

# Sexual self-schema and depressive symptoms after prostate cancer

Michael A. Hoyt<sup>1,2\*</sup> and Kristen M. Carpenter<sup>3</sup>

<sup>1</sup>Department of Psychology, Hunter College, City University of New York, New York, NY, USA

<sup>2</sup>Department of Psychology, Graduate Center, City University of New York, New York, NY, USA

<sup>3</sup>Departments of Psychiatry and Psychology, The Ohio State University, Columbus, OH, USA

\*Correspondence to:

Department of Psychology,  
Hunter College, City University  
of New York, 695 Park Avenue,  
Room 611-HN, New York,  
NY 10065, USA. E-mail:  
michael.hoyt@hunter.cuny.edu

## Abstract

**Introduction:** The years following prostate cancer treatment are characterized by changes in sexual functioning and risk for depressive symptoms. Sexual self-schema (SSS) is a cognitive generalization about sexual aspects of the self that are associated with sexual behavior, affect, and the processing of sexually relevant information. This study tested if men's SSS moderates the impact of sexual morbidity on depressive symptoms.

**Methods:** Men ( $N = 66$ ) treated for localized prostate cancer in the preceding 2 years were assessed at T1 and 4 months later (T2). Questionnaires included the Center for Epidemiologic Studies Depression Scale, Sexual Self-schema Scale for Men, Sexual Experience Scale, and Expanded Prostate Cancer Index Composite.

**Results:** Regressions controlled for age, sexual activity, and T1 depressive symptoms revealed no significant effect of SSS on depressive symptoms; however, better sexual functioning was related to fewer depressive symptoms ( $B = -0.25$ ,  $p < 0.05$ ). Results showed significant interactions between SSS and sexual outcomes. Among men with high SSS, poor sexual functioning was associated with increased depressive symptoms; loss of sexual function was particularly distressing. There was no significant effect of sexual functioning. Among men with high SSS, there was an inverse relationship between sexual engagement and depressive symptoms. Among men with lower SSS, greater frequency of sexual behavior was associated with increased depressive symptoms.

**Conclusions:** SSS may be an important individual difference in determining the impact of sexual morbidity on psychological adjustment. Men high on SSS are more vulnerable to psychological consequences of lower sexual functioning and less engagement in sexual activities.

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## Introduction

The experience of prostate cancer diagnosis and treatment involves numerous physical and emotional stressors that increase patients' risk for emotional distress and depression. The 24 months following radical prostatectomy or completion of radiation treatment for prostate cancer is especially demanding, characterized by relatively rapid changes in physical and sexual functioning including erectile dysfunction, blunted sexual responsiveness (e.g., erections that are less firm and subjective experience of feeling less aroused), and lessened overall engagement in sexual activity [1,2]. These sexual changes have been linked to increased risk for depressive symptoms and poorer health-related quality of life [3–8], although substantial heterogeneity across men exists. Despite this, few factors that distinguish patients' relative risk for distress following loss of sexual functioning have been established, leaving researchers and clinicians with little guidance on identifying vulnerable patients or viable targets for intervention.

One characteristic with potential to account for some of the heterogeneity in men's responses to adverse sexual

changes that follow prostate cancer diagnosis and treatment is a man's view of himself as a sexual person – his sexual self-schema (SSS). Self-schemas are cognitive generalizations about the self [9–11] and, in this case, generalizations about sexual aspects of the self. As conceptualized [12,13], SSS is manifest in current experience, guides sexual behavior (past, present, and future), and influences the processing of sexually relevant information. In men, SSS has three factors: passionate/loving (e.g., sensitivity and sensuality), which includes feelings of love and passion toward sexual partners; powerful/aggressive (e.g., direct and independent), which shares conceptual overlap with agency and assertiveness; and open-minded/liberal (e.g., liberal and broad minded), which can denote sexual openness [13].

Men differ in the degree to which they are 'schematic' (i.e., high scorers on all factors) versus 'aschematic' (i.e., low scorers on all factors), and these differences are associated with numerous experiential, behavioral, attitudinal, affective, and cognitive differences in the sexual domain [12,14,15]. Stated simply, a man who is schematic – that is, scores high on sexual SSS – can be sensitive and warm and experiences emotions of passion/love more easily

than his aschematic counterpart and yet still perceives himself as sexually powerful, experienced, and direct. He also tends to be more open-minded and liberal in his sexual attitudes. Compared with aschematic men, schematic men are more sexually experienced, have a broader repertoire of sexual behaviors, and report higher levels of sexual arousal. With regard to relationships, they experience greater feelings of passionate love and are more likely to have romantic attachments. Conversely, aschematic men have a narrower range of sexual experiences, have fewer lifetime sexual partners, and are less likely to be involved in romantic relationships [13]. Further, in timed information-processing laboratory tasks, schematic men have demonstrated a preference for positively valenced self-referential words [13]. SSS has also been associated with espousal of traditional and restrictive concepts of masculinity [16,17].

The development of SSS is likely shaped by past social, sexual, and affective experiences and influences how sexual information is processed [9]. Because of their role in affective and attentional processes, it has been suggested that individual differences in SSS constitute a cognitive diathesis in a diathesis–stress model of sexual dysfunction [18], conferring vulnerability to poorer sexual outcomes and perhaps a more difficult psychological trajectory in the face of sexually relevant stressors. For instance, data from gynecologic cancer patients suggest that the combination of a negative SSS and low sexual satisfaction heightened survivors' risk for psychological distress, including depressive symptomatology. Moreover, among women with more positive SSS, higher sexual satisfaction was related to better quality of life, suggesting that these women tend to benefit more from a satisfying sexual life than women with more negative schemas [19].

There are important conceptual differences in men's and women's SSS that are relevant to the discussion of SSS as a diathesis or protective factor. Studies among women also revealed three factors: two of which have a clear positive (e.g., passionate/romantic and open/direct) valence and one of which has a clear negative valence (e.g., embarrassed/conservative), allowing for a discussion of positive and negative sexual self-views among women and consistent with the pattern of results described earlier. In contrast, men were overall less likely to endorse negatively valenced items.<sup>1</sup> Of course, there are high and low scorers, but it is difficult to characterize men's SSS as positive versus negative given the scale's content (for a more thorough discussion, see [12,13]); thus, men's SSS is seen on a single dimension of schematic (high scorers) to aschematic (low scorers), as described earlier.

To our knowledge, only two studies have examined SSS among men with cancer, both in the prostate cancer context. Neither of these studies aimed to examine the relationships among SSS, sexual outcomes, and psychological adjustment, but the results suggest an important

role for schema in this population. Schover *et al.* [2] found that schematic men were more likely to attempt to remediate erectile dysfunction and engage in sexual activity than aschematic men, consistent with the notion that schematic men were more motivated to maintain their sexual identity following treatment. In a subsequent study, Schover and colleagues [21] examined differences between African-American and White men who had undergone radical prostatectomy or radiation therapy for localized prostate cancer ( $N=1220$ ). In this sample, African-American men evidenced higher scores on SSS than White men ( $M=110.9$  vs.  $105.2$ ,  $p=0.04$ ); they were also more likely to endorse the belief that erections are essential to sexual activity ( $p=0.006$ ), and they reported greater interest in preserving erectile capacity ( $p<0.0001$ ) and willingness to seek help for sexual difficulties ( $p=0.01$ ). On the basis of these findings, the authors concluded that African-American men might be more vulnerable to the sexual consequences of their treatments than their White counterparts.

The present study examines the relationships among men's SSS, sexual outcomes, and psychological adjustment following treatment for prostate cancer. There were two aims. First, following a clinical description of the sample, we tested the covariation of SSS and sexual outcomes. Second, we tested the possibility that SSS exacerbates the impact of sexual morbidity on depressive symptoms (i.e., moderation). We anticipated that men who reported higher levels of sexual dysfunction and less engagement in sexual activity would report increased depressive symptoms. However, we expect that the impact of sexual dysfunction and low sexual engagement will have a more negative impact on schematic men, who are more oriented toward their sexual selves.

## Method

### Participants and procedures

Participants ( $N=66$ ) were English-speaking men who had undergone radical prostatectomy or radiation therapy for localized prostate cancer within the prior 2 years, recruited to take part in a larger study of 'health-related quality of life after prostate cancer' (Table 1). Participants were recruited via physician/clinic referrals ( $n=7$ ), via community outreach and advertisement ( $n=24$ ), and from an institutional tumor registry database ( $n=37$ ). The average time since diagnosis at study entry was 28.6 ( $SD=20.5$ ; range=4–108) months, and on average, men had completed treatment 18 months prior ( $SD=10.0$ ; range=5–24 months) to study completion; 71.2% of the sample underwent surgical treatment for prostate cancer, and 31.8% received radiation therapy.

After providing written informed consent, participants completed an in-person individual interview and questionnaire (T1); the second assessment occurred 4 months later (T2). Participants received \$25 for each assessment (\$50

**Table 1.** Participant characteristics (N = 66)

Characteristic	
M Age	65.76 (SD = 9.04)
Ethnicity	
White (non-Hispanic)	84.8%
African-American/Black	10.6%
Hispanic/Latino	3.1%
Native American	1.5%
Education	
High school degree	10.7%
Some post-high school	21.2%
2- or 4-year college degree	34.8%
Advanced degree	33.3%
Annual household income	
\$15,000 or less	3.1%
\$15,001–\$45,000	9.2%
\$45,001–\$75,000	26.2%
\$75,001–\$100,000	21.5%
\$100,001 or more	40.0%
Job status	
Full time	35.4%
Part time	10.8%
Retired	47.7%
Unemployed/disabled	6.1%
Relationship status	
Married/partnered	89.4%
Widowed/divorced	7.5%
Single, never married	3.1%
Treatment	
Prostatectomy/surgery	71.2%
Radiation therapy	31.8%
Hormone therapy	9.1%
M Months since diagnosis	28.62 (SD = 20.45)
M Gleason sum	6.0 (SD = 1.45)

Several participants reported receipt of more than one treatment type. Only two participants reported current receipt of hormone therapy at the time of participation.

total). The institutional review boards at the University of California, Los Angeles, and the University of California, Merced, approved all procedures.

## Measures

### Sexual self-schema

The Sexual Self-schema Scale for Men (SSS-M) [13] was administered at T1. The measure contains 27 trait adjectives (e.g., passionate, loving, open-minded, and spontaneous) that were self-rated from 0 (*not at all descriptive of me*) to 6 (*very descriptive of me*). Previous factor analytic studies have revealed three dimensions: (a) power/agency; (b) capacity for experiencing sexual passion and love; and (c) openness to sexual experience. A total SSS-M score was computed by calculating a mean across dimensions. As described earlier, higher scores indicate a more ‘schematic’ sexual self-view, whereas lower scores indicate an ‘aschematic’ sexual self-view. Validation studies have demonstrated stability (9-week Pearson  $r=0.81$ ) and suggest that the measurement of SSS is not hampered by social desirability [13]. Coefficient  $\alpha$  for the present study was 0.83.

### Sexual functioning

The Expanded Prostate Cancer Index Composite (EPIC) [22] questionnaire was administered at T1 to assess prostate-relevant indicators of sexual functioning. The EPIC is a widely used instrument specified for men with prostate cancer and was developed as an expansion of the University of California, Los Angeles Prostate Cancer Index [23]. For this study, the sexual domain score was computed to measure sexual functioning. This is composed of 13 items, which are transformed into a scale ranging from 0 (poor function) to 100 (better function). In the current study, Cronbach’s  $\alpha$  was 0.92.

### Engagement in sexual behavior

An adapted version of the Sexual Experience Scale (SES) [24] was used to measure the frequency of sexual behavior at T1. The SES is a 24-item scale measuring engagement in specific sexual behaviors. Current (past 60 days) affectionate (e.g., kissing on the lips) and sexual (e.g., intercourse and oral sex) behaviors were assessed by using a frequency-based scale from 0 (did not occur) to 9 (4+ times per day). In the current study, Cronbach’s  $\alpha$  was 0.84.

### Depressive symptoms

Depressive symptoms were measured at T1 and T2 with the Center for Epidemiologic Studies Depression Scale (CES-D) [25]. The CES-D is a 20-item scale designed to measure depressive symptomatology in the general population. The scale assesses depressive symptoms experienced within the past week on a 4-point Likert scale (‘0=rarely or none of the time’ to ‘3=most or all of the time’), and total scores range from 0 to 60. Standard cutoffs are 16 for ‘possible depression’ and 23 for ‘probable depression’ [25]. In the present study, Cronbach’s  $\alpha$  was 0.89.

### Health status and demographics

Participants self-reported their age, level of education, income, employment status, ethnicity, and other sociodemographic variables. This included information regarding health history, health behaviors, and diagnosis and treatment factors (including Gleason score).

### Data analyses

Descriptive statistics and zero-order correlations were computed for key variables. Relationships between the dependent variable and the potential covariates were examined. These included participant age, education (in years), ethnicity, marital status (married/partnered versus not), and time since completing treatment (in months). The sample included only patients with localized disease; therefore, cancer stage was not considered as a covariate. Only those variables significantly correlated with depressive symptoms were included in subsequent analyses.

Multiple linear regression was used to test study hypotheses. Two sets of analyses were conducted. T2 depressive symptoms were separately regressed on sexual functioning and sexual engagement, controlling for identified variables. In each model, the first block included SSS and controlled for relevant covariates, sexual activity, and T1 depressive symptoms. The second block tested the moderation effect, that is, the SSS X sexual outcome interaction. Regression analyses were conducted in accordance with procedures outlined by Aiken and West [26]. Variables were centered around the mean. For significant interactions, simple slopes analysis was used for interpretation [27].

## Results

As reported in Table 2, descriptive statistics were examined for primary study variables. In this sample, the mean of SSS was slightly lower than that reported in Schover *et al.* [2] ( $M = 105.7$ ,  $SD = 16.7$ ) and Jenkins *et al.* [19] (White men  $M = 105.2$ ,  $SD = 15.9$ ; African-American men  $M = 110.9$ ,  $SD = 22.7$ ). On average, participants scored below clinical thresholds for depressive symptoms at study entry.

**Table 2.** Descriptive statistics and correlations for key variables

Variable	Descriptive statistics		Correlations			
	Mean (SD)	Range	1	2	3	4
1. Sexual self-schema	101.7 (18.7)	42.0–135.0	—	0.12	0.10	−0.04
2. Sexual function	41.5 (28.2)	0.0–93.8	—	0.40**	−0.29*	
3. Sexual engagement	23.3 (15.6)	0.0–61.0		—	−0.26*	
4. Depressive symptoms	8.9 (8.1)	0.0–36.0			—	

\* $p < 0.05$ .

\*\* $p < 0.01$ .

However, 15 patients scored  $\geq 16$  (approximately 23%) on the CES-D, indicating the possibility of mild to moderate depression; six of these were  $\geq 23$ , which is indicative of more significant depressive symptoms. Notably, 73% of the participants reported engagement in ‘any sexual activity’, and 42% reported having ‘sexual intercourse’ in the past 4 weeks at study entry. At follow-up (T2), 60% of the participants reported engagement in ‘any sexual activity’, and 30% reported having ‘sexual intercourse’ in the past 4 weeks.

Correlation coefficients are reported in Table 2. SSS was not correlated with sexual engagement or functioning, or depressive symptoms. Finally, relationships between study variables and identified potential covariates were also examined. Only participant age was correlated with depressive symptoms ( $r = -0.28$ ,  $p < 0.05$ ); thus, age was included in the final regression models.

Separate regression analyses controlling for age and T1 depressive symptom were conducted. The regression including sexual dysfunction also controlled for T2 sexual activity. See Table 3 for a summary of the regression results. In the analysis examining the effect of sexual functioning on depressive symptoms, there were no significant main effects of age, sexual activity, or SSS on depressive symptoms; however, better sexual functioning was related to fewer depressive symptoms ( $\beta = -0.25$ ,  $p < 0.05$ ). This main effect was qualified by a significant SSS X sexual functioning interaction (Figure 1). Simple slope analyses facilitated interpretation of the interaction. Among men with high SSS, poor sexual functioning was associated with increased depressive symptoms (and better sexual functioning was associated with fewer depressive symptoms), suggesting that the loss of sexual function was particularly distressing for these men. In contrast, there was not a significant relationship

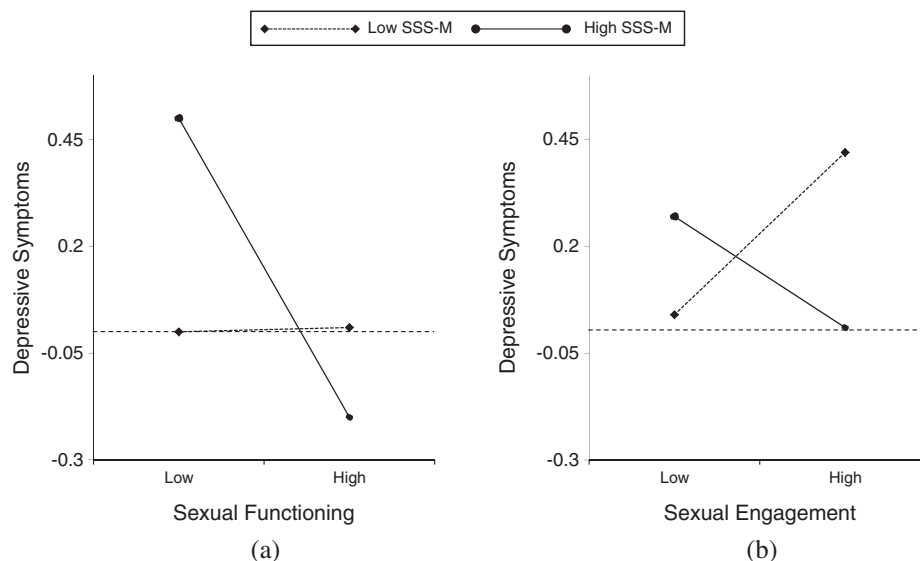
**Table 3.** Predictors of depressive symptoms at time 2

Variable	$\Delta R^2$	B	SE	$\beta$
Sexual functioning $F(6, 54) = 17.491^{***}$ ; $R^2 = 0.69$				
Block 1	0.63***			
Age		0.00	0.00	−0.25
T1 depressive symptoms		0.63	0.07	0.80***
Sexual activity		0.13	0.09	0.16
Sexual self-schema		0.00	0.00	−0.01
Sexual functioning		−0.01	0.00	−0.25*
Block 2	0.06**			
Sexual self-schema X sexual functioning		0.00	0.00	−0.24**
Sexual engagement $F(5, 55) = 18.80^{***}$ ; $R^2 = 0.65$				
Block 1	0.61***			
Age		0.00	0.01	−0.02
T1 depressive symptoms		0.59	0.07	0.75***
Sexual activity		0.02	0.03	0.04
Sexual self-schema		0.00	0.00	−0.03
Block 2	0.04*			
Sexual self-schema X sexual engagement		−0.01	0.00	−0.21*

\* $p < .05$ .

\*\* $p < .01$ .

\*\*\* $p < .001$ .



**Figure 1.** Interactions of sexual self-schema with sexual functioning (a) and engagement (b)

between sexual functioning and depressive symptoms (nonsignificant slope) for aschematic men.

In the analysis examining the effect of sexual engagement (i.e., frequency of sexual behaviors) on depressive symptoms, there were no significant main effects of age, sexual activity, or SSS on depressive symptoms; however, there was a significant SSS X sexual engagement interaction (Figure 1). Among schematic men, there was an inverse relationship between sexual engagement and depressive symptoms, indicating that more sexual activity was associated with fewer depressive symptoms. The converse was observed among men with lower SSS scores; greater frequency of sexual behavior was actually associated with increased depressive symptoms among these men.

## Discussion

Understanding sexual self-schema in men with prostate cancer will help distinguish which men are at risk for heightened distress related to sexual dysfunction. Results of this study suggest that schematic men might be more vulnerable to negative psychological consequences of lower sexual functioning and less engagement in sexual activities, whereas aschematic men evidenced less bother in the face of poor sexual functioning and higher levels of distress with increased frequency of sexual behavior.

Notably, our results stand in stark contrast to observations of the influence of SSS in female cancer patients. As discussed, SSS has been shown to be a protective factor for women facing sexual difficulty and disruption following cancer. There are several plausible explanations for these differences. It may be that men high in SSS, more so than women high in SSS, tend to garner an actualized sense of self through behavioral enactment of their sexuality. Thus, erectile dysfunction and other sexual

problems likely result in distress when sexual behavior and response are rigidly defined (e.g., capacity for penile intercourse and erection, respectively). Findings from the current study regarding the operation of sexual engagement on depressive symptoms in the context of high SSS are consistent with this possibility. Schematic men engaging in little to no sexual activity are forced to reconcile behavior that is inconsistent with their sexual self-view. Future work distinguishing specific types of engagement or motivations for non-engagement might further understanding. The degree that SSS is associated with masculine cancer threat [28] deserves more attention. Another possibility might implicate coping processes. For women, SSS might aid adaptive emotional processing and acceptance of sexual change; however, SSS might orient men toward agency and action. In the presence of sexual dysfunction, this orientation could exacerbate ineffective coping and behavior and ultimately increase distress. If true, men with lower SSS might be better able to divert their attention and effort toward reengagement in alternative meaningful goals. Interpretation of findings for men with relatively low SSS is less clear. More work is needed to understand if low SSS is in fact protective in the face of sexual dysfunction. The fact that the men with lower SSS experienced higher distress with more sexual engagement supports the notion of a mismatch between the self-view and the behavior. It is possible that engagement in sexual activity by aschematic men is perceived as less satisfying or initiated by pressure from a partner. Such activity, particularly if unsuccessful, could lead to increased negative affect. It also appears that these men may be buffered against the distressing effects of sexual dysfunction, even though correlations do not suggest that these men engage in more or less sexual activity than their high SSS counterparts. Also, this study examined total SSS scores on the SSS-M; however, future studies with

larger samples should consider the three scale factors individually or in unique combinations. This will likely provide a more nuanced characterization of prostate cancer survivors' experience and potentially discover resilience factors. For instance, men particularly high on the open-minded-liberal subscale might be more amenable to expansion of their sexual/intimacy repertoire beyond intercourse.

Several limitations of the current study are notable. This study relied solely on self-report measures. In this case, these captured only perceptions of sexual function and engagement. These may themselves be subject to recall bias, which could in fact be related to SSS. This study also utilized a relatively small and homogenous sample. Also, without characterization of individuals who refused participation in this study as well as the potential for 'overfitting' our statistical model, generalizability of the results will be strengthened with replication of findings with larger samples. We were able to detect the moderation effect; however, in light of the work of Schover *et al.* [21, 289], it will be important to examine the degree to which culture/race might serve as a moderator as well. As noted, Jenkins and colleagues [21] documented higher or more positive SSS in African-American prostate cancer survivors compared with White survivors, particularly in regard to being sexually open and liberal. Likewise, the majority of men in this study were married and heterosexual. Sexual self-schema might operate differently in single men or gay men. Studies including diverse samples of men will make a strong contribution.

Translation of findings regarding individual difference factors on sexual and cancer adjustment outcomes is critical. To date, sexual rehabilitation following prostate cancer has largely focused on restoration of function [29]. As we learn more about which individual difference factors differentiate how men adjust to sexual changes, more tailored interventions that incorporate cognitive and behavior change and response strategies will become increasingly useful. For instance, altering or expanding how men can experience, express, and enact sexuality that circumvents the necessity for complete restoration of erectile functioning might allow men with high SSS to view their behavior as more consistent with their sexual self-view.

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### Note

1. This finding is consistent with the broader literature on gender differences in self-esteem/self-view; see [20].

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