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ORIGINAL PAPER

Sexuality in Older Couples: Individual and Dyadic Characteristics

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Abstract Sexuality is a key component of health and functioning that changes with age. Although most sexual activity takes place with a partner, the majority of research on sexuality has focused on individuals. In this paper, we focused on the sexual dyad. We proposed and tested a conceptual model of the predictors of partnered sexual activity in older adulthood. This model began with the personality of each of the partners, which affects individuals' views of sex and characteristics of the partnership, which in turn affected sexual expression in the couple. We measured a key feature of personality, Positivity, which reflected the individual's tendency to present his or herself positively in social situations. This trait, we posited, increased frequency of sex through increased desire for sex, and the subjective importance of sex to each member of the couple. In this model, Positivity also impacted characteristics of the relationship that promoted dyadic sexual behavior. These processes differed for men and women in the model. We tested this model with data from the National Social Life, Health and Aging Project, which conducted personal interviews with both partners in 940 American dyads (average male age 72; average female age 69). We found that couples in which the husbands' (but not wives') were high in Positivity show higher levels of sexual activity, and that this association was partially mediated by dimensions of relationship quality, but more so by individual factors such as thinking about sex and believing sex is important.

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Introduction

Sexual activity is a key component of marital quality for many married couples, and individuals who have frequent sex with their spouse tend to report better marital satisfaction than the sexually inactive (Galinsky & Waite, 2014). In turn, marital quality is a crucial component of overall quality of life and good health, especially at older ages (Kim & Waite, 2014; Warner & Kelley-Moore, 2012). Therefore, it is important to understand why some older couples are sexually active, and some are less so, or inactive. Sexual interest and partnered sexual activity persist into older ages among a sizeable share of older women and especially older men, according to recent studies (Lindau, Levinson, O'Muircheartaigh, Schumm, & Waite, 2007a). But even among those with partners, fewer than half of the oldest—those 81 to 85 years old—reported any sexual activity with their partner over the past year (Palacios-Ceña et al., 2012).

Although a number of recent studies have greatly expanded our knowledge of sexuality at older ages, there is still much that we do not know. Virtually all recent research on sexuality at older ages has focused on individuals; we know little about the characteristics of *couples* that influence sexuality in later life, and virtually nothing about the role of partners in the performance of this joint activity. This is despite growing evidence that both partners contribute independently to relationship outcomes (Fisher, Donahue, Long, Heiman, & Rosen, 2015). Using the dyad as our unit of measurement and theoretical focus, we develop a conceptual model of partnered sexual activity in which characteristics of each partner, and characteristics the relationship as perceived by each of the partners, affect frequency of their

joint sexual activity. We focus on partnered sexual activity as mutually constituted by the two people involved, in contrast to sexual satisfaction which is evaluated separately by each partner. Using data for married and cohabiting dyads from the second wave of the National Social Life, Health and Aging Project (NSHAP), we examined the characteristics of partners and characteristics of the relationship as perceived by each of partner to predict the couple's frequency of sex. We now turn to a review of the literature, to ground our model in existing theory.

Background

This article will emphasize partnership and partner characteristics as crucially important for continuing sexual activity in older adulthood, since most sex among older people occurs in couples (Galinsky, Waite, & McClintock, 2014). In this section, we review existing work on individual factors that facilitate or impede sexual activity in older adulthood, and make an argument for focusing on the dyad when studying partnered sexual expression. We then describe the role that our key independent variable—personality—plays in sexual activity at older ages, setting this factor in dyadic context, before proceeding to our conceptual model.

Sexual activity is the outcome of physical capacity, motivation, attitudes, opportunity for partnership, and relationship quality (Bullivant et al., 2004; Lindau, Laumann, Levinson, & Waite, 2003). In older adulthood, these numerous factors come together to determine the frequency of sexual activity. Research on sexual behavior at older ages points to declines in sexual activity with age (Karraker, DeLamater, & Schwartz, 2011; Lindau et al., 2007a, b; Palacios-Ceña et al., 2012), arising in part from worsening physical health (Ambler, Bieber, & Diamond, 2012; Karraker et al., 2011; Palacios-Ceña et al., 2012), and comorbid diseases (Lindau & Gavrilova, 2010; Palacios-Ceña et al., 2012), and these physical health deficits may be particularly consequential if the male partner is in poor health (Karraker & DeLamater, 2013). Loss of sexuality is also the hallmark of some mental health deficits, such as depression (DeLamater, 2012). In addition to these health factors, different dimensions of relationship quality may affect sexual activity; those who express greater marital happiness also report higher levels of sexual activity (Avis et al., 2009; DeLamater, Hyde, & Fong, 2008; Galinsky & Waite, 2014; Syme, 2014). In short, numerous physical, psychological, and relational factors as reported by a focal individual may impact frequency of sex in older adulthood.

However, we argue that this individual-focused perspective may be limited for understanding coupled sexual activity in older adulthood, since, mental or physical health deficits in one partner may reduce sexual expression, even if the other partner remains in good health (Karraker et al., 2011). Therefore, a fuller account of when and why older adults have sex requires researchers to turn their attention to the dyad, and the characteristics of both partners. Accordingly, we view sexual activity in older couples as emerging from the resources that both partners bring to their relationship, which produce the motivation and the practical circumstances necessary for sex. This perspective emerges from recent theoretical proposals in the literature on older adult sexuality (Lindau et al., 2003), which argue that individual psychological and physical resources need to be placed in a social context in order to be more fully understood, and that conceptualizing social factors in terms of social interaction and relationships may be especially fruitful for understanding the production of positive and negative outcomes. This perspective suggests that sexual expression highly influenced by the characteristics of both partners in a relationship (Galinsky, McClintock, & Waite, 2014). Thus our conceptual model of partnered sexuality includes these relational components.

In this article, we focused on a factor that may be crucial for sexual activity, and yet has often been conceptualized in individualistic terms in studies of sexuality (Eysenck, 1977; Eysenck & Wakefield, 1981; Gute & Eshbaugh, 2008; Schmitt & Shackelford, 2008; Zietsch, Verweij, Bailey, Wright, & Martin, 2010). We refer here to personality traits, that is, characteristic individual ways of presenting oneself to others, and interacting with the world. Personality has implications for sexual activity, by shaping the ways that individuals typically approach social interaction, including the ways that they seek out, initiate, and maintain sexual activity in social interaction with romantic and sexual partners (Eysenck, 1977; Gute & Eshbaugh, 2008; Schmitt & Shackelford, 2008). Personality traits can also affect numerous intervening variables, which in turn shape sexual activity, as we discuss in more detail below.

The most commonly used framework for measuring personality traits is the Big Five (John, Naumann, & Soto, 2008; Malouff, Thorsteinsson, Schutte, Bhullar, & Rooke, 2010). These dimensions of personality, summarized in the mnemonic *OCEAN*, are (a) Openness to experience, (b) Conscientiousness, (c) Extraversion, (d) Agreeableness, and (e) Neuroticism. Others have suggested that there exists a global disposition to display a high level of positive emotionality across Big Five traits (Iveniuk, Laumann, McClintock, Tiedt, & Waite, 2014a; Iveniuk, Waite, Laumann, McClintock, & Tiedt, 2014b; Musek, 2007), which represents the intersection of various positive dimensions of personality. This overarching characteristic may represent global positive affect, as well as a tendency to present oneself in a positive light in social interaction (Iveniuk et al., 2014a, b). This personality characteristic, called *Positivity,* was found by Iveniuk et al., (2014b; also see Iveniuk et al., 2014a for a review) to be related to marital conflict; wives whose husbands were high on Positivity reported lower levels of conflict than wives whose husbands showed lower levels; wives' Positivity was unrelated to either spouse's report of conflict. This suggests that Positivity may describe a personality characteristic that is beneficial for social interaction, at least with one's spouse. A recent methodological

article also proposed a bi-factor modeling approach as a way to measure this construct, and argued that high correlations among Big Five traits may be accounted for by this factor (Iveniuk et al., 2014a).

We argue below that the tendency to present oneself to others in a positive light is associated with both individual and dyadic facets of sexual motivation and behavior in ways that increase frequency of sexuality in the dyad. Note that we do not argue that Positivity represents all that is "good" in the Big Five, but rather the overall affectually positive, both intrapsychically, and in social interaction. Therefore, this article brings together perspectives that have previously mostly focused on the individual, such as personality research (Gute & Eshbaugh, 2008; Schmitt & Shackelford, 2008; Zietsch et al., 2010), and sociological perspectives that theorize the relationship itself (Galinsky & Waite, 2014; Iveniuk et al., 2014b). We will now describe the conceptual model that emerges from bringing these perspectives together.

Conceptual Model

We proposed a model, shown in Fig. 1, to summarize the hypothesized relationship between Positivity and frequency of sex among older couples and the mechanisms responsible for the effect. Latent factors are in ovals, while measured factors are in rectangular boxes. We hypothesized two pathways through which the Positivity of each partner may affect frequency of dyadic sex at older ages.

First, we posited an *individual facet* of Positivity, a feature of personality that comprises overall positive affect, and positive affect experienced specifically in interaction with others (Iveniuk et al., 2014a, b). Highly positive persons may experience more rewarding affect in social interaction than do those who are less positive, leading them to think about and seek out sexual interaction as part of their overall disposition to desire mutually rewarding and pleasurable social contact. In our model, these highly positive people think about sex more often, and rate sex as more important to them than do those lower in Positivity. Therefore, we hypothesize that the individual's sex drive and the importance of sex to him or her will mediate the effect of Positivity on frequency of sex in older couples. We argue that spouses will have sex with each other more often when both the male and the female partner think about sex often (Corona et al., 2010; Corona, Rastrelli, Maseroli, Forti, & Maggi, 2012), and rate sex as important (Ambler et al., 2012; Gott & Hinchliff, 2003).

Second, we posited a *dyadic facet* of Positivity, corresponding to the individual's concept of him- or herself as consistently appreciated by others, including the degree to which the person sees him/herself as liked by and beneficial for his or her spouse. We proposed that for such persons, their Positivity led to better overall relationship quality, including greater satisfaction with the marriage, less conflict or trouble, and more frequent caring

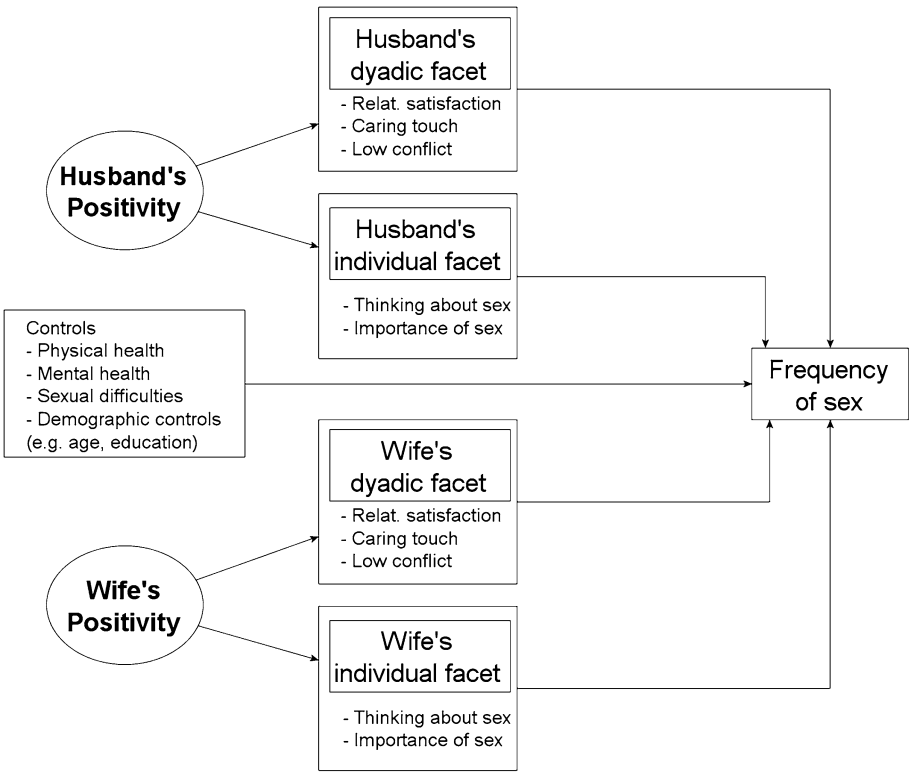

Fig. 1 Conceptual model of positive personality traits and frequency of sex at older ages

physical contact in everyday interaction (Fisher et al., 2015). We also hypothesized, following previous research, that those high in relationship satisfaction (Heiman et al., 2011; Karraker et al., 2011), those who share caring touch frequently (Fisher et al., 2015; Galinsky, 2012), would have sex with their spouse more frequently than those in relationships of poorer quality. Although we could find no literature on sexual activity and marital trouble, we argue that poor quality may reduce frequency of partnered sex by making it a less pleasant encounter. Thus Positivity will affect frequency of sex not only through the dispositions of the two individuals, but also through relationship quality and partners' behavior in the relationship. These individual and dyadic factors will mediate the effect of Positivity on frequency of sex.

Finally, our conceptual model points to a key role for *gender* in the process through which Positivity affects frequency of sex. In this model, Positivity may increase the frequency of sex among older adults through the individual's characteristic modes of thought (individual facet) or their characteristic modes of behavior in relation to their spouse (dyadic facet). However, gendered marital roles may shape the expression of both these factors. Older men agree to sex more often when their spouse wants to have sex than older women do (Impett & Peplau, 2003; Kim & Waite, 2014; Peplau, 2003). To the extent that men want sex, on average, more than women do (Peplau, 2003), women may act as the sexual gatekeepers in many couples, deciding when and how often the couple has sex. Accordingly, we hypothesize that the personality characteristics of the husband will be more consequential than the personality characteristics of the wife, since the husband's role in marital sexual scripts will be to perform actions that indicate to his wife that sex is desirable and appropriate. Therefore, we allowed the consequences of Positivity to differ depending on the gender of the person who possesses either high or low Positivity, and we hypothesized that the husband's Positivity will be more consequential for the couple's frequency of sex than will the wife's Positivity. In addition, wives of men who are high in Positivity may agree to sex more often when asked, at least in part because it is a more pleasant encounter.

Although not a focus of this article, our model included characteristics of the individuals that may affect sexual activity directly. These included measures of physical health, including chronic diseases and limitations in activities of daily living, measures of psychological health, specifically depressive symptoms and anxiety symptoms, and a measure of the sexual problem most often mentioned by men, erectile dysfunction, and the problem most often mentioned by women, difficulty with lubrication (Laumann, Das, & Waite, 2008), and a set of demographic characteristics used as controls.

Our hypotheses may be summarized as follows: We hypothesized that having an overall Positive personality would be associated with greater sexual activity in older couples, and that this association would be mediated by relationship quality, believing that sex is important, and thinking about sex more often. Moreover, within the same dyad, the Positivity of the male partner would be more important than that of the female. We now proceed to our methods to describe our operationalization of the conceptual model, and how we tested hypotheses emerging from the model.

Method

Participants

The data came from Wave 2 of the NSHAP, a nationally representative survey of older Americans (Waite et al., 2013). NSHAP is designed to collect extensive information on the social, romantic and sexual lives of older respondents, as well as a broad array of assessments of health. The first wave of NSHAP, collected in 2005–2006, comprised 3005 respondents with a response rate of 75.5 %. By Wave 2, fielded in 2010–2011, 430 became deceased, 139 had health problems that were too severe for them to participate in the interview, 4 were in a nursing home, and an additional 171 could not be contacted. Of those partners who were asked to participate in W2, 84.5 % consented and were interviewed, yielding a sample of 955 partners, and thus, 955 marital and cohabitational dyads. Spouses and co-resident partners were interviewed using the same protocol as the focal respondents; note that age was not used as a criterion for whether a *partner* would be interviewed, and so respondents added to the sample could be younger than 62. There was one same-sex female couple and one same-sex male couple; since this is too few to make inferences about non-heterosexual pairings, we did not include these couples in the analysis below, leaving 953 couples. Additionally, thirteen dyads showed noteworthy discrepancies between husbands' and wives' reports (one partner reported weekly sex, and another partner reported no sex in the past year), and were excluded from the sample, leaving 940 persons as our analytic sample. Including partners, the W2 response rate was 76.9 % (O'Muircheartaigh, English, Pedlow, & Kwok, 2014).

Measures

Frequency of Sex

The dependent variable for this analysis was constructed using both husbands' and wives' reports. Husbands and wives were each asked: "In the last 12 months, about how often did you have sex with [current partner]?" Sexual activity was defined for respondents as "any mutually voluntary activity with another person that involves sexual contact, whether or not intercourse or orgasm occurs." Because our unit of analysis was the couple rather than the individual, we averaged the two respondents' reports to create a single variable describing frequency of sex in the dyad. As stated above, we excluded dyads with large disagreements between partners on frequency of sex. The result is a

five-level ordinal variable describing frequency of sex in the past year within the dyad, ranging from "*None at all"* to "*Once a week or more."*

Personality

The Big Five dimensions of personality and Positivity were measured using the Midlife Development Inventory or MIDI, which is a 20-item adjective battery, where respondents are asked to rate how well the adjectives describe them, using a four-point scale ranging from "*not at all"* to "*a lot"* (Iveniuk et al., 2014a; Lachman & Weaver, 1997). Measures constructed from the MIDI are highly consistent across time at older ages (Turiano et al., 2012), meaning that our personality measure generally described individuals as they have been for some time. Loading of the adjectives on the latent OCEAN factors are described below, along with the method we used to construct the sixth factor, Positivity. Using a confirmatory factor analysis (CFA), also described below, we estimated and predicted factor scores to measure latent personality variables, including Positivity.

Physical Health

Comorbidities were calculated as a weighted count of thirteen chronic conditions, including cancer, arthritis, high blood pressure, diabetes, stroke, and osteoporosis. This measure is a shortened form of the Charlson Comorbidity scale, using 10 of the original 19 items, and has been validated by previous studies in older populations (Vasilopoulos, Kotwal, Huisingh-Scheetz, & Waite, 2014). Note that we do not report an alpha for this standard scale because it is not necessarily a measure of a latent construct, but rather a measure of total comorbididty burden. Activities of daily living (ADL) difficulties were constructed as a dichotomous variable indicating whether the respondent had any difficulties with any of the following activities: dressing, bathing, toileting, getting in and out of bed, eating (alpha = .83; see Williams, Pham-Kanter, & Leitsch, 2009 for more information).

Mental Health

We measured whether the respondent has severe depressive symptoms using NSHAP's version of the Iowa 11-item Centers for Epidemiologic Studies Depression scale (CES-D; alpha = 0.79). The scores of the scale ranged from 0 to 22, and was dichotomized at 8, which corresponded to the clinical cutoff from the Iowa Scale (Payne, Hedberg, Kozloski, Dale, & McClintock, 2014). Anxiety was measured using NSHAP's version of the 11-item anxiety subscale from the Hospital Anxiety and Depression Scale, (HADS; alpha = 0.73), also dichotomized at 8 (Payne et al., 2014).

Erectile dysfunction was measured using a question asked of male respondents about whether they had trouble getting or maintaining an erection. Similarly, female respondents were asked whether they had trouble *lubricating* (Waite, Laumann, Das, & Schumm, 2009). Note that we do not conceptualize both of these as sexual dysfunction, since women may have difficulty lubricating even if they experience sexual arousal (Basson, 2005).

Individual Sexuality (Individual Facet Variables)

Importance of sex and frequency of thinking about sex are each associated with more frequent sex (Ambler et al., 2012; Corona et al., 2012; Gott & Hinchliff, 2003). Each spouse was asked to rate the importance of sex in their lives using a scale ranging from "*Extremely important*" to "*Not at all important,"* which we recoded into three categories: "*Somewhat to not at all,"* "*Moderately"* and "*Very/Extremely."* Each was also asked how often they think about sex, which we coded into three categories: "*Less than once a month,"* "*Once or a few times a month"* and "*Once a week or more."* We recoded these variables in order to achieve adequate cell sizes in each category.

Relationship Quality (Dyadic Facet Variables)

Frequency of sex may be affected by satisfaction with the relationship (Avis et al., 2009), frequency of caring touch with the partner (Fisher et al., 2015; Galinsky et al., 2014; Galinsky & Waite, 2013), and levels of conflict in the relationship (Brown & Kawamura, 2010; Galinsky, 2012b; Galinsky & Waite, 2013; Warner & Kelley-Moore, 2012). Relationship satisfaction was measured using two items combined into a scale: how physically pleasurable the respondent found their relationship with their partner, and how emotionally satisfying they found their relationship with their partner (alpha = 0.81). Note that there was no lead-in for 'physically pleasurable' that defined the term. However, the question makes clear that this was a question of the respondent's assessment of the relationship, and therefore not as assessment of their own, or their partner's, level of physical functioning. We also measured whether the respondents shared a daily "*caring touch, such as a hug, a touch on the arm, or a neck rub*" with their partners (Galinsky, 2012). Finally, low conflict (spousal trouble), was measured using three items: "*how often does [current partner] make too many demands on you?"* "*how often does [current partner] criticize you?"* and "*how often does your partner get on your nerves?"* (alpha = 0.65; Iveniuk et al., 2014a, b).

Additional Controls

We also control for the respondents' age and the number of years they have been living together, as well as the ethnic composition and educational composition of the dyad (Karraker & DeLamater, 2013). We also created three dichotomous variables for (1) whether the dyad contains at least one

non-Hispanic black, (2) at least one Hispanic, and (3) at least one partner with a BA or more. We created these three new variables because with dyads, ethnicity and education were highly correlated.

Statistical Analyses

Constructing Positivity

The first stage of our analysis used CFA to extract the Big Five dimensions of personality, as well as the additional Positivity factor. It is not uncommon in CFAs to include an additional factor capturing variance which is due to person-specific patterns of scale use across subscales (Chang, Connelly, & Geeza, 2012; DiStephano & Motl, 2009). This sort of CFA is called a *bifactor model*. To model positivity, we fit a sixth factor which was allowed to predict respondents' scores on all items. Thus every item was predicted by both the general factor (Positivity) and a specific factor (corresponding to one of the Big Five). This changed the interpretation of the other five factors, as we point out in the discussion. Since the response categories are ordinal, we employed an ordered probit link, and so all factor loadings were in standard deviation units on a standard normal distribution, with a mean of 0; as such, factor scores could be negative.

Regression Analysis

Regressions were carried out using ordinal probit analyses, fit with Full Information Maximum Likelihood (FIML) in order to assuage problems with missing data. FIML makes use of all information that exists for any of the variables included in the model (Enders & Bandalos, 2001). We first predicted our outcome without potential mediators, and then fit a second model that included these mediators. In each model, we used Wald tests to examine whether coefficients associated with husbands' characteristics had a different association with frequency of sex than wives' characteristics. All continuous variables (personality, comorbidities, spousal satisfaction, spousal trouble, years living together) were standardized before being inputted into the model, in order to facilitate comparisons within and across models.

Mediation Analysis

Following our regression analyses, we tested to see how much of the association between husbands' Positivity and frequency of sex was mediated by the factors that we hypothesized would be important (the variables listed above under "Individual sexuality" and "relationship quality"). For each mediation analysis, we fit two equations, one predicting our outcome using husbands' Positivity, our mediator, and our "additional controls," and then a second equation predicting our mediator using husbands' Positivity and the "additional controls." We calculated indirect effects using the product method, and calculated standard errors with bootstrap methods (Baron & Kenny, 1986).

Results

Figure 2 shows the results of the Positivity model. Previous to fitting this model, we attempted several alternative specifications, comparing models by three measures: the chi squared test of model fit, the Confirmatory Fit Index (CFI), and the Root Mean Squared Error of Approximation (RMSEA). Insignificant chi squared values, CFIs greater than .95, and RMSEA's less than .10 generally indicate good fit to the data (Ullman & Bentler, 2003). First, we fit a model with five latent factors corresponding to OCEAN, estimating all covariances between latent factors (χ^2 4919.67; CFI .85; RMSEA .10). Second, we fit a model using the General Factor of Personality (Erdle & Rushton, 2011; Van der Linden, Scholte, Cillessen, te Neijenhuis, & Segers, 2010), which is a common second-order trait in the personality literature (χ^2 5083.59; CFI .84; RMSEA .10). Finally, we fit the model as shown in Fig. 1, which added a sixth factor, and left all factors constrained to have covariances of zero (χ^2 2078.66; CFI .94; RMSEA .07); allowing additional paths meant the model was no longer identified. The chi squared test was always significant $p < .001$, but the chi squared test is rarely insignificant in large surveys because it is sensitive to sample size (Ullman & Bentler, 2003). This final, six-factor model had the best fit. Variances of latent factors were constrained to one, and means set to zero, again to ensure the model was identified. Note that even though that the items that predict 'N' are not predicted by Positivity, we retain them, along with the 'O,' 'C,' 'E,' and 'A' factors, as additional predictors of sexual activity, because these Big Five traits may still be consequential for sexual activity, even after their cross-trait variance (i.e., Positivity) has been extracted.

Table 1 presents sample characteristics for the variables in the models. Personality differed between men and women on every trait and on the overarching trait of personality. Women showed more positivity, on average, than men (0.15 vs. −0.20), higher levels of Conscientiousness (0.030 vs. −0.030), Extraversion (0.05 vs. −0.02) Agreeableness (0.12) vs. −.19), and Neuroticism (0.20 vs. −0.08), but lower levels of Openness (−0.04 vs. 0.09). The sample had an average age of 72.3 (males) and 68.8 (females). Note that the minimum age is 36, because there was no age restriction on the recruitment of partners. A total of 5 men and 46 women were under 57 years old (the minimum age of recruitment to the NSHAP sample, see Lindau et al., 2007b). Because we were concerned about these younger persons biasing the sample, we re-estimated the models below without them, and we obtained very similar results. In terms of ethnic composition, 14 % had at least one Hispanic partner and 11.4 % had at least one black partner. Just over a third had at least one college graduate, and the couples had been living together 39 years, on average.

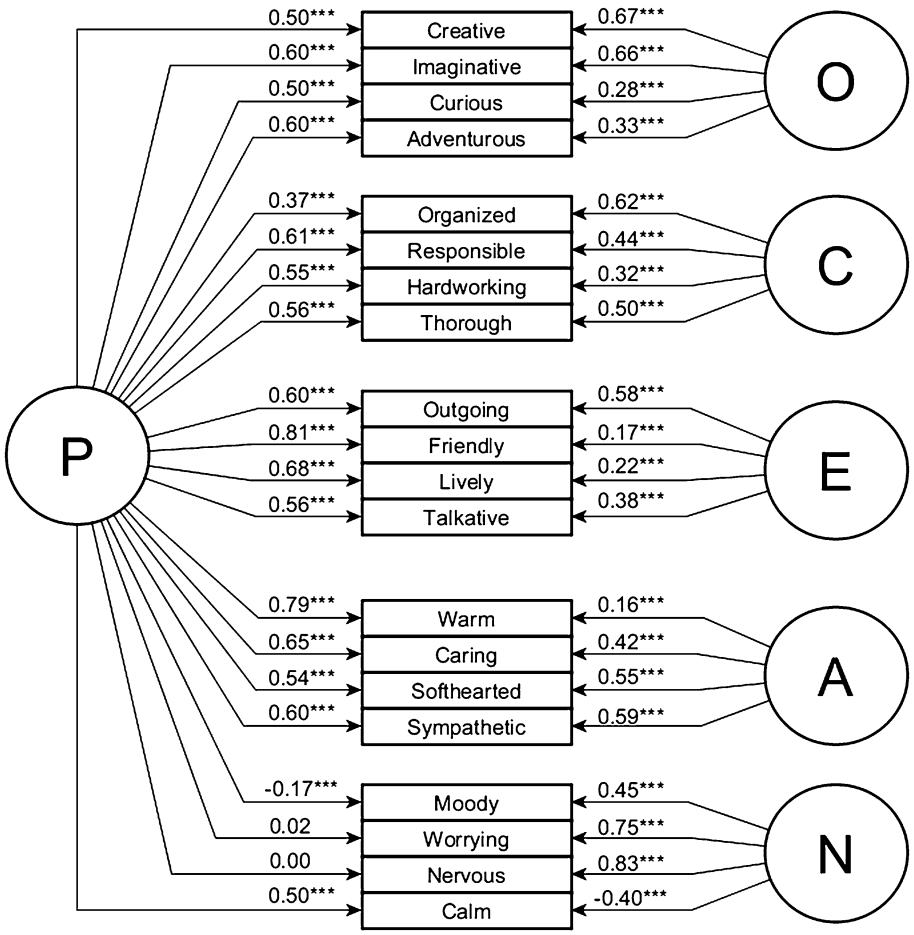

Fig. 2 Positivity in a confirmatory factor analysis of the big five. Personality factors are (clockwise from the left) positivity, openness, conscientiousness, extraversion, agreeableness, neuroticism

Men had more comorbid diseases than women did (2.6 vs. 2.3) on average, although there were no differences in ADL limitation. A greater share of women (20.9 %) than men (14.1 %) had significant levels of depressive symptoms and anxiety symptoms (26.3 vs. 22.4 %).

Table 1 also shows that 37.3 percent of couples had no partnered sex in the past year, the modal response, and 30 % have had partnered sex 2–3 times per month. Eleven percent had sex once a week or more. Forty-five percent of the men reported erectile dysfunction, and 34.6 % of the women reported difficulties with lubrication. Men reported higher levels of spousal satisfaction than did women but also reported higher levels of spousal trouble. Just over half of men and women reported that they shared a caring touch at least once a day. A greater share of men (34.3 %) than women (19.8 %) said that sex was very or extremely important to them, and men were much more likely than women to have said they think about sex every day (56.6 vs. 26.5 %). Note that among these variables, the greatest amount of missing data was among items that were produced from the leave-behind questionnaire, such as the personality battery items (11.8 % missing for men; 12.1 % missing for women); variables with the least amount of missing data were age and education, with 100 % non-missing data.

Table 2 gives the results for our three ordinal probit regressions, predicting frequency of sex in the NSHAP sample of older Americans. Husbands' and wives' coefficients were compared within models. Looking at Model 1, which did not control for hypothesized mediators, we can see that husbands' who were high in Positivity also had sex with their wife more frequently ($b = 0.31$, $p < .001$), but there was no association with wives' positivity ($b = 0.05$, n.s.). Furthermore, couples in which the husband ($b = -0.19$, $p < .05$) or wife ($b = -0.17$, $p < .05$) was high on Extraversion or the husband was high on Agreeableness ($b = -0.23$, $p < .01$) had sex less frequently than others. Recall that we removed the general positive component of both these traits, meaning that the trait 'E' was closer to a measure of surgency (Iveniuk et al., 2014b; Soto, John, Gosling, & Potter, 2011), and Agreeableness may have been closer to a measure of cooperativeness or a tendency to acquiesce to demands (Graziano & Tobin, 2002). The association between husbands' Positivity and the couple's frequency of sex was larger than the association between wives' Positivity and frequency of sex, at $p < .05$. Among the controls we saw that the age of both partners was negatively associated with frequency of sex (husbands' age: $b = -0.35$, $p < .001$; wives' age: $b = -0.31$, $p < .001$), and that frequency of sex was negatively associated

Table 1 Sample characteristics; means and standard deviations, frequencies and percents ($N = 955$ couples)

	Husbands mean (SD)/Num. (%)	Gender difference	Wives mean (SD)/Num. (%)	Within-couple correlation
Individual characteristics				
Personality (range −4.0 to 2.4)				
Positivity	−0.20 (0.88)	§§§	0.15 (0.79)	.09**
Openness	0.09 (0.75)	§§	−0.04 (0.77)	.06
Conscientiousness	−0.03 (0.70)	§	0.03 (0.82)	−.01
Extraversion	−0.02 (0.63)	§	0.05 (0.63)	.04
Agreeableness	−0.19 (0.66)	§§§	0.12 (0.58)	.07*
Neuroticism	−0.08 (0.85)	§§§	0.20 (0.79)	.07*
Comorbidities (range 0–12)	2.64 (2.18)	§§§	2.30 (1.87)	.11**
ADL difficulties (range 0–1)	193 (20.6 %)		181 (19.3 %)	.23***
Depressive symptoms (range 0 or 1)	135 (14.1 %)	§§§	198 (20.9 %)	.27***
Anxiety symptoms (0 or 1)	177 (22.4 %)	§	205 (26.3 %)	.24***
Erectile dysfunction (range 0 or 1)	376 (45.4 %)	N/A	N/A	N/A
Difficulties with lubrication (range 0 or 1)	N/A	N/A	276 (34.6 %)	N/A
Age (range 36–99)	72.28 (7.35)	§§§	68.80 (8.05)	.70***
Spousal satisfaction (range 1–5)	4.12 (.89)	§§§	3.79 (.98)	.38***
Spousal trouble (range 1–3)	2.33 (0.65)	§§	2.26 (0.67)	.30***
Daily caring touch (range 0 or 1)	453 (55.1 %)		468 (57.8 %)	.57***
Importance of sex (range 1–3)		§§§		.37***
Somewhat to not at all (1)	316 (38.0 %)		441 (53.9 %)	
Moderately (2)	231 (27.8 %)		215 (26.3 %)	
Very/extremely (3)	285 (34.3 %)		162 (19.8 %)	
How often thinks about sex (range 1–3)		§§§		.31***
Less than once a month (1)	144 (15.9 %)		370 (40.7 %)	
Once or a few times a month (2)	250 (27.5 %)		297 (32.7 %)	
Once a week or more (3)	514 (56.6 %)		241 (26.5 %)	
				Mean (SD)/Num (%)
Couple characteristics				
Frequency of sex (range 1–5)				
None at all (1)				339 (37.3 %)
Between none and 2,3 times a month (2)				86 (9.46 %)
2,3 times a month (3)				273 (30.0 %)
Between 2,3 times a month and once a week (4)				110 (12.1 %)
Once a week or more (5)				101 (11.1 %)
At least one Hispanic (range 0 or 1)				135 (14.1 %)
At least one non-Hispanic black (range 0 or 1)				109 (11.4 %)
At least one BA or more (range 0 or 1)				355 (37.1 %)
Years living together (range 1–71)				39.1 (15.79)

Spearman correlation if ordinal; tetrachoric correlation if dichotomous; Pearson correlation if continuous. Mean and standard deviation given if variable is continuous, number and percent if dichotomous or ordinal

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

Gender difference (two-tailed t test): § $p < .05$; §§ $p < .01$; §§§ $p < .001$

Table 2 Ordinal probit regressions predicting frequency of sex, using husbands' and wives' self-reported characteristics ($n = 940$)

	Model 1		Model 2	
	Individual characteristics		Individual characteristics	
	Husbands' self-reports	Wives' self-reports	Husbands' self-reports	Wives' self-reports
Personality				
Positivity	0.31***§	0.05	0.12	−0.06
Openness	−0.06	−0.04	−0.07	−0.11
Conscientiousness	−0.06	0.04	−0.12	0.14
Extraversion	−0.19*	−0.17*	−0.26**	−0.15
Agreeableness	−0.23**	−0.09	−0.25**	−0.12
Neuroticism	0.00	0.03	0.03	0.06
Comorbidities	−0.15*	−0.03	−0.09	−0.03
ADL problems	−0.34	−0.18	−0.37	−0.15
Depressive symptoms	−0.31	−0.06	−0.40	−0.21
Anxiety symptoms	−0.25	−0.13	0.01	−0.07
Erectile dysfunction	−0.69**		−0.56*	
Lubrication difficulties		0.33		0.38
Age	−0.35***	−0.31**	−0.21*	−0.14
Spousal satisfaction			0.26**	0.30**
Spousal trouble			−0.17*§§	0.20*
Daily caring touch			−0.05	0.30
Importance of sex				
Somewhat, not at all (ref.)				
Moderately			1.14***§	0.41*
Very/extremely			1.16***	1.01***
How often thinks about sex				
<Once a month (ref.)				
Once, few times a month			1.10***	0.97***
≥Once a week			1.37***	1.36***
	Couple characteristics			Couple characteristics
Hispanic	0.50*			1.05***
Black, non-Hispanic	−0.11			0.41
BA or more	0.14			−0.12
Years living together	−0.09			−0.01
Intercepts				
Threshold 1	−0.97***			1.95***
Threshold 2	−0.48*			2.67***
Threshold 3	1.15***			4.97***
Threshold 4	2.15***			6.23***

All continuous coefficients standardized to facilitate comparisons of association size (age, traits)

* $p < .05$; ** $p < .01$; *** $p < .001$; § husbands' and wives' coefficients different at $p < .05$, §§ husbands' and wives' coefficients different at $p < .01$

both with husbands' comorbidities ($b = -0.15$, $p < .05$) and erectile dysfunction ($b = -0.69$, $p < .01$). Wives' comorbidities or lubrication difficulties were not associated with frequency of sex. Hispanic couples were also more likely than others to have sex frequently ($b = 0.50$, $p < .05$).

Model 2 introduces measures of individual sexuality and relationship quality. Both partners' relationship satisfaction was important for frequency of sex (husbands: $b = 0.26$, $p < .01$) (wives: $b = 0.30$, $p < .01$). If husbands reported conflict with their wives, they had less frequent sexual activity ($b = -0.17$, $p < .05$), but if wives reported conflict with their husbands, then the dyad experienced *more* sexual activity ($b = 0.20$, $p < .05$). Daily caring touch was not associated with more frequent sexual activity. Both men and women who reported that sex was very/extremely

important to them also reported significantly more frequent sex with their partner than those who said sex was less important to them (husbands $b = 1.16$, $p < .001$; wives $b = 1.01$, $p < .001$). Also, those who thought about sex once a week or more were also more likely to have sex more frequently (husbands: $b = 1.37$, $p < .001$; wives: $b = 1.36$, $p < .001$). The addition of these mediators reduced the coefficient for husbands' Positivity to insignificance ($b = 0.12$, n.s.). Including these measures of key attitudes of each spouse reduced the association between husbands' Positivity and frequency of sex to insignificance even when dyadic facet variables were not included in the model. Note as well that wives' age is also not associated with frequency of sex in this model ($b = -0.14$, n.s.). These models do not allow us to examine which factors mediate the association between husbands' Positivity and frequency of sex. We now turn to our mediation analysis in order to examine this question.

Table 3 shows the results of this mediation analysis. The total effect of husbands' Positivity on frequency of sex was 0.16 ($p < .001$). We decompose this association into the indirect effect (the portion of that association that works through the mediating variable), and the direct effect (the portion of that association that does not work through the mediating variable). We can see that among the dyadic factors, the husband's reports of spousal satisfaction, spousal trouble, and daily caring touch all partially mediated the association between husband's Positivity and frequency of sex, although only a very small part of the association was mediated by spousal trouble (Indirect Effect = 0.01, $p < .05$). The association between husband's Positivity and frequency of sex was also partially mediated by wives' reports of spousal satisfaction and daily caring touch. Among the individual facet factors, we can see that the association between husbands' Positivity and frequency of sex was not mediated by how often he thought about sex, but was completely mediated by how important he said sex is to him. In other words, a husband who was highly Positive, but whose Positivity did not translate into rating sex as important, would not be as likely to have frequent sex with his spouse, compared to a husband whose Positivity did translate into thinking about sex more frequently. Part of the association between husband's Positivity and frequency of sex also appeared to be mediated by how often his wife thought about sex, and how important she believed sex to be. There was no mediating, indirect effect through how often the *husband* thought about sex.

Discussion

In this article, we investigated partnered sexual activity at older ages, positing that sexual activity in this group arose from a confluence of characteristics of the two individuals, including their psychological and physical health, and characteristics of the relationship. We carried out a CFA of a Big Five personality battery, and constructed a measure of respondents' general Positivity, which loaded strongly on positively worded items (for a fuller discussion of Positivity, see Iveniuk et al., 2014a, b). Our analyses showed that among older Americans, the Positivity of the husband was associated with more frequent sex in older couples.

Based on the pattern of mediation observed in our analyses, it would appear that the association between husbands' Positivity and sexual activity was largely the result of more Positive husbands being more likely to think of sex as highly important. This corresponded with the expected patterns in our conceptual model, where Positivity was parlayed into greater frequency of sex in part by affecting one's own thinking about sex and valuation of sex. More Positive husbands also reported better relationship quality, which also affected frequency of sex, as expected. However, we also observed cross-partner mediation patterns, where the male partner's personality was positively associated with the female partner's reports of sexual thoughts, and importance of sex. As discussed above, this may be because husbands who are more positive may translate their overall upbeat personality into a greater valuation of sex, and because greater Positivity may lead the female partner to consider sex with her husband to be more desirable.

Table 3 Mediators of the association between husbands' positivity and frequency of sex in older couples

	Husbands' mediating characteristics		Wives' mediating characteristics	
	Direct effect of husbands' positivity	Indirect effect of husbands' positivity	Direct effect of husbands' positivity	Indirect effect of husbands' positivity
Mediating variable				
Spousal satisfaction	0.12**	0.04**	0.13**	0.03**
Spousal trouble	0.15***	0.01*	0.15***	0.01
Daily caring touch	0.11**	0.05**	0.13**	0.03*
Importance of sex	0.05	0.11***	0.09*	0.07**
How often thinks about sex	0.12**	0.04	0.11**	0.05*

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

Direct and indirect effects always sum to a total effect of 0.16, significant at $p < .001$. Mediation analyses decompose this total effect into direct and indirect effects. Thus each pair of direct and indirect effects sums to 0.16

There does not appear to be a corresponding process connecting wives' Positivity to greater frequency of sex, and the reasons for this remain unclear. Note that even though wives' Positivity was not associated with greater frequency of sex with their partner, wives who thought about sex more often, and who said sex was important to them, were more likely to have frequent sex, regardless of how often their husbands had thoughts about sex, and also regardless of how important their husbands rated sex. This corresponds to previous literature in which thinking about sex and valuation of sex were not hypothesized to have gender-specific consequences (Ambler et al., 2012; Corona et al., 2010, 2012; Gott & Hinchliff, 2003). On average, older men desired sex more frequently than older women, and therefore, it may be the case that more Positive older men are more likely to manifest their Positivity in ways that make them a more attractive sexual partner. Positive older men may be more charming and flirtatious, and because their role in sexual expression is often one of initiator (Impett & Peplau, 2003; Lodge & Umberson, 2012; Peplau, 2003), these gender-typical marital roles may convert their Positivity into greater sexual frequency within the dyad. In other words, the gendered roles within the marital dyad shape how personality leads to more or less sexual activity—something that our data were particularly useful for discovering, since they included measures on both husbands' and wives' traits within the same dyad.

Among our mediating variables, several factors emerged as independently important for continuing sexual activity. Satisfaction with the marriage was important for continuing sexual activity, regardless of whether it was the husband's report, or the wife's. This also corresponds to findings from previous work (Heiman et al., 2011; Karraker & DeLamater, 2013). Interestingly, while marital conflict as reported by the husband was associated with decreased frequency of sex, martial conflict as reported by the wife was associated with *increased* frequency of sex. Recall that the items that make up this battery include one that asks about 'too many demands' and 'getting on nerves.' It may be that husbands who are making too many demands of their spouse are also demanding sex, and that even if the wife acquiesces to these demands, she still finds the husband's behavior to be burdensome.

Also net of these measures of relationship quality, the importance of sex to each of the partners and the frequency with which each thinks about sex emerged as powerful predictors of frequency of sexual activity. There was one gender difference between men and women, in that husbands who rated sex as 'moderately' important were likely to be having more frequent sex compared to wives who also reported that sex was 'moderately' important to them. However, other than this difference, the importance of sex, and thinking about sex was independently and comparably important for men and women in older couples. Although our study has described older husbands as being more often in the role of initiator, due to gender-based expectations in behavior, this should not be taken to mean that women in older couples are passive or unimportant in determining the frequency of sex. Based on these findings, even if a husband has a low sex drive compared to his wife, our results suggest that this couple will have sex more frequently than a couple where both partners have subdued sex drives.

Several findings among the controls also deserve interpretation, including other personality variables in this study. Older couples were less likely to be having frequent sex if the husband was more agreeable. Interpreting this finding net of Positivity is difficult, since Agreeableness typically comprises an altruistic and beneficent orientation toward others (see the adjectives that make up this item in the CFA). Removing the socially positive component may have left behind an acquiescence factor, meaning husbands may be more likely to reduce their demands for sex. This is commensurate with previous work arguing that female sexual arousal may be contingent upon male initiation, and subsequent female response; if so husbands with this trait may be less likely to stimulate desire in their partners, leading to less frequent sex (Basson, 2005; Basson et al., 2004). Extraversion net of Positivity may reduce frequency of sex for different reasons, namely that without Positivity, Extraversion becomes a "surgency" factor, proxying energy and vitality, but without necessarily expressing that energy in a way that is pleasant for their partner. In line with this interpretation, previous work using the Positivity factor showed that net of Positivity, Extraversion was associated with more marital conflict (Iveniuk et al., 2014b). Therefore, while extracting Positivity from the Big Five created challenges for interpretation of the remaining factors, these findings are also suggestive for future hypotheses about the role different traits play in sexual activity.

Turning now to health, surprisingly few health factors were associated with differences in frequency of sex. Among these, erectile dysfunction showed the strongest negative association with frequency of sex. Lubrication problems did not have any association with frequency of sex, and in line with previous studies, it would appear that husbands' inability to have an erection may be a challenge for sexual intercourse (Laumann & Waite, 2008; Lindau et al., 2007a). Lubrication problems may be more easily addressed with artificial lubricants, whereas erectile dysfunction typically requires pharmacological interventions. Among the other health factors, only the husband's comorbidity burden was associated with differences in frequency of sex, and this association was reduced to non-significance by the addition of controls. Therefore, while the husband's health may be important for continuing sexual activity, for individuals who think about sex more frequently and see it as very important, sexual expression of some kind may continue. Note that our outcome was not necessarily 'intercourse,' and so even for individuals with serious health problems, there may be opportunities for different kinds of sexual activity.

Limitations

This article benefitted from several unique strengths, including a large national dyadic dataset, a diversity of measures, and a conceptual model incorporating an innovative measure of personality. However, several limitations still remain which we could not address in this work. First, our measures of sexual function are very limited. We do not have access to a diversity of measures in order to assess functioning beyond the measures that we describe here. Second, we did not examine the sources of measures like sexual ideation, beyond the role that Positivity might play in accounting for why some older adults think about sex more often than others. Sexual ideation may emerge from a much more complicated psychological and biological process, and our focus on Positivity is not meant to suggest that Positivity is somehow exclusively important for sexual ideation. Rather we focus on Positivity as a relatively underexplored factor that may increase sexual ideation. Because NSHAP only has a limited range of measures, we were also unable to incorporate other measures that might be important for continuing sexual activity and ideation, which may include relationship insecurity, and attachment styles (Birnbaum, 2007; Davis, Shaver, & Vernon, 2004). A more complex and multicausal model could be investigated in future research. Third and finally, the mechanisms that we proposed to explain the abovementioned findings were not tested beyond our mediation analysis. We were unable to test any of the conjectures above about why we might observe gender effects (e.g., whether men and women in these dyads do in fact exhibit gendered differences in scripted sexual behavior). Finer measures of behavior, and more detailed observations of the behavior of men and women in older dyads, might reveal the specific ways that personality impacts sexual activity through various mediating processes, in ways that we did not anticipate.

Conclusions

The analyses in this article bring together dyadic data on older couples, examining the gender-specific contributions of personality to continuing sexual activity in late life. We hope that the findings in this article will spur researchers on in future studies to investigate the dyadic properties of older couples, including sexual frequency. Furthermore, we hope that in future work in clinical practice, counseling, and treatment of older adults' sexual expression will involve both partners in the dyad. These theoretical and practical implications may both be necessary, as a step toward improving overall sexual satisfaction, activity, and thus quality of life at older ages. Marriage is a key component of overall quality of life in older adults, and the strength of one's relationship with one's spouse is consequential for numerous outcomes. Focusing on the dyad helps draw attention to the social and relational properties of the marriage, in addition to those individuals who compose it.

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