores among both aging men and women. Comparisons of gender-specific sexual well-being by country pointed to similar levels of well-being in older European men and women. The exception was Denmark, where aging women reported a significantly lower mean level of sexual well-being compared to their male peers. In all but the smallest national sample (Portugal), self-reported general health and being in a close relationship or being married were significantly related to sexual well-being. Higher sexual well-being corresponded to better health and having a partner in both genders, which corroborates findings from other studies (Bancroft, 2009; Kontula & Haavio-Mannila, 2009).

The proposed model of sexual well-being represents a more comprehensive, global conceptualization of the positive aspects of a person’s sexual life. According to the literature and our clinical experience, sexual well-being is a broader construct than personal sexual satisfaction and clearly distinct from it (Anderson, 2013; Contreras, Lillo, & Vera-Villarroel, 2016; Neto, 2012; Rosen et al., 2010; Rosen & Bachmann, 2008). It also goes beyond narrow definitions of sexual health that focus on sexual functioning and the frequency of sexual activity (cf. Kleinstäuber, 2017). Specific differences between these constructs and sexual well-being may be particularly salient in elderly women and men, for whom sexual functioning likely occupies an important but less central role in their experience and evaluation of sexual satisfaction (Træen, Carvalheira, et al., 2017; Træen, Hald, et al., 2017). In addition, current sexual satisfaction may not play the same role in older individuals’ sexual well-being, compared to their younger years. There is some evidence that relational aspects of sexual expression become increasingly important in older age (Heiman et al., 2011; Mansfield, Koch, & Voda, 1998; Müller et al., 2014). Our model of sexual well-being moves away from the framework based on perfect sexual function and the frequency of sexual activity to include (often ignored) indicators of intimacy during sexual activity, sensual touch (kissing, caressing and cuddling) and the sense of sharing the same or similar perspective on sex with the partner (Hinchliff & Gott, 2004; Potts, Grace, Vares, & Gavey, 2006). The last component, perceived sexual compatibility, was specified as the perception of shared sexual beliefs, needs, desires and expressions (Offman & Matheson, 2005). All three included dimensions have been found to be strongly related to sexual and relationship satisfaction (Contreras et al., 2016; Heiman et al., 2011; Mark, Milhausen, & Maitland, 2013). Finally, the inclusion of distress over difficulties in sexual body function served as a proxy for the ability to cope with age-related changes in sexual function (Bell & Reissing, 2017; Bertone & Camoletto, 2009; Pazmany et al., 2014; Stephenson et al., 2010), rather than an indicator of non-compromised sexual functioning.

To date, research on sexual well-being has focused primarily on premenopausal adult women, leaving the sexual well-being of the elderly—especially older men—an unexplored area. To the best of our knowledge, the multi-dimensional model of sexual well-being presented in this study is the first comprehensive model of sexual well-being that has been validated in older men and women. Methodologically, the measure demonstrated a satisfactory level of gender invariance, as well as conceptual cross-cultural invariance—at least in the European context. Future research may elucidate culture-specific influences on this model of older individuals’ sexual well-being, particularly the effect of social norms and cultural expectations, such as ageism and religiosity (Heywood et al., 2017).

The convergent validity of the model was supported by the strong and positive associations between sexual well-being and emotional intimacy and frequency of sexual intercourse, and a negative relationship to solitary sexual activity (masturbation). Corroborating the findings from earlier studies in older individuals (Heiman et al., 2011; Laumann et al., 2006; Lee, Nazroo, et al., 2016), the results were consistent across gender and country. Elderly men and women who reported higher sexual well-being also reported more partnered and less solitary sex. These results are not surprising given that previous studies have found a negative correlation between masturbation frequency and sexual well-being (Bancroft et al., 2011; Bell & Reissing, 2017; Lee, Nazroo, et al., 2016), sexual satisfaction (Brody & Costa, 2009; Velten & Margraf, 2017) and the frequency of partnered sex (Regnerus, Price, & Gordon, 2017). Our findings seem to corroborate the validity of the compensatory hypothesis in older individuals; older men and women might be more likely to masturbate if they do not have a partner or if the partner is unwilling or unable to engage in sex. Although masturbation is increasingly socio-culturally accepted sexual behavior that has been demonstrated to be important for sexual health (Regnerus et al., 2017), an alternative explanation should also be considered. Given that participants in our study were socialized in a substantially less sexual permissive sociocultural environment compared to the contemporary one, in which masturbation was portrayed as a health hazard (for men) and/or morally problematic act (especially in young women; see Stengers & Van Neck, 2001), it might also be that the observed negative association primarily reflected the internalized stigmatization of self-pleasuring and the associated feelings of guilt and shame.

Our findings also demonstrated that older individuals’ sexual well-being was significantly associated with having a partner and self-reported health status. The former finding is only partially trivial (in the sense that non-solitary sexual activity depends on partner availability), as being in a relationship at an advanced age or remaining married may influence self-evaluation of many different aspects of life, including the sexual. The finding of a positive association between general health and sexual well-being is also hardly surprising. As people age, they more frequently experience health problems, which can affect their sexual health either directly or indirectly (Træen, Hald, et al., 2017) and decrease their sexual well-being (Kontula & Haavio-Mannila, 2009). Our results are consistent with previous findings about the importance of general health status for sexuality in older age (Bancroft et al., 2011; Heiman et al., 2011; Laumann et al., 2006). Although Laumann et al. (2006) found that the relationship between sexual well-being and health was stronger in older women than among their male peers in a number of countries included in their global assessment, this study’s findings, which are based on a more refined measure of well-being and restricted to the (less culturally heterogeneous) European context, did not point to a consistent pattern of gender differences in the levels of sexual well-being.

Our analysis of the sociodemographic predictors of sexual well-being in older European women and men failed to corroborate the significance of education and age—which is often observed in studies of sexuality among aging individuals (e.g., Lindau et al., 2007; Lindau & Gavrilova, 2010; Meston & Trapnell, 2005). In the case of education, this study’s results add weight to the lack of consistency in findings about the protective role of higher education in sexual well-being (Bancroft et al., 2011; Bell & Reissing, 2017; Contreras et al., 2016; Heiman et al., 2011; Laumann et al., 2006). In contrast, age has been found to be fairly robustly related to some aspects of sexual well-being (cf. Bell & Reissing, 2017; Laumann et al., 2006). The absence of a significant association between male and female participants’ age and sexual well-being might be the consequence of a relatively restricted age range represented in the current study or related to the multi-dimensional assessment of sexual well-being. The possibility that age may affect some but not other aspects of sexual well-being was indicated by Bell and Reissing (2017) who observed a negative relationship between age and two indicators of sexual well-being (i.e., sexual functioning and frequency of sex), but not between age and subjective aspects of sexual well-being (i.e., sexual satisfaction and distress over sexual function). In that respect, our findings suggest that sexual well-being in older adults aged 60-75 years is determined by other factors—including subjective age (Estill, Mock, Schryer, & Eibach, 2017), which was not assessed in this study—than merely biological age (Baltes & Smith, 2003).

**Study Limitations**

Sexually active aging men and women, as well as those with more permissive views about sexuality, were most likely oversampled in this study. Although it was clearly stated during the recruitment process that being sexually active was not a prerequisite for participation, it is plausible that sexually active men and women were more motivated to take part in this study on healthy sexual aging. If so, the levels of sexual well-being observed in this study would be higher than the respective population levels. Taking into account that sexual well-being may not be an invariant construct across different sexual identities and orientations, the fact that sexual orientation was not controlled for in this study requires clarification. Due to the fact that only 1.9% of participants identified as gay, lesbian or bisexual (additional 3.2% identified as “other”), sexual orientation was not controlled for in our analyses. Finally, inadequate statistical power was likely an issue in some of the estimates in the Portuguese sample and the subsample of Belgian men. Comparisons of effect sizes (by gender) across the four countries may be informative in the assessment of underpowered estimations.

CONCLUSIONS

Different forms of sexual expression seem to be beneficial to older adults’ health and well-being (Kleinstäuber, 2017). Given a relative paucity of systematic research on sexuality in the aging population, as well as a lack of measures designed to explore successful sexual aging, here we presented a cross-cultural validation of a multi-dimensional measure of well-being in a large-scale sample of European women and men aged 60+ years. Additional research will be needed to address the question of how age-specific the presented model and its dimensionality are. In addition to coping with sexual problems (levels of distress), are there additional facets that may be less relevant for younger men and women? Given the lack of information about successful sexual aging and the absence of sexuality education program targeting older adults, we hope that this study’s findings will be of some use to health workers and other professionals working with this population.

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Figure 1 – Confirmatory Factor Analysis of Sexual Well-Being by Gender, Model C (*N*Men = 1,083 and *N*Women = 1,378)

.26\*

.34\*

.69\*

.66\*

.77\*

.78\*

.62\*

.62\*

-.28\*

-.30\*

.67\*

.58\*

*Notes*. Estimates for men are presented left and those for women right from arrows; \**p* < .001

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Table 1 – Basic Sociodemographic Characteristics of the Sample by Country and Gender | Norway | Denmark | Belgium | Portugal |
|  | Men | Women | Men | Women | Men | Women | Men | Women |
|  | *n* (%) | *n* (%) | *n* (%) | *n* (%) |
| Age |  |  |  |  |  |  |  |  |
| 60-65 | 173 (37.8) | 140 (37.1) | 128 (39.6) | 91 (29.5) | 75 (41.0) | 220 (41.0) | 61 (51.3) | 83 (53.2) |
| 66-70 | 162 (35.4) | 123 (32.6) | 82 (25.4) | 93 (30.2) | 61 (33.3) | 199 (37.1) | 42 (35.3) | 37 (23.7) |
| 71-75 | 123 (26.9) | 114 (30.2) | 113 (35.0) | 124 (40.3) | 47 (25.7) | 118 (22.0) | 16 (13.4) | 36 (23.1) |
| Education |  |  |  |  |  |  |  |  |
| Primary | 46 (10.1) | 34 (9.8) | 93 (29.0) | 85 (27.7) | 23 (12.6) | 70 (13.2) | 32 (26.9) | 46 (30.3) |
| Secondary | 156 (34.1) | 149 (39.6) | 118 (36.8) | 121 (39.4) | 87 (47.5) | 276 (52.0) | 59 (49.5) | 80 (52.6) |
| Tertiary | 256 (56.9) | 190 (50.6) | 110 (34.2) | 101 (32.9) | 73 (39.9) | 185 (34.8) | 28 (23.5) | 26 (17.1) |
| In a relationship/married |  |  |  |  |  |  |
| Yes | 340 (74.2) | 190 (50.4) | 235 (73.3) | 228 (74.0) | 125 (68.3) | 178 (33.1) | 103 (86.6) | 90 (57.7) |
| No | 111 (24.2) | 180 (47.7) | 86 (26.7) | 79 (25.6) | 55 (30.1) | 357 (66.5) | 15 (12.6) | 64 (41.0) |
| Religiosity |  |  |  |  |  |  |  |  |
| Never | 191 (41.7)  | 101 (26.8)  | 123 (38.1)  | 76 (24.7)  | 90 (49.2)  | 235 (43.8)  | 30 (25.2)  | 35 (22.4)  |
| Less than once a year | 107 (23.4)  | 91 (24.1)  | 71 (22.0)  | 74 (24.0)  | 26 (14.2)  | 55 (10.2)  | 18 (15.1)  | 27 (17.3)  |
| Once a year | 54 (11.8)  | 43 (11.4)  | 43 (13.3)  | 46 (14.9)  | 8 (4.4)  | 32 (6.0) | 11 (9.2)  | 7 (4.5)  |
| Twice a year | 54 (11.8)  | 68 (18.0)  | 42 (13.0)  | 66 (21.4)  | 29 (15.8)  | 98 (18.2)  | 21 (17.6)  | 17 (10.9)  |
| Once a month | 26 (5.7) | 32 (8.5)  | 20 (6.2) | 29 (9.4) | 5 (2.7)  | 40 (7.4) | 15 (12.6)  | 14 (9.0)  |
| Once every two weeks | 10 (2.2) | 22 (5.8)  | 8 (2.5)  | 7 (2.3)  | 6 (3.3)  | 20 (3.7)  | 3 (2.5)  | 12 (7.7)  |
| Once a week or more | 9 (2.0)  | 18 (4.8) | 14 (4.3)  | 8 (2.6)  | 18 (9.8)  | 50 (9.3)  | 18 (15.1)  | 38 (24.4)  |
| Place of residence |
| Rural | 151 (33.0)  | 114 (30.2)  | 113 (35.0)  | 99 (32.1)  | 49 (26.8)  | 143 (26.6)  | 20 (16.8)  | 26 (16.7)  |
| Small town | 165 (36.0)  | 138 (36.6)  | 114 (35.3)  | 111 (36.0)  | 89 (48.6)  | 203 (37.8)  | 30 (25.2)  | 30 (19.2)  |
| Medium sized city | 55 (12.0)  | 43 (11.4)  | 47 (14.6)  | 39 (12.7)  | 19 (10.4)  | 71 (13.2)  | 23 (19.3)  | 30 (19.2)  |
| Suburb of a large city | 33 (7.2) | 20 (5.3) | 17 (5.3)  | 15 (4.9) | 15 (8.2)  | 58 (10.8)  | 9 (7.6)  | 14 (9.0)  |
| Central large city | 50 (10.9)  | 51 (13.5)  | 28 (8.7)  | 32 (10.4)  | 9 (4.9)  | 31 (5.8)  | 36 (30.3)  | 52 (33.3)  |

Table 2 – Model Fit and Invariance Testing Results

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | *χ*2 (df) | CFI | ΔCFI | RMSEA | RMSEA90% CIb |
| Model A | 20.69 (5) | .947 |  | .071 | .041-.103 |
| Model B | 11.70 (2) | .963 |  | .088 | .044-.139 |
| Model C | 6.89 (4) | .990 |  | .034 | .000-.075 |
| Model C - multi-group by gender, unconstrained | 35.82 (8) | .979 | Ref.a | .038 | .026-.051 |
| Model C - multi-group by gender, partial scalar invariance | 53.66 (17) | .972 | .007 | .030 | .021-.039 |
| Model C - multi-group by country, unconstrained | 30.54 (16) | .989 | Ref.a | .019 | .008-.029 |
| Model C - multi-group by country, metric invariance | 62.99 (31) | .975 | .004 | .020 | .013-.028 |

*Notes*. aReference CFI value; bconfidence interval

Table 3 – Convergent Validity of the Sexual Well-Being Model in Four European Countries by Gender

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | NORWAY | DENMARK | BELGIUM | PORTUGAL |
|  | Men(*N* = 458) | Women(*N* = 377) | Men(*N* = 323) | Women(*N* = 308) | Men(*N* = 183) | Women(*N* = 537) | Men(*N* = 119) | Women(*N* = 156) |
|  | *r* | *r* | *r* | *r* | *r* | *r* | *r* | *r* |
| Emotional intimacy | .68\*\*\* | .68\*\*\* | .66\*\*\* | .66\*\*\* | .64\*\*\* | .63\*\*\* | .77\*\*\* | .78\*\*\* |
| Frequency of sexualIntercourse | .67\*\*\* | .55\*\*\* | .57\*\*\* | .66\*\*\* | .54\*\*\* | .59\*\*\* | .47\*\* | .65\*\*\* |
| Frequency of masturbation | -.31\*\*\* | -.14\* | -.36\*\*\* | -.21\*\* | -.34\*\* | -.05 | -.21 | .18 |

*Notes*. \* *p* < .05; \*\* *p* < .01; \*\* *p* < .001

Table 4 – Sociodemographic, Sociocultural and Socio-sexual Correlates of Sexual Well-Being Among Aging Individuals

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | NORWAY | DENMARK | BELGIUM | PORTUGAL |
|  | Men(*N* = 458) | Women(*N* = 377) | Men(*N* = 323) | Women(*N* = 308) | Men(*N* = 183) | Women(*N* = 537) | Men(*N* = 119) | Women(*N* = 156) |
|  | *β* (SE) | *β* (SE) | *β* (SE) | *β* (SE) | *β* (SE) | *β* (SE) | *β* (SE) | *β* (SE) |
| Age | -.05 (.01) | -.04 (.01) | -.03 (.01) | -.03 (.01) | -.00 (.01) | -.00 (.01) | -.04 (.02) | -.06 (.02) |
| Secondary education | -.07 (.08) | -.01 (.09) | -.11 (.09) | .16\* (.09) | -.08 (.13) | -.01 (.08) | -.01 (.24) | .04 (.25) |
| Tertiary education | -.06 (.10) | .01 (.13) | -.09 (.13) | -.02 (.17) | -.10 (.14) | -.04 (.12) | -.15 (.48) | .12 (.63) |
| Relationship status | .39\*\*\* (.09) | .28\*\*\* (.09) | .13\* (.09) | .19\*\* (.09) | .36\*\*\* (.13) | .20\*\*\* (.08) | .06 (.28) | .12 (.18) |
| Self-rated health | -.22\*\*\* (.04) | -.26\*\*\* (.04) | -.34\*\*\* (.04) | -.23\*\* (.05) | -.26\*\* (.07) | -.30\*\*\* (.05) | -.26\* (.11) | -.16 (.11) |
| *R2* | .22 | .15 | .17 | .13 | .24 | .13 | .09 | .05 |

*Notes*. \* *p* < .05; \*\* *p* < .01; \*\* *p* < .001