

Intimacy and Belonging: The Association between Sexual Activity and Depression among Older Adults

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Abstract

There is a paucity of systematic analysis of the relation between sexual activity and mental health. To address this gap, we ask whether sexual activity associates with lower levels of depression among older adults. We hypothesize that sexual activity—especially if it typically incorporates other forms of physical affection—may be a socially meaningful activity and may create intimacy that provides social uplift. We test this hypothesis against alternative hypotheses that relationship characteristics or physical health could account for any association between sex and depression. In addition, we consider whether there are gender dynamics that affect the association between sexual activity and depression. We analyze data from the National Social Life, Health, and Aging Project (NSHAP), a nationally representative survey of adults aged 57 to 85. Given findings of significant gendered aspects of depression, sexual activity, social support, and aging, we estimate separate models for women and men. Although we find differences between models for men and women for many control variables that correspond to gendered differences in depression, sexual activity that typically incorporates other forms of physical intimacy has a robust association with lower depression for both women and men.

Keywords

aging, depression, gender, sex

Despite claims in popular, practitioner, and academic circles that sex has beneficial effects on older adults' sense of belonging and self-worth (Pangman and Seguire 2000; Weeks 2002; Westheimer 2005), there has been little systematic research examining whether sexual activity has a positive association with mental health. Sociological explanations of mental health note the importance of the "sense that one belongs and matters to others" (Thoits 1995:67)—precisely the type of effect attributed to sex (Pangman and Seguire 2000). Sex may involve socio-emotional forces that make immediate and continuing contributions to mental health by providing a sense of union and promoting feelings of intimate belonging. This article tests this idea

by asking whether sexual activity associates with decreased depression among older adults.

Examining the association between older adults' sexual activity and depression can yield significant theoretical and substantive insights. The public tends not to consider how sexual activity might associate with older adults' mental health, perhaps reflecting the mistaken beliefs that the importance of sex decreases with age

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and that older people do not participate in or desire sexual activity (Gott and Hinchliff 2003; Weeks 2002). Nonetheless, transitions associated with aging—for example, leaving the labor force, experiencing the death of a spouse, and physical changes—can alter sexual activity (Cain et al. 2003; Lindau et al. 2007; Trudel, Turgeon, and Piché 2000).

These transitions also influence depression: Throughout the life course, depression follows a U-shaped pattern, reflecting the stability of middle age and the instability of family, work, and personal life transitions in younger and older adulthood (George 1993; Mirowsky and Ross 1999; Yang 2007). Yet the transitions of aging do not universally cause depression—approximately one fifth of older adults have symptoms of low to acute depression (Bower 1991; Surgeon General 1999). Although changes in social status and relations can result in significant stress for older adults (Moen 2003), increased age generally associates with increased happiness (Yang 2008). Net of the effects of transitions and other individual characteristics, age corresponds with decreased depression among older adults (Yang 2006, 2007).

In this article, we hypothesize that sexual activity associates with lower depression among older adults because sex can be a form of intimacy and a meaningful social activity that provides an uplifting sense of belonging and fosters the development of perceptions of support. The effects of aging and transitions are not uniform, since aging is an active process that people manage through the cultivation and maintenance of social networks and attachment to activities (Bath and Deeg 2005; Cornwell, Laumann, and Schumm 2008; Rowe and Kahn 1998). Successful engagement likely involves pursuing meaningful activity with others and acting in ways that others expect and respect—in other words, support networks, activities, and roles likely are integrated with each other to create a sense of belonging. As such, sex may have more of an association with lower levels of depression if it engages a partner in ways that can induce more shared, emotional responses, which can cultivate both actual and perceived support (Cornwell et al. 2008; Yang 2006). From this perspective, not all sexual activity would associate with improved mental health. Rather, we hypothesize that the association between sexual activity and lower depression depends on whether people are oriented toward their

partners, as evidenced by the integration of other forms of affection into sexual activity. Sexual activity can overlap with relationships, social support, and physical health—each of which contributes to mental health. Therefore, we test alternative hypotheses that relation and support characteristics and physical health could account for any association between sex and mental health.

Significant differences in experiences of sexual activity and rates and correlates of depression between men and women suggest that gendered processes could result in different associations between sexual activity and depression for women and men (Laumann et al. 1994; Lindau et al. 2007; Simon 2002; Walker and Luszcz 2009). Attention to these differences should not, however, obscure the possibility that underlying social processes can affect women and men in similar ways. For instance, despite gendered differences in the formation, quantity, and experience of social support relationships, being in such relationships has similar influence on the well-being of both women and men (Umberson et al. 1996). We attend to the possibility that notwithstanding gendered differences in sexual activity and in how sex associates with physical health and relationships, women and men could both receive similar psycho-social benefits from sex. Accordingly, our analysis uses separate elaboration models for women and men to compare how controlling for a range of influences affects the association between sexual activity and depression and whether sexual activity has similar or different effects for men and women.

We analyze data from the first wave of the National Social Life, Health, and Aging Project, a nationally representative survey of adults ages 57 to 85. In separate nested models for women and men, we test our research hypotheses that sexual activity associates with lower depression and that the association between sex and depression is conditioned on whether the sexual activity typically integrates other forms of physical affection. Our models include variables for the alternative hypotheses that any association between sex and mental health is due to relationship characteristics (status, quality, and support) or due to underlying physical and sexual health. While the cross-sectional analyses cannot provide evidence to support stronger causal claims, they do show an association between sexual activity and decreased depressive symptoms among older adults.

THEORETICAL FRAMEWORK

In this section, we first develop the twin research hypotheses: (1) that sexual activity associates with lower depression if (2) that sexual activity integrates other forms of affection. We then explicate alternative hypotheses that any association between sex and mental health reflects the influences of relationship characteristics or physical or sexual health. Finally, we review the limited research on the association between sex and mental health among older adults, discussing how gender may influence an association between sexual activity and mental health.

Why Sexual Activity May Decrease Older Adults' Depression

That older adults' maintaining sexual activity may have a positive association with mental health corresponds with theories that hold social support and activity produce mental health. These theories lend support to the idea that sexual activity could be associated with lower depression among older adults, since sex could induce the feelings of belonging associated with perceiving social support and may be a socially meaningful activity.

Social support theories hold that health-promoting resources flow through the networks that connect people to one another (Aneshensel 2009; Cornwell et al. 2008; Musick and Wilson 2003; Thoits 1995, 2010).¹ Sex could be more than the context of developing support; it could also play important roles in forging connections between partners. If sex is a meaningful social experience, it could induce a more exclusive type of increased support of and care for a partner. Findings that perceptions of social support influence psychological well-being (Yang 2006) lend support to this idea, since people are more likely to perceive support when it seems exclusive.

Activity theory holds that engaging in physical and mental activity underlies healthy aging by providing people with self-concepts and self-esteem while also preventing or mitigating the effects of role loss (Croezen et al. 2009; Lemon, Bengston, and Peterson 1972; Wahrendorf et al. 2008). Research suggests that aging adults experience shifts in the quality of emotions they experience, as passive emotions gain in prominence compared to active emotions. The increased prevalence of depression among older adults compared

to middle-aged adults reflects this shift in emotions (Ross and Mirowsky 2008). The discussion of emotional change suggests that the affective character of activity may play an important role in influencing how activity affects mental health: People who participate in activities evoking positive emotion, such as certain forms of sexual activity, could have lower rates of depression.

As suggested by activity theory, depression sometimes increases in later life due to transitions that lead people to give up activities that were important for their identity. In adulthood, sexual activity, particularly but not exclusively in the context of long-term relationships and marriage, is normative (Laumann et al. 1994). Sexual inactivity therefore could have potentially deleterious effects on mental health because it could indicate a loss of a component of one's identity. This idea echoes Umberson, Crosnoe, and Reczek's (2010) conclusion that the symbolic meaning of activity could influence the development of shared understandings that enable health-promoting coping, social support, activity, and relationships. Cultural beliefs about the importance of an activity provide evidence of such symbolic meaning. The general population believes that sex is important for adults' mental health. For example, one study of the well-being of 1,000 employed women found that they rated sex as providing the greatest contribution to happiness of any activity (Kahneman et al. 2004). A survey of 27,500 men and women ages 40 to 80 worldwide similarly found sexual activity consistently associated with quality of life and emotional well-being (Rosen and Bachmann 2008). Transitions of aging possibly could alter the experience of sex, changing its frequency or context (Trudel et al. 2000). Older adults who no longer engage in sexual expression and activity may feel "a lack of tenderness, insufficient loving bodily contact and loneliness" (Weeks 2002:234).

Sexual intimacy's link with warmth, care, and acceptance could thereby induce feelings of belonging. As such, sexual activity may be an emergent social experience that reminds people of their connections to others, recalling Durkheim's ([1912] 2001:314) description of effervescent social action as a source of energy much like "contact with a source of heat or electricity to warm or electrify" that binds people into social relations. Such experience "strengthens emotions . . . by bringing all those who share them into more intimate and more dynamic relationship" with each other (Olaveson 2001:100), creating a sense of

belonging and mattering and contributing to mental health. If it engrosses partners in shared union, sex may elevate people beyond individual experiences. This social experience could provide social uplift resulting in benefits for mental health, particularly in the face of wider cultural emphases on individualism (Giddens 1992).

As an experience, sexual activity is distinct due to its intimate qualities that set apart the shared activity (and participants) from other people (Durkheim [1912] 2001; Giddens 1992; Zelizer 2005). Practices that reinforce intimacy cultivate meaningful ties that distinctively identify a relation between people from other types of relations; that is, intimate ties have an element of social closure (Zelizer 2005). Given the importance of trust to intimacy, intimate relations inherently involve some attention to others. Accordingly, we suspect that the power of these intimate experiences to have enduring beneficent effects derives from the qualities of activities that take account of and are oriented toward others. Not all sexual experiences, however, are expected to create such a state. Positive meanings seem more likely when partners understand sex as a shared, mutual experience—demonstrating awareness of and orientation toward each other and how they each experience the activity (Schalet 2009). Accordingly, we hypothesize that sexual activity that incorporates more affection, such as caressing, hugging, and kissing, will have a greater effect than just the physical pleasure associated with sex, because these affectionate actions indicate a greater sense of intimacy and orientation toward another person.

Alternative Hypotheses: Relationship and Physical Health Characteristics as Explanations

Any association between sex and mental health, however, may be spurious, reflecting the underlying influence of relationship characteristics, social support, and physical well-being on both sexual activity and mental health.

Given the general associations between marital status and sexual activity (DeLamater and Sill 2005) and marriage and perceived happiness and well-being (Weeks 2002), an association between mental health and sex may simply reflect the influence of relationship status on both sex and mental health. Marriage has an association with increased mental health while the loss of a spouse has negative mental health consequences for both

men and women (Simon 2002; Wood, Goesling, and Avellar 2007). Although the effects of widowhood concentrate in the few years closest to the death of a spouse (Wade and Pevalin 2004), it has lingering negative consequences for mental health (Lee et al. 2001; Peters and Liefbroer 1997). The positive association between having a partner and mental health may extend to non-marital romantic relationships (Simon and Barrett 2010). Indeed, among older adults, non-marital sexual relationships (e.g., among widowed individuals who do not remarry) are associated with greater sexual frequency and satisfaction than marital sexual relationships (Fisher 2010).

The quality of a relationship and social support could also explain an association between sex and mental health. Perceptions of relationship quality and support might both enhance mental health and increase the likelihood of sexual activity. Supportive marriages contribute to mental health for both women and men (Williams 2003). Although women and men may differ in how they receive support in relationships, they both react to the quality of support in a relationship (Phillipson 1997; Umberson 1992; Umberson et al. 1996; Waldron, Hughes, and Brooks 1996; Walker and Luszcz 2009). Higher quality relations between partners also associates with increased frequency of sex among older adults (Trudel et al. 2000).

Finally, functional, objective, or subjective elements of physical health could account for an association between sex and mental health. Physical decline frequently results in decreasing mental health (Yang 2006). Older adults' physical health has an association with the frequency of sex, particularly in the case of declining sexual health (Lindau et al. 2007). Because older adults may believe that their sexual health could indicate their overall health, they could perceive a lack of sexual activity as an indicator of a more general physical decline (Marshall 2008). An association between sexual activity and depression could also reflect side effects of prescription medications that affect sexual function, such as antidepressants that can both reduce sexual desire and indicate preexisting depression (Kellett 1996; Marsiglio and Donnelly 1991). Urinary incontinence also could significantly affect both depression and sexual activity. Among both women and men, urinary incontinence increases depressive symptoms, although the effect is larger for men (Fultz et al. 2005). Similarly, people with urinary incontinence—particularly men—report

a decrease in the quality of their sex lives (Temml et al. 2000).

Previous Research on and Gendered Dynamics of Sex and Mental Health among Older Adults

Although aging is associated with a decline in the frequency of sex, older adults maintain active sex lives (Cain et al. 2003; Lindau et al. 2007) and often describe sex as important (Kontula and Haavio-Mannila 2009; Lindau et al. 2007; Skultety 2007). Similar studies find that sex improves self-reported happiness, quality of life, self-worth, and well-being (Marsiglio and Donnelly 1991; Rosen and Bachmann 2008). Studies of older adults' sexual practices find those who are not active more likely to rate sex as unimportant or not of interest than their sexually active counterparts (Gott and Hinchliff 2003; Lindau et al. 2007). In short, older adults differ in their opinion of whether sex has benefits based on whether they have maintained sexual activity. These findings, however, rely on individuals' self-assessments of the link between sex and mental health. As a result, they may reflect desirability biases, since people may prefer to show that their sexual activity or inactivity reflects a choice. Examining whether there is an association between sexual activity and mental health can assess if these self-assessments are accurate.

Such an examination could also provide insight about the gendering of sexual activity among older adults. Given persistent gender differences in interpersonal romantic relationships (England 2010), gender could affect older adults' sexual activity and its relation to depression. Gender theories call attention to how social structures, cultural beliefs, and routine interactions reproduce and justify categorical inequalities (Ridgeway and Smith-Lovin 1999; Risman 2004; West and Zimmerman 1987). Cultural ideas about women (as more emotional, supportive, and reactive) and men (as less emotional and more independent and proactive) shape behavioral norms, reproducing beliefs about purportedly "natural" gendered behavior (Ridgeway 2009; West and Zimmerman 2009). Such beliefs may lead to differences between women and men in the propensity to initiate sexual encounters and the nature of activity during these encounters (England, Shafer, and Fogarty 2008). Women, therefore,

may compromise more than men about sexual activities, resulting in differences in the benefits women and men derive from sex.

Sex may have gendered dimensions particular to older adults. As men experience the physical changes of aging, they may place greater emphasis on their sexual prowess in order to project masculinity (Meadows and Davidson 2006). This finding is consistent with older adults' self-report data that show men typically rating sex as more important than women rate sex (Kontula and Haavio-Mannila 2009; Lindau et al. 2007). In contrast to the self-report data, however, sex may be particularly socially meaningful and affirming for older women. Reflecting the greater value attributed to women's physical characteristics compared to men's physical characteristics, desirability as a partner decreases markedly earlier for women than men (England and McClintock 2009). Sexual activity could affirm older women's desirability in ways that provide uplift and a sense of belonging.

As noted by the alternative hypotheses, however, relationship characteristics, social support, and physical health could account for an association between sexual activity and mental health. Relationships, social support, and physical health have gendered dimensions that could affect an association between sex and depression differently for women and men.

Cultural beliefs about social support and gender may result in different relationship characteristics influencing an association between sex and depression for women and men. Caregiving remains significantly gendered (England 2010). Men typically rely primarily on a spouse for health-related support while women receive such support from a larger number of people (Umberson 1992; Umberson et al. 1996). As such, if sexual activity induces perceptions of belonging, intimate closure, and support, relationship status might have a greater effect on an association between sexual activity and mental health for men than women. Conversely, the qualities of a relationship and social support might have a greater effect on an association between sexual activity and mental health for women, since other relationships may condition the extent to which women experience the socio-emotional uplift and sense of belonging from sexual activity.

Physical and sexual health may also have gendered dimensions that affect how sexual activity relates to mental health. Among older men, following norms of masculine behavior decreases the

Table 1. Means and Standard Deviations of Variables

Variable	Women (N = 1,345)		Men (N = 1,251)		t value
	M	SD	M	SD	
Depression/Center for Epidemiology Studies Depression Scale score (0-33; sample range 2-31)	7.580	5.155	6.643	4.530	4.91***
Sexual activity measures					
Sex in last year	.419	.494	.668	.471	-13.14***
Insufficient data on sexual history	.027	.161	.052	.222	-3.37**
Sociodemographic characteristics					
Age (years)	68.33	7.716	67.36	7.488	3.23**
Race/ethnicity (reference category: white)					
Black	.098	.298	.083	.277	1.32
Hispanic	.061	.240	.066	.248	-0.45
Other	.018	.134	.031	.174	-2.12*
Education (reference: some college or more)					
Less than high school	.180	.384	.149	.356	2.13*
High school	.289	.453	.254	.436	1.98*
Vocational/associate's	.344	.475	.278	.448	3.63***
Income (reference: between \$25,000 and \$50,000)					
≥ \$50,000	.230	.421	.404	.491	-9.69***
≤ \$25,000	.267	.443	.190	.392	4.70***
Refused/don't know income	.331	.471	.203	.403	7.42***
Currently working	.292	.455	.430	.495	-7.42***
Retired	.568	.496	.615	.487	-2.42*
Relationship characteristics					
Relationship status					
Married	.563	.496	.796	.403	-13.09***
Living with unmarried partner	.023	.150	.015	.123	1.40
Widowed	.250	.433	.077	.267	12.12***
Current romantic partner, not married/living with	.031	.174	.055	.228	-3.00**
Social support					
Four or more close family members	.716	.451	.658	.475	3.19**
Four or more close friends	.795	.404	.787	.409	0.46
Can rely on family sometimes or less	.276	.447	.372	.484	-5.26***
Can rely on friends sometimes or less	.493	.500	.608	.488	-5.94***
Can rely on spouse/partner sometimes or less ^a	.161	.368	.101	.301	3.94***
Spouse/partner criticizes often ^a	.054	.225	.106	.308	-4.13***
Physical health					
Subjective assessments					
Difficult to walk a block	.278	.448	.190	.392	5.34***
Poor physical health	.058	.235	.064	.244	-0.54

(continued)

Table 1. (Continued)

Variable	Women (N = 1,345)		Men (N = 1,251)		t value
	M	SD	M	SD	
Urinary incontinence during past 12 months	.537	.499	.239	.427	16.26***
Respondent has been ever told by doctor that he or she has					
Arthritis	.597	.491	.440	.497	8.12***
Emphysema, bronchitis, or obstructive lung disease	.122	.328	.102	.303	1.61
Hypertension	.540	.499	.529	.499	0.55
Medications taken on a regular basis					
Antidepressants	.015	.122	.010	.098	1.23
Antihypertensives	.119	.324	.097	.296	1.85
Sexual health during past 12 months					
Experienced pain during sex ^a	.177	.382	.031	.173	9.63***
Experienced trouble lubricating during sex ^a	.386	.487	n/a	n/a	—
Experienced trouble getting/maintaining erection ^a	n/a	n/a	.368	.483	—
Relationship and sex quality					
Never sleep in the same bed ^a	.210	.407	.155	.362	3.39**
Not always or usually caressing, hugging, kissing during sex ^a	.103	.304	.070	.256	2.14*

a. Conditionally relevant variable (see Analysis); these statistics exclude those without partners or sexual activity. t value tests statistical significance of difference between women and men: * $p < .05$, ** $p < .01$, *** $p < .001$ (two-tailed).

likelihood of seeking preventive care (Springer and Mouzon 2011). Men also rely more than women on partners' social control efforts to promote healthy behavior (Umberson 1992). Older men, therefore, are less likely to attend to their own physical health than older women, suggesting that an association between physical health and depression may be less robust for men than women. The greater effects of urinary incontinence on depression for men than women (Fultz et al. 2005) and the importance of sexual health for older men (Meadows and Davidson 2006), however, suggest that an association between sexual activity and depression may be particularly influenced by sexual health for men.

DATA AND METHOD

To test the hypotheses, we use data from the first wave of the National Social Life, Health, and

Aging Project (NSHAP) (Waite et al. 2008). Research subjects for NSHAP were drawn from a population-based nationally representative probability sample of noninstitutionalized older adults (ages 57-85) that oversampled on the basis of race, ethnicity, age, and sex. The weighted response rate was 75.5 percent. Although NSHAP is designed as a longitudinal study, the second stage is being completed in 2011; therefore, our analysis in this article relies on first wave cross-sectional data, collected in 2005 and 2006. Since the data are cross-sectional, they do not allow us to make stronger causal tests of our hypotheses; however, they do enable us to test for an association between sex and depression in light of the competing hypotheses. Our analysis is based on data weighted for inverse probability of selection and a further adjustment for likelihood of nonresponse.

Table 1 reports descriptive statistics for each variable in separate columns for women ($n = 1,345$)

and men ($n = 1,251$). The dependent variable in our analysis is an 11-item version of the Center for Epidemiology Studies Depression Scale (CES-D) (Radloff 1977).² Each item asked respondents to rank whether they experienced the phenomenon rarely or none of the time (0), some of the time (1), occasionally (2), or most of the time (3) during the past week. The scale of summed scores for each item has a theoretical range of 0 to 33 and a sample range of 2 to 31; higher values represent greater depressive symptoms. Among our sample, the 11 items have a Cronbach's alpha of 0.78.

We measure sexual activity with a variable indicating whether the respondent had sex during the past year. The NSHAP data file includes such a variable computed from responses to a series of questions about individuals' sex partner history (Waite et al. 2008:9).³ To measure if sex was oriented toward one's partner, we include a measure of whether caressing, kissing, hugging, or other sexual touching was typically incorporated into sexual intercourse with respondent's primary sex partner during the past year.⁴ We recode these responses to distinguish between those who reported never, rarely, or only sometimes engaging in these activities from those who reported usually or always including these activities as part of having sex to distinguish between those for whom this behavior is typical and those for whom it is not.

Measures of relationship status, quality, and social support serve as controls to test the alternative hypothesis that relationship context accounts for an association between sexual activity and lower depression. Since relationship status may have greater consequence for the association between sexual activity and depression for men and since relationship and support qualities may have greater effect on this association for women, we enter these sets of variables in separate steps. The key relationship statuses that might influence sexual activity and depression are currently having a partner or being in widowhood. A set of dummy variables therefore indicates those who are married, unmarried but living with a partner, or widowed compared to those who are separated, divorced, or never married. An additional dummy variable indicates if respondents who are neither married nor living with a partner have romantic partners.

Given the importance of social support to relationship quality and differences in sources of

support between men and women (Umberson 1992), we include three sets of measures of relationship and support quality. First, three dummy variables distinguish between respondents who report that they can often rely on a partner, family, and friends if they have a problem from those who could only sometimes or rarely rely on these sources of support.⁵ By measuring perceptions of support quality, these variables capture subjective elements of support, which influence health (Cornwell and Waite 2009). Second, given that the size of support networks is important (Umberson et al. 1996), we include two measures of family and friend network size based on NSHAP variables concerning the number of close family members (excluding a primary partner) and number of friends respondents had. Since these variables were categorical (0, 1, 2-3, or 4 or more close relatives or friends) and since combinations of the non-zero values create collinearity problems, we use single dummy variables to distinguish between those with four or more close relatives or friends from those with fewer close relatives or friends. The four or more category contains a clear majority of respondents in the sample.⁶ Those with larger social networks of friends and family may have more robust support because they are more socially adept (Idler, McLaughlin, and Kasl 2009), which could affect both mental health and sexual activity. Third, we measure relationship quality of respondents with partners with a dummy variable indicating whether respondents stated that their spouse or partner criticized them often (compared to those who said partners criticized them sometimes or less frequently).

While physical and sexual health could explain an association between sexual activity and depression, the relative influence of physical health and sexual health may vary between men and women. Accordingly, we introduce controls in two steps. We first include variables measuring subjective, functional, and objective indicators of respondents' physical condition. Dummy variables indicate whether respondents rated their health as poor and whether they reported some or greater difficulty walking a block. If perceived physical health or functional stamina influences sexual behavior, these variables could account for an association between sex and mental health. We also include measures of experiences with health conditions. A dummy variable measures whether the respondent experienced urinary incontinence

during the previous year. Three variables indicate whether a doctor has ever told the respondent that she or he has arthritis, hypertension, or a chronic obstructive lung disease (e.g., emphysema). Finally, dummy variables indicate whether respondents regularly take antidepressants or antihypertensives.

For sexual health, dummy variables measure whether respondents had difficulties enduring several months during the previous year. These variables are: experiencing pain during sex and difficulty getting or maintaining an erection (for men) or lubricating (for women).

Finally, we include a variable measuring whether respondents with partners state that they never sleep in the same bed as their partner. Bed-sharing corresponds with happiness with a relationship (Maume, Sebastian, and Bardo 2010) and demonstrates a degree of simple physical closeness, which could explain an association between sex and mental health. Furthermore, couples' sleep practices are gendered: Men are more likely than women to disrupt a partner's sleep and women are more likely to take account of and accommodate a partner's sleep habits (Maume et al. 2010). As such, particularly for men, never sharing a bed with a partner may be an important relationship status indicating lower levels of intimacy.

Our multivariate models also include sociodemographic controls that we do not report in our tables of regression coefficients: age in years, race and ethnicity (black, Hispanic, and other compared to white), education (less than high school, high school, and vocational education compared to some college or more), and household income (as measured by dummy variables with income between \$25,000 and \$50,000 as the reference group and including a dummy variable for respondents who did not provide household income). Since retirement changes social relations and activity (Phillipson 1997), we include a dummy variable indicating whether respondents are retired. Finally, because work can affect mental health (Walker and Luszcz 2009), we include a dummy variable indicating whether respondents reported currently working.

ANALYSIS

We present our analysis with two sets of nested ordinary least square models elaborating the

association between sexual activity and depression. We estimate separate models for men and women because depression is a gendered response to stress (Simon 2002; Umberson 1992), self-reports suggest the importance of sex differs for men and women, and previous research finds men and women experience physical health and relationships differently. Elaborating models control for sociodemographic characteristics, relationship status, relationship quality and social support, physical health, sexual health, never sleeping in the same bed, and typically engaging in other forms of touching during sex. We treat control variables measuring relationship qualities (relying on, often being criticized by, and sleeping in the same bed as one's partner) and different characteristics of sexual activity (experiencing erectile or lubrication difficulties, pain during sex, and additional intimate touching) as conditionally relevant variables (Ross and Mirowsky 1992). These conditionally relevant variables apply only to those who have a partner or who are sexually active. The main effect variables for having a partner or sexual activity show the average effect of these statuses compared to those without a partner or who have not had sex in the previous year; the conditionally relevant variables show the deviations associated from these average effects for the particular characteristic measured by the variable.

RESULTS

Table 2 and Table 3 report the results of the analysis of the association between sexual activity and depression for women and men, respectively. In both tables, model 1 shows, as hypothesized, a significant association between having sex during the previous year and lower depression; this bivariate association is slightly greater for men than women.

Model 2 adds partnership status and sociodemographic controls. The elaboration pattern shows divergence between women and men, supporting the idea that gendered dynamics influence how other characteristics affect the association between sex and depression. Net of sociodemographic characteristics' influence, for men, controlling partnership status reduces the magnitude of association between sex and depression by about one-quarter; for women, the decrease in magnitude is about half as large, despite the strong

Table 2. Estimated Effects of Sexual Activity on Depression Levels of Older American Women, National Social Life, Health, and Aging Project (NSHAP)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Sex last year	-1.886*** (.283)	-1.249** (.371)	-968** (.368)	-656 P = .061 (.350)	-953* (.385)	-.924* (.389)	-1.084** (.398)
Insufficient sexual history	-1.250 (.869)	-1.017 (.858)	-778 (.842)	-.249 (.800)	-.268 (.800)	.254 (.800)	-.267 (.799)
Married		-.013 (.460)	-.537 (.469)	-.538 (.447)	-.524 (.447)	-.516 (.447)	-.451 (.448)
Living with nonmarried partner		.415 (.986)	-.391 (.973)	-1.122 (.923)	-1.039 (.923)	-1.013 (.925)	-.978 (.924)
Widowed		.820 (.448)	.947* (.440)	1.018* (.419)	1.015* (.418)	1.023* (.419)	1.036* (.418)
Romantic partner, not married/living with		.729 (.832)	-.270 (.833)	-.586 (.791)	-.455 (.793)	-.488 (.795)	-.378 (.797)
Four or more close family			-.392 (.303)	-.360 (.286)	-.381 (.286)	-.374 (.286)	-.354 (.286)
Four or more close friends			-.677* (.342)	-.602 (.323)	-.587 (.323)	-.570 (.325)	-.570 (.324)
Cannot often can rely on family			1.384*** (.318)	1.273*** (.301)	1.239*** (.301)	1.234*** (.301)	1.228*** (.301)
Cannot often can rely on friends			.313 (.284)	.237 (.269)	.251 (.269)	.253 (.269)	.236 (.269)
Cannot often rely on spouse/partner			1.976*** (.468)	1.976*** (.444)	1.944*** (.444)	1.922*** (.446)	1.844*** (.447)
Spouse/partner criticizes often			2.270** (.746)	2.317** (.704)	2.240** (.705)	2.235** (.705)	2.105** (.708)
Difficult to walk a block				1.872*** (.317)	1.889*** (.317)	1.881*** (.318)	1.865*** (.317)
Poor self-rated physical health				3.728*** (.566)	3.680*** (.566)	3.693*** (.567)	3.669*** (.566)
Urinary incontinence past 12 months				.536* (.256)	.533* (.256)	.532* (.256)	.547* (.256)
Been told by doctor that have arthritis				.725** (.264)	.708** (.265)	.714** (.265)	.711** (.265)
Been told by doctor that have emphysema,				1.020* (.395)	.992* (.395)	.991* (.395)	1.032** (.395)
bronchitis, or obstructive lung disease							
Been told by doctor that have				.658* (.272)	.674* (.273)	.670* (.273)	.651* (.273)
hypertension							
Takes antidepressants on regular basis				.483 (1.036)	.505 (1.035)	.474 (1.037)	.511 (1.036)
Takes antihypertensives on regular basis				-.511 (.403)	-.540 (.403)	-.540 (.404)	-.541 (.403)
Pain during sex in previous 12 months					.711 (.542)	.703 (.542)	.710 (.542)
Difficulty lubricating during sex in previous					.434 (.428)	.436 (.428)	.390 (.428)
12 months							
Never sleep in the same bed						.191 (.333)	.182 (.332)
Not always or usually caressing, hugging,							1.193 ^{p = .066} (.649)
kissing during sex							
Constant	8.404	11.467	12.562	11.344	11.403	11.364	11.352
R ²	.032	.117	.158	.257	.259	.260	.262

Notes: Models 2 through 7 include sociodemographic control variables; numbers in parentheses are standard errors. N = 1,345.

*p < .05. **p < .01. ***p < .001 (two-tailed).

Table 3. Estimated Effects of Sexual Activity on Depression Levels of Older American Men, National Social Life, Health, and Aging Project (NSHAP)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Sex last year	-1.998*** (.283)	-1.110** (.319)	-952** (.315)	-.393 (.314)	-637 ^{p = .060} (.339)	-595 ^{p = .078} (.337)	-.724* (.341)
Insufficient sexual history	-.544 (.599)	-.062 (.595)	-.066 (.587)	.556 (.572)	.530 (.572)	.617 (.570)	-.592 (.569)
Married		-1.396*** (.475)	-1.569*** (.475)	-1.682*** (.458)	-1.647*** (.458)	-1.305*** (.466)	-1.215** (.467)
Living with nonmarried partner		-4.198*** (1.078)	-4.330*** (1.063)	-4.507*** (1.025)	-4.408*** (1.026)	-4.004*** (1.026)	-3.919*** (1.025)
Widowed		.114 (.584)	.470 (.579)	.700 (.558)	.709 (.558)	.664 (.555)	.738 (.555)
Romantic partner; not married/living with		-.799 (.649)	-1.187 (.648)	-1.331* (.624)	-1.311* (.624)	-1.081 (.625)	-.955 (.626)
Four or more close family			-.340 (.263)	-.477 (.254)	-.457 (.254)	-.454 (.253)	-.420 (.253)
Four or more close friends			-.383 (.308)	-.327 (.297)	-.312 (.297)	-.290 (.296)	-.292 (.295)
Cannot often can rely on family			.618* (.265)	.617* (.256)	.618* (.255)	.595* (.254)	.575* (.254)
Cannot often can rely on friends			.727** (.261)	.478 (.253)	.467 (.254)	.477 (.252)	.496* (.252)
Cannot often rely on spouse/partner			1.167*** (.439)	1.219** (.425)	1.190** (.425)	1.014* (.426)	.937* (.426)
Spouse/partner criticizes often			1.235** (.427)	.833* (.413)	.790 (.414)	.656 (.414)	.656 (.413)
Difficult to walk a block				1.696*** (.336)	1.694*** (.336)	1.616*** (.335)	1.591*** (.334)
Poor self-rated physical health				1.625** (.524)	1.588** (.525)	1.623** (.522)	1.624** (.521)
Urinary incontinence past 12 months				1.734*** (.284)	1.676*** (.285)	1.690*** (.284)	1.694*** (.283)
Been told by doctor that have arthritis				.014 (.246)	.023 (.246)	.011 (.245)	.004 (.244)
Been told by doctor that have emphysema,				.092 (.398)	.033 (.399)	.104 (.398)	.079 (.397)
bronchitis, or obstructive lung disease							
Been told by doctor that have				-.409 (.247)	-.419 (.247)	-.431 (.246)	-.459 (.246)
hypertension							
Takes antidepressants on regular basis				1.884 (1.178)	1.813 (1.179)	1.783 (1.173)	1.871 (1.172)
Takes antihypertensives on regular basis				.059 (.409)	.063 (.409)	.086 (.407)	.093 (.406)
Pain during sex in previous 12 months							.308 (.822)
Difficulty getting/maintaining erection							.538 (.299)
during sex in previous 12 months							
Never sleep in the same bed							1.226*** (.359)
Not always or usually caressing, hugging,							1.339** (.564)
kissing during sex							
Constant	8.007	10.451	10.970	10.432	10.653	10.209	10.258
R ²	.040	.120	.152	.221	.223	.231	.234

Notes: Models 2 through 7 include sociodemographic control variables; numbers in parentheses are standard errors. N = 1,251. *p < .05. **p < .01. ***p < .001 (two-tailed).

relation between partnership status and older adults' sexual activity (Weeks 2002). Also of note, for men, either being married or living with an unmarried partner has a significant association with decreased depressive symptoms. (The coefficient for living with an unmarried partner is particularly large: over twice the magnitude of being married.)

Model 3 adds controls for social support and relationship quality, decreasing the magnitude of the coefficient for sexual activity for women by a bit more than one fifth and about 15 percent for men from model 2. While being criticized often by one's spouse has significant associations with increased depression for both women and men, the association is notably stronger for women. There is a difference in the gendered patterns of support: For women, being unable to rely on partners and being unable to rely on family have significant associations with increased depressive symptoms; for men, being unable to rely on partners, family, or friends associates with greater depression, although this association is of a lower magnitude than for women. While the coefficients for sexual activity for women and men are essentially the same in model 3, the elaboration pattern corresponds to the idea derived from gender theories that the association between sexual activity and depression is gendered. The part of the association accounted for by relationship characteristics is more of a function of relationship status for men and more of a function of relationship quality and support for women.

Controlling for physical health, in model 4, decreases the coefficients for sexual activity by over half for men (becoming nonsignificant) and by almost a third for women (becoming just nonsignificant at $p = .061$). For women, but not men, having been diagnosed with arthritis, emphysema, and hypertension have significant associations with increased depression. While significantly associated with increased depression for all older adults, urinary incontinence has about a three times larger association with increased depression for men than women.

Model 5 includes sexual health variables. While no measure of sexual health problems has a direct, significant association with depression—erectile problems for men ($p = .062$) has a nearly significant association with greater depression—the effect of controlling for sexual health difficulties increases the magnitude of the association between sexual activity and lower reports of depression by

nearly half for women and over 60 percent for men. The association between sexual activity and lower depression for women is statistically significant, essentially returning to the magnitude it had in model 3. For men, the coefficient remains about one third lower than the coefficient in model 3 and is close to significant ($p = .060$). This pattern suggests support for the research hypothesis because declines in sexual health might influence the qualities of sex that associate with decreased depression. The elaboration patterns also support the idea that gendered processes influence the relations between physical health, sexual activity, and depression differently for women and men, as physical health more closely and directly associates with depression for women than for men. Notwithstanding this stronger direct association between physical and mental health for women, the influence of physical and sexual health on the association between sexual activity and depression is greater for men than women, which corresponds to findings about how masculinity is increasingly important for older men who face physical decline (Meadows and Davidson 2006).

Model 6 controls for the conditionally relevant variable of bed-sharing. Never sleeping in the same bed as one's partner has a statistically significant association with increased depression for men but not for women. The coefficients for sexual activity decrease only slightly. Additionally, the negligible changes in the coefficients for being unable to rely on and often being criticized by one's partner suggest that sharing a bed is a distinct quality of relationships.

Model 7 tests for the affectionate orientation toward one's sex partner by including the variable measuring whether respondents typically do not engage in other intimate touching during sex. Including this control produces many interesting findings, some of which Figure 1 illustrates.

First, the coefficient for sexual activity, which now separates out the effect of those who have sex without typically integrating other forms of physical affection, increases by around 20 percent for both women and men. Not accounting for the effect of sex without intimate touching suppressed the association between sex and lower depression. In other words, among older adults, sexual activity is associated with lower depression unless the sexual activity does not typically incorporate other forms of intimate touch. Second, the positive coefficient for those who do not typically integrate other forms of affection is significant for men and near significant ($p = .066$) for women.

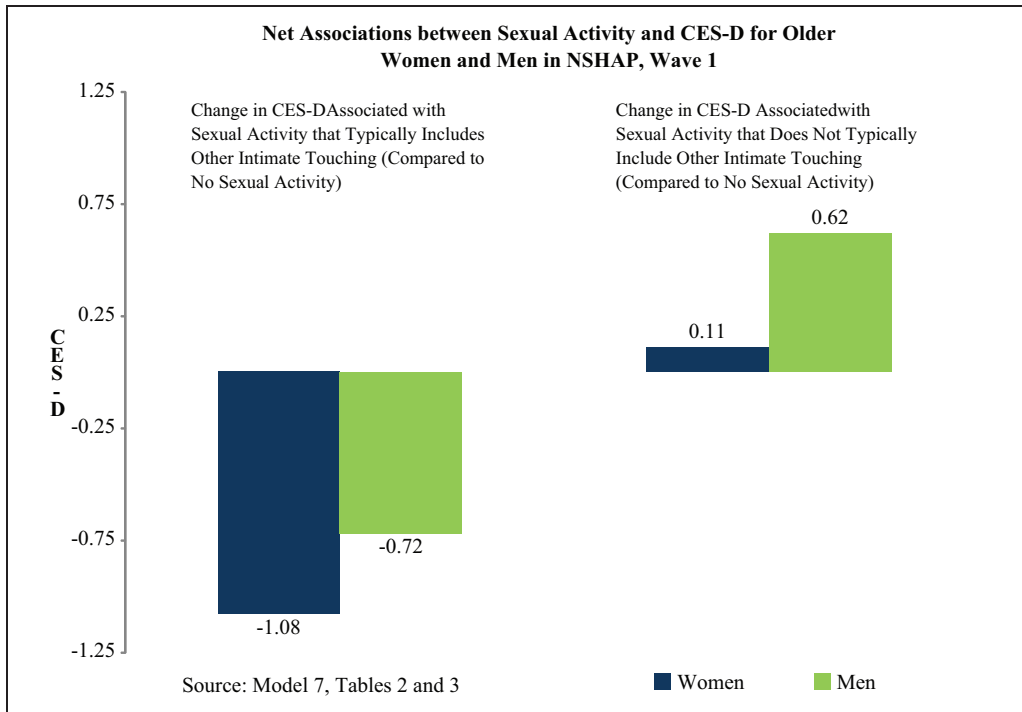


Figure 1. Net associations between sexual activity and Center for Epidemiology Studies Depression Scale (CES-D) for older women and men in National Social Life, Health, and Aging Project (NSHAP), Wave 1

Third, comparing men and women who typically integrate other forms of affectionate touch with sex shows that the regression coefficient is 50 percent larger for women (−1.08 to −0.72), although the difference is not statistically significant. For women, the coefficient for sexual activity shows an association with lower depression roughly equal to the increase in depression associated with widowhood. For men, the association between sexual activity and lower depression is approximately the same size decrease as being either retired or currently working (instead of being disabled, unemployed, a homemaker, or in some other job status). Fourth, comparing the net associations for men and women who typically do not integrate other intimate touching with sex shows a near-zero association with depression for women (+0.11) and a larger association with increased depression for men (+0.62). While the difference between men and women is not statistically significant, the coefficient for men suggests that the lack of the affectionate aspects of sex may associate with higher levels of depression for men. The intimate uplift associated with

belonging and the attention associated with mattering, rather than mere sexual release or prowess to maintain self-identity as masculine, could account for the association between sexual activity and lower depression for older men.

Because the overall patterns show an association between sexual activity and decreased depression for both women and men, we also ran a version of model 7 (not reported here) that pooled men and women into a single model ($N = 2,596$) and included a dummy variable for men. Both of our primary independent variables are statistically significant in this model: The coefficient for sexual activity is -0.788 ($p = .002$) and the coefficient for not typically integrating other forms of affection is $+1.265$ ($p = .003$). The coefficient for the dummy variable for men is not significant, but positive ($b = +0.329$, $p = .13$). We used this pooled model to test for significant interaction between the control variables and the dummy variable for men. Eight interaction variables had statistically significant coefficients, none of which changed the association between sexual activity and depression.⁷ These significant

interaction variables support the interpretation that gendered differences in relationship status, relationship support qualities, and physical health affect the association between sexual activity and mental health.

Overall, the elaboration patterns and final models show gender similarity in the association between sexual activity and lower depression among older adults but gendered differences in how relationships, social support, and physical health influence this association. These differences between women and men in how relationship and health characteristics influence the association between sex and depression suggest gendered patterns in how sex, as an activity, is positioned in relation to other sources of belonging, support, and activity. Notwithstanding these gendered dynamics, sexual activity that typically integrates other forms of touch associates with lower depression for both women and men.

To further test the theory, we used logistic regression to analyze whether depression (as an independent variable) could predict the likelihood that a respondent would report having sex at least weekly or at least monthly. Even though we are using cross-sectional data, these models can provide preliminary evidence about whether the association we find between sexual activity and depression might reflect reverse or joint causation. People who are more depressed may be less likely to want to have sex or may be less likely to inspire a partner to want to have sex. If so, we would anticipate that depression would have an association with the frequency of sex.

As with our main models, we analyzed women and men separately; we also tested the association between depression and sexual frequency among both our full sample and only respondents who had been sexually active during the previous year. (We do not include the eight detailed tables for these analyses but narratively summarize them.) The CES-D variable had an insignificant association with sexual frequency; the coefficients were smaller in models that included only respondents who had been sexually active during the last year. For models including only people who had been sexually active during the previous year, there was just one statistically significant bivariate association between depression and sex frequency likelihood: for men having sex monthly or more often, which became insignificant after controlling for sociodemographic, partnership status, and support characteristics. Significant

predictors of likelihood of sexual frequency included sexual problems (erectile dysfunction for men, experiencing pain during sex for women), age, and, among men, reporting difficulty walking a block, not being able to rely on friends, and often experiencing partner criticism. In models including all respondents, there were statistically significant bivariate associations between depression and sex frequency. For women, the association became insignificant after controlling for sociodemographic characteristics (predicting a frequency of weekly or more often) and for sociodemographic and relationship status and support (predicting a frequency of monthly or more often). For men, controlling for sociodemographic, relationship status and support, and physical health made the association between depression and monthly or more frequent sex nonsignificant, while the association between depression and weekly or more frequent sex became nonsignificant after controlling for sociodemographic and relationship status and support. In models among the full samples, partnership status was strongly associated with sexual frequency. For women, age and never sleeping in the same bed as a partner also had significant associations. For men, age, experiencing criticism from one's partner, self-assessed health, and difficulty walking a block had significant associations with the likelihood of sexual frequency.

CONCLUSIONS

Beginning with the insights that belonging and mattering contribute to mental health and that socially meaningful activity can reinforce social support in ways productive of mental health, we hypothesized that being sexually active may associate with lower levels of depression among older adults. Rather than seeing all sex as equivalent, however, we suggested that sex that integrates other forms of affection is more likely associated with lower depression because the mutual orientation of intimate connection may create more of a shared experience and provide more social uplift to people. While controls associated with alternative hypotheses account for about half (for women) and two thirds (for men) of the initial bivariate association between sex and lower depression, our final models show a significant, negative association between sexual activity and depression, conditioned on whether people

typically incorporate other forms of intimate touch with sex. The association between sex and depression, therefore, is not a mere artifact of relationship status or quality or physical health. Indeed, the patterns of elaboration in the analysis suggest that not accounting for sexual health problems—which did not have a significant, direct association with depression in our models—suppresses the association between sexual activity and lower depression. Contrary to studies in which older adults who are sexually inactive report sex is unimportant (Gott and Hinchliff 2003; Lindau et al. 2007), these findings imply that sexual abstinence among older adults may associate with greater depression.

Our analysis also examined whether the association between sexual activity and mental health among older adults is gendered. Contrary to self-report studies showing older men rating sex as more important to them than older women rated sex (Kontula and Haavio-Mannila 2009; Lindau et al. 2007; Skultety 2007), we find gender similarity in the general association between sexual activity and lower depression but gender differences in details about this association (Umberson et al. 1996). Although differences between women and men for the main effect variables are not statistically significant, the differences run counter to conventional wisdom: a higher magnitude coefficient between sexual activity and lower depression for women and a stronger conditioning of this association on integration of other forms of touch for men. This pattern may reflect the gendering of intimacy because men are more likely than women to rely on partners as sole sources of intimacy (Simon and Barrett 2010; Umberson 1992). Our findings emphasize the importance of considering the gendered nature of sexual behavior and the potential consequences of change in the “symbolic dimensions” of romantic relationships (Graf and Schwartz 2011). Beliefs about appropriate gendered behavior may influence how women and men approach sex, presenting gender normative behavior (men as initiators concerned with sexual release; women as passive, reactive, and interested more in ancillary activities rather than sex). Gendered behavior patterns could result in sex being less mutually oriented and also lead to women being less likely to pursue or initiate sex, both of which could have adverse mental health consequences for both women and men. Indeed, the gap between self-report studies and our findings may demonstrate that older women

and men draw on cultural repertoires when discussing sexual activity, possibly reproducing gendered patterns of sexual behavior.

The findings of gender differences in how health and relationship characteristics influence the association between sex and depression hold further implications. While more dimensions of physical health associate with depression for women, physical health has greater consequence for the association between sex and depression for men. This finding is consistent with research that shows sexual health particularly important for older men (Meadows and Davidson 2006), suggesting that cultural beliefs about masculinity, control, and virility may influence the gendered patterns we observe (Cornwell and Laumann 2011). Additionally, consistent with literature concerning the gendered nature of the association between relationships and depression (Simon 2002; Simon and Barrett 2010; Umberson 1992; Walker and Luszcz 2009), we found relationship qualities have a greater influence on the association between sexual activity and depression for older women than they do for men. Conversely, relationship status exerts a greater influence on the association between sex and mental health and has a stronger direct association with depression for older men than for older women. Finally, the elaboration patterns imply that research attempting to account for an association between depression and social activities, such as religious participation, should examine whether gender influences these activities’ association with depression (Idler, Boulifard et al. 2009; Schnittker 2001; Sternthal et al. 2010).

The finding that sexual activity associates with lower depression but that depression does not associate with the frequency of sex lends support to our theoretical interpretation; the pair of findings is consistent with the possibility that there is not joint or reverse causation. Yet it also raises the question: Why is there no association between frequency of sex and depression? We offer two potential explanations, revealing suggestions for future research. First, people may understand sexual activity as a component of identity that is not associated with how frequently they have sex, as suggested by activity theory and interview-based studies with older adults about sex (Loe 2004; Meadows and Davidson 2006). This possibility suggests further research on the temporal structure—an understanding of the meaning of time, including appropriate intervals and pacing, and the anchoring of time for one realm of activity based on other

activities (Larson 2010)—of sexual activity. Second, sex may simply have a long resonance to induce perceptions of support and belonging. Increased professional attention to a connection between sex and healthy aging (Scherrer 2009) could further enhance this resonance. This argument is consistent with findings of intercohort changes in older adults' sexual expectations and norms (DeLamatar and Moorman 2007; Fisher 2010). Future research could build on this idea by examining whether the duration since last sexual activity associates with depression.

Since we have only the first wave of NSHAP data, our analysis had to remain cross-sectional. As a result, despite our additional robustness checks, we cannot draw stronger causal conclusions. Although our findings are consistent with descriptive studies that claim causal connections between sex and lower levels of depression, the findings are also consistent with possible selection effects. People with better mental health may have greater interest in sexual activity and including intimate touch as part of this activity. Similarly, the onset of depressive symptoms could decrease the likelihood of sexual activity and incorporating other forms of intimate touch. Sexual activity and lower levels of depression could also mutually reinforce each other. Further study on these possibilities is warranted when longitudinal data are available. Our analysis suggests additional questions such studies could address. For instance, do declines in sexual health have effects on depression? It is possible that people adapt to changes in sexual health, suggesting that those changes may have temporary influences on depression. Similarly, what effect do changes in partners and relationship status have on the association between sexual activity and depression? This question may be particularly important for those who have been widowed. The notably strong association between being in a nonmarital domestic partnership and lower depression for men suggests that effects of a new partnership may be gendered.

While we focused on older adults' sexual activity, sex may have positive implications for mental health among other age groups. Some aspects of the theorized association between sex and mental health, such as how sex can induce perceptions of belonging and intimate support, could persist over much of the life course. Attending to this possibility among other age groups could illuminate the life course dynamics that affect an association between sex and depression. In contrast to our findings that sexual activity has a positive association

with mental health, most systematic research on the association between sexual activity and mental health examines adolescents to test hypotheses about negative consequences of sex (McLeod and Knight 2010; Spriggs and Halpern 2008). Recent findings concerning adolescents' sexual behavior, however, emphasize the importance of the social context and content of sexual activity for the mental health consequences of sex (McCarthy and Casey 2008; McCarthy and Grodsky 2011; Meier 2007). These findings imply that the association between sex and mental health—and how this association intersects with other activities and statuses that influence mental health and sex—could vary in gendered ways across the life course. For example, the risk of pregnancy, work entanglements, birth control decisions, and familial relations may be salient gendered influences on an association between sex and mental health in young adulthood (Armstrong, Hamilton, and England 2010; Fennell 2011; Schalet 2010). The gender dynamics of relationship qualities and status and their influence on how sex associates with depression may also vary across the life course. In contrast to our findings about older adults, relationship status matters more for women and relationship support matters more for men in early adulthood (Simon and Barrett 2010). Future research could examine whether gendered aspects of transitions in early and later life differ in ways that influence the meaning of romantic relationships. Such analysis can provide insight about how material gains by women remake gender dynamics in relationships (England 2010; Graf and Schwartz 2011). Finally, such research could examine how symbolic meanings attached to sex at various stages of the life course influence an association between sexual activity and depression. Among middle-aged and younger adults, for instance, associations between sex and lower depression might be larger than among older adults, since sexual activity is even more normative for these groups than for older adults.

ACKNOWLEDGMENTS

We presented an earlier version of this paper at the 2011 Annual Meetings of the American Sociological Association in Las Vegas. We thank Mahnaz Kousha, Ann Meier, and Joshua Rubin for their comments and assistance. Benjamin Cornwell's comments on an earlier manuscript provided helpful guidance in developing this article. In addition, the Editor and anonymous referees

provided valuable suggestions that greatly improved our manuscript.

NOTES

1. Social networks have effects on health distinct from social support; these network effects derive from the nature, extent, and pattern of ties between people (Smith and Christakis 2008). Since our focus is on differences between individuals, we discuss social support in this section.
2. The 11 items are: (a) I felt depressed; (b) I felt that everything I did was an effort; (c) My sleep was restless; (d) I was happy (reverse coded); (e) I felt lonely; (f) People were unfriendly; (g) I enjoyed life (reverse coded); (h) I did not feel like eating. My appetite was poor; (i) I felt sad; (j) I felt that people disliked me; (k) I could not get going.
3. Since some respondents did not complete all items regarding partner history, there are a number of cases coded as having "insufficient history." In this article, we treat these cases as instances in which the individual did not have sex during the last year under the assumption that noncompletion of the sex partner history portion of the survey likely corresponds to having not had sex partners during the recent past. We include a dummy variable for cases with insufficient history and recode the value on the variable for having sex in the last year to zero for these cases. The coefficient for insignificant sexual history was statistically insignificant in every model, suggesting that this group did not differ substantially from respondents who completed all sexual history items and who had not had sex during the previous year. To test this specification, we analyzed a second set of models not reported here that excluded those with insufficient sexual history as missing cases. There are no substantial differences in variable coefficients between these models and the first set of models.
4. National Social Life, Health, and Aging Project (NSHAP) included the question "When you had sex with [partner] in the last 12 months, how often did your activities include kissing, hugging, caressing, or other ways of sexual touching?" We treat this variable and sexual health variables as conditionally relevant variables, as further discussed in the Analysis section. For respondents who had two or more partners, the answers for all partners are the same.
5. We treat relationship quality variables as conditionally relevant for only respondents in relationships.
6. We tested alternate specifications of this variable (single variables measuring 1+ or 2+ friends or relatives and a two-variable specification of 2-3 and 4+ friends or relatives); however, these specifications showed less of an association with the dependent variable. NSHAP also includes a separate variable measuring the size of respondents' core discussion network. Following Cornwell et al. (2008), we tested

this variable; however, it had no significant association with the dependent variable after controlling for sociodemographic characteristics. Because it less clearly measured support and subsequent tests of our final models show it has no significant association with depression, we have not included it.

7. Statistically significant positive main effect coefficients and negative interaction coefficients show that spousal criticism, perceptions of overall health, and having a history of arthritis, emphysema, or hypertension associates with greater depression for women significantly more than men. Statistically significant positive main effect and interaction coefficients show that urinary incontinence has significantly greater association with depression for men. Nonsignificant main effect coefficients and significant interaction coefficients show that never sleeping in the same bed has a positive association with depression for men only and that living with a nonmarried partner has a negative association with depression for men only.

REFERENCES

- Aneshensel, Carol S. 2009. "Toward Explaining Mental Health Disparities." *Journal of Health and Social Behavior* 50(4):377-94.
- Armstrong, Elizabeth A., Laura Hamilton, and Paula England. 2010. "Is Hooking Up Bad for Young Women?" *Contexts* 9(3):22-7.
- Bath, Peter A. and Dorly Deeg. 2005. "Social Engagement and Health Outcomes among Older People: Introduction to a Special Section." *European Journal of Ageing* 2(1):24-30.
- Bower, Bruce. 1991. "Marked Questions on Elderly Depression." *Science News* 140(2):310-11.
- Cain, Virginia S., Catherine B. Johannes, Nancy E. Avis, Beth Mohr, Miriam Schocken, Joan Skurnick, and Marcia Ory. 2003. "Sexual Functioning and Practices in a Multi-ethnic Study of Midlife Women: Baseline Results from SWAN." *Journal of Sex Research* 40(3):266-76.
- Cornwell, Erin York and Linda J. Waite. 2009. "Social Disconnectedness, Perceived Isolation, and Health among Older Adults." *Journal of Health and Social Behavior* 50(1):31-48.
- Cornwell, Benjamin and Edward O. Laumann. 2011. "Network Position and Sexual Dysfunction: Implications of Partner Betweenness for Men." *American Journal of Sociology* 117(1):172-208.
- Cornwell, Benjamin, Edward O. Laumann, and L. Philip Schumm. 2008. "The Social Connectedness of Older Adults: A National Profile." *American Sociological Review* 73(2):185-203.
- Croezen, Simone, Annemien Haveman-Nies, V. J. Alvarado, Pieter Van't Veer, and C. P. G. M. de Groot. 2009. "Characterization of Different Groups

- of Elderly According to Social Engagement Activity Patterns." *Journal of Nutrition, Health, and Aging* 13(9):776-81.
- DeLamater, John and Sara M. Moorman. 2007. "Sexual Behavior in Later Life." *Journal of Aging and Health* 19(6):921-45.
- DeLamater, John D. and Morgan Sill. 2005. "Sexual Desire in Later Life." *The Journal of Sex Research* 42(2):138-49.
- Durkheim, Emile. [1912] 2001. *The Elementary Forms of Religious Life*. Translated by C. Cosman. New York: Oxford University Press.
- England, Paula. 2010. "The Gender Revolution: Uneven and Stalled." *Gender & Society* 24(2):149-66.
- England, Paula and Elizabeth Aura McClintock. 2009. "The Gendered Double Standard of Aging in US Marriage Markets." *Population and Development Review* 35(4):797-816.
- England, Paula, Emily Fitzgibbons Shafer, and Alison C. K. Fogarty. 2008. "Hooking Up and Forming Romantic Relationships on Today's College Campuses." Pp. 531-46 in *The Gendered Society Reader*. 3rd ed., edited by M. Kimmel and A. Aronson. New York: Oxford University Press.
- Fennell, Julie Lynn. 2011. "Men Bring Condoms, Women Take Pills: Men's and Women's Roles in Contraceptive Decision Making." *Gender & Society* 25(4):496-521.
- Fisher, Linda. 2010. *Sex, Romance, and Relationships: AARP Survey of Midlife and Older Adults*. Washington, DC: AARP. Retrieved September 15, 2010 (http://assets.aarp.org/rgcenter/general/srr_09.pdf).
- Fultz, Nancy H., Kristi Rahrig Jenkins, Truls Østbye, Donald H. Taylor Jr., Mohammed U. Kabeto, and Kenneth M. Langa. 2005. "The Impact of Own and Spouse's Urinary Incontinence on Depressive Symptoms." *Social Science & Medicine* 60(11): 2537-48.
- George, Linda K. 1993. "Sociological Perspectives on Life Transitions." *Annual Review of Sociology* 19:353-73.
- Giddens, Anthony. 1992. *The Transformation of Intimacy: Sexuality, Love and Eroticism in Modern Societies*. Stanford: Stanford University Press.
- Gott, Merryn and Sharon Hinchliff. 2003. "How Important Is Sex in Later Life? The Views of Older People." *Social Science & Medicine* 56(8):1617-28.
- Graf, Nikki L. and Christine R. Schwartz. 2011. "The Uneven Pace of Change in Heterosexual Romantic Relationships." *Gender & Society* 25(1):101-07.
- Ilder, Ellen L., David A. Boulifard, Erich Labouvie, Yung Y. Chen, Tyrone J. Krause, and Richard J. Contrada. 2009. "Looking Inside the Black Box of 'Attendance at Services': New Measures for Exploring an Old Dimension in Religion and Health Research." *The International Journal for the Psychology of Religion* 12(1):1-20.
- Ilder, Ellen L., Julie McLaughlin, and Stanislav Kasl. 2009. "Religion and the Quality of Life in the Last Year of Life." *Journal of Gerontology: Social Sciences* 64B(4):528-37.
- Kahneman, Daniel, Alan B. Krueger, David Schkade, Nobert Schwarz, and Arthur Stone. 2004. "Toward National Well-being Accounts." *American Economic Association* 94(2):429-34.
- Kellett, J. M. 1996. "Sex and the Elderly Male." *Sexual and Marital Therapy* 11(3):281-88.
- Kontula, Osmo and Elina Haavio-Mannila. 2009. "The Impact of Aging on Human Sexual Activity and Sexual Desire." *Journal of Sex Research* 46(1): 46-56.
- Larson, Erik. 2010. "Time and the Constitution of Markets: Internal Dynamics and External Relations of Stock Exchanges in Fiji, Ghana, and Iceland." *Economy and Society* 39(4):461-88.
- Laumann, Edward O., J. H. Gagnon, R. T. Michael, and S. Michaels. 1994. *The Social Organization of Sexuality*. Chicago: University of Chicago Press.
- Lee, Gary R., Alfred DeMaris, Stefoni Bavin, and Rachel Sullivan. 2001. "Gender Differences in the Depressive Effect of Widowhood in Later Life." *Journal of Gerontology: Social Sciences* 56B(1): S56-61.
- Lemon, Bruce W., Vern L. Bengston, and James A. Peterson. 1972. "An Exploration of the Activity Theory of Aging: Activity Types and Life Satisfaction among In-movers to a Retirement Community." *Journal of Gerontology* 27(4):511-23.
- Lindau, Stacy Tessler, L. Philip Schumm, Edward O. Laumann, Wendy Levinson, Colm A. O'Muirheartaigh, and Linda J. Waite. 2007. "A Study of Sexuality and Health among Older Adults in the United States." *The New England Journal of Medicine* 357:762-74.
- Loe, Meika. 2004. "Sex and the Senior Woman: Pleasure and Danger in the Viagra Era." *Sexualities* 7(3):303-26.
- Marshall, Barbara L. 2008. "Older Men and Sexual Health: Post-Viagra Views of Changes in Function." *Generations* (Spring):21-7.
- Marsiglio, William and Denise Donnelly. 1991. "Sexual Relations in Later Life: A National Study of Married Persons." *Journal of Gerontology* 46(6):S338-44.
- Maume, David J., Rachel A. Sebastian, and Anthony R. Bardo. 2010. "Gender, Work-family Responsibilities, and Sleep." *Gender & Society* 24(6):746-68.
- McCarthy, Bill and Teresa Casey. 2008. "Love, Sex, and Crime: Adolescent Romantic Relationships and Offending." *American Sociological Review* 73(6): 944-69.
- McCarthy, Bill and Eric Grodsky. 2011. "Sex and School: Adolescent Sexual Intercourse and Education." *Social Problems* 58(2):213-34.
- McLeod, Jane D. and Syndee Knight. 2010. "The Association of Socioemotional Problems with Early

- Sexual Initiation." *Perspectives on Sexual and Reproductive Health* 42(2):93-101.
- Meadows, Robert and Kate Davidson. 2006. "Maintaining Manliness in Later Life: Hegemonic Masculinities and Emphasized Femininities." Pp. 295-312 in *Age Matters: Realigning Feminist Thinking*, edited by T. Calasanti and K. Slevin. New York: Routledge.
- Meier, Ann M. 2007. "Adolescent First Sex and Subsequent Mental Health." *American Journal of Sociology* 112(6):1811-847.
- Mirowsky, John and Catherine E. Ross. 1999. "Well-being across the Life Course." Pp. 328-47 in *A Handbook for the Study of Mental Health: Social Contexts, Theories, and Systems*, edited by A. V. Horwitz and T. L. Scheid. New York: Cambridge University Press.
- Moen, Phyllis. 2003. "Midcourse: Navigating Retirement and a New Life Stage." Pp. 269-91 in *Handbook of the Life Course*, edited by J. Mortimer and M. Shanahan. New York: Kluwer Academic Publishers.
- Musick, Marc A. and John Wilson. 2003. "Volunteering and Depression: The Role of Psychological and Social Resources in Different Age Groups." *Social Science & Medicine* 56(2):259-69.
- Olaveson, Tim. 2001. "Collective Effervescence and Communitas: Processual Models of Ritual and Society in Emile Durkheim and Victor Turner." *Dialectical Anthropology* 26(2):89-124.
- Pangman, Verna C. and Marilyn Seguire. 2000. "Sexuality and the Chronically Ill Older Adult: A Social Justice Issue." *Sexuality and Disability* 18(1):49-59.
- Peters, Arnold and Arat C. Liefbroer. 1997. "Beyond Marital Status: Partner History and Well-being in Old Age." *Journal of Marriage and Family* 59(3): 687-99.
- Phillipson, Chris. 1997. "Social Relationships in Later Life: A Review of the Research Literature." *International Journal of Geriatric Psychiatry* 12(5):505-12.
- Radloff, Lenore Sawyer. 1977. "The CES-D Scale: A Self-report Depression Scale for Research in the General Population." *Applied Psychological Measurement* 1(3):385-401.
- Ridgeway, Cecilia L. 2009. "Framed before We Know It: How Gender Shapes Social Relations." *Gender & Society* 23(2):145-60.
- Ridgeway, Cecilia L. and Lynn Smith-Lovin. 1999. "The Gender System and Interaction." *Annual Review of Sociology* 25:191-216.
- Risman, Barbara J. 2004. "Gender as a Social Structure: Theory Wrestling with Activism." *Gender & Society* 18(4):429-50.
- Rosen, Raymond C. and Gloria A Bachmann. 2008. "Sexual Well-being, Happiness, and Satisfaction in Women: The Case for a New Conceptual Paradigm." *Journal of Sex and Marital Therapy* 34(4):291-97.
- Ross, Catherine E. and John Mirowsky. 1992. "Households, Employment, and the Sense of Control." *Social Psychology Quarterly* 55(3): 217-35.
- Ross, Catherine E. and John Mirowsky. 2008. "Age and the Balance of Emotions." *Social Science & Medicine* 66(12):2391-400.
- Rowe, John W. and Robert L. Kahn. 1998. *Successful Aging*. New York: Random House.
- Schalet, Amy. 2009. "Subjectivity, Intimacy, and the Empowerment Paradigm of Adolescent Sexuality: The Unexplored Room." *Feminist Studies* 35(1):133-60.
- Schalet, Amy. 2010. "Sexual Subjectivity Revisited: The Significance of Relationships in Dutch and American Girls' Experiences of Sexuality." *Gender & Society* 24(3):304-29.
- Scherrer, Kristin S. 2009. "Images of Sexuality and Aging in Gerontological Literature." *Sexuality Research & Social Policy* 6(4):5-12.
- Schnittker, Jason. 2001. "When Is Faith Enough? The Effects of Religious Involvement on Depression." *Journal for the Scientific Study of Religion* 40(3): 393-411.
- Simon, Robin W. 2002. "Revisiting the Relationships among Gender, Marital Status, and Mental Health." *American Journal of Sociology* 107(4):1065-096.
- Simon, Robin W. and Anne E. Barrett. 2010. "Nonmarital Romantic Relationships and Mental Health in Early Adulthood: Does the Association Differ for Women and Men?" *Journal of Health and Social Behavior* 51(2):168-82.
- Skultety, Karyn M. 2007. "Addressing Issues of Sexuality with Older Couples." *Generations* 31(3):31-7.
- Smith, Kirsten P. and Nicholas A. Christakis. 2008. "Social Networks and Health." *Annual Review of Sociology* 34:405-29.
- Spriggs, Aubrey L. and Carolyn Tucker Halpern. 2008. "Sexual Debut Timing and Depressive Symptoms in Emerging Adulthood." *Journal of Youth and Adolescence* 37(9):1085-096.
- Springer, Kristen W. and Dawne M. Mouzon. 2011. "'Macho Men' and Preventive Health Care: Implications for Older Men in Different Social Classes." *Journal of Health and Social Behavior* 52(2):212-27.
- Sternthal, Michelle J., David R. Williams, Marc A. Musick, and Anna C. Buck. 2010. "Depression, Anxiety, and Religious Life: A Search for Mediators." *Journal of Health and Social Behavior* 51(3):343-59.
- Surgeon General. 1999. *Mental Health: A Report of the Surgeon General*. Washington, DC: Surgeon General.
- Temml, Christian, Gerald Haidinger, Jörg Schmidbauer, Georg Schatzl, and Stephan Madersbacher. 2000. "Urinary Incontinence in Both Sexes: Prevalence

- Rates and Impact on Quality of Life and Sexual Life." *Neurology and Urodynamics* 19(3):259-71.
- Thoits, Peggy A. 1995. "Stress, Coping, and Social Support Processes: Where Are We? What Next?" *Journal of Health and Social Behavior* 35(Extra Issue):53-79.
- Thoits, Peggy A. 2010. "Stress and Health: Major Findings and Policy Implications." *Journal of Health and Social Behavior* 51(S):S41-53.
- Trudel, Gilles, Lyse Turgeon, and Lyne Piché. 2000. "Marital and Sexual Aspects of Old Age." *Sexual and Relationship Therapy* 15(4):381-406.
- Umberson, Debra. 1992. "Gender, Marital Status, and the Social Control of Health Behavior." *Social Science and Medicine* 34(8):907-17.
- Umberson, Debra, Meichu D. Chen, James S. House, Kristine Hopkins, and Ellen Slaten. 1996. "The Effect of Social Relationships on Psychological Well-being: Are Men and Women Really so Different?" *American Sociological Review* 61(5): 837-57.
- Umberson, Debra, Robert Crosnoe, and Corinne Reczek. 2010. "Social Relationships and Health Behavior across the Life Course." *Annual Review of Sociology* 36:139-57.
- Wade, Terrance J. and David J. Pevalin. 2004. "Marital Transitions and Mental Health." *Journal of Health and Social Behavior* 45(2):155-70.
- Wahrendorf, Morten, Céline Ribet, Marie Zins, and Johannes Seigrist. 2008. "Social Productivity and Depressive Symptoms in Early Old Age—Results from the GAZEL Study." *Aging and Mental Health* 12(3):310-16.
- Waite, Linda J., Edward O. Laumann, Wendy Levinson, Stacy Tessler Lindau, Martha K. McClintock, Colm A. O'Muircheartaigh, and L. Philip Schumm. 2008. *National Social Life, Health, and Aging Project (NSHAP)* [Computer file]. ICPSR20541-v4. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2010-07-28.
- Waldron, Ingrid, Mary Elizabeth Hughes, and Tracy L. Brooks. 1996. "Marriage Protection and Marriage Selection: Prospective Evidence for Reciprocal Effects of Marital Status and Health." *Social Science and Medicine* 43(1):113-23.
- Walker, Ruth B. and Mary A. Luszcz. 2009. "The Health and Relationship Dynamics of Late-life Couples: A Systematic Review of the Literature." *Ageing and Society* 29:455-80.
- Weeks, David J. 2002. "Sex for the Mature Adult: Health, Self-esteem and Countering Ageist Stereotypes." *Sexual and Relationship Therapy* 17(3):231-240.
- West, Candace and Don H. Zimmerman. 1987. "Doing Gender." *Gender & Society* 1(2):125-51.
- West, Candace and Don H. Zimmerman. 2009. "Accounting for Doing Gender." *Gender & Society* 23(1):25-51.
- Westheimer, Ruth K. 2005. *Dr. Ruth's Sex after 50: Revving up the Romance, Passion, & Excitement!* Fresno, CA: Quill Driver Books/Linden Publishing.
- Williams, Kristi. 2003. "Has the Future of Marriage Arrived? A Contemporary Examination of Gender, Marriage, and Psychological Well-being." *Journal of Health and Social Behavior* 44(4):470-87.
- Wood, Robert G., Brian Goesling, and Sarah Avellar. 2007. "The Effects of Marriage on Health: A Synthesis of Recent Research Evidence." Washington, DC: Mathematica Policy Research Inc.
- Yang, Yang. 2006. "How Does Functional Disability Affect Depressive Symptoms in Late Life? The Role of Perceived Social Support and Psychological Resources." *Journal of Health and Social Behavior* 47:355-72.
- Yang, Yang. 2007. "Is Old Age Depressing? Growth Trajectories and Cohort Variations in Late-life Depression." *Journal of Health and Social Behavior* 48(1):16-32.
- Yang, Yang. 2008. "Social Inequalities in Happiness in the United States, 1972 to 2004: An Age-period-cohort Analysis." *American Sociological Review* 73(2):204-226.
- Zelizer, Viviana A. 2005. *The Purchase of Intimacy*. Princeton, NJ: Princeton University Press.