The relationship between openness to experience and intelligence with sexual desire; The moderating role of weight and age

Marzieh, Barazandeh, Mohammad Ali, Besharat, Ali, Moghadamzadeh

To link to this article: HTTP://DX.DOI.ORG/10.52547/JSHP.2203.1010

Published online: 06 July 2022.
The relationship between openness to experience and intelligence with sexual desire; The moderating role of weight and age

Marzieh, Barazandeh, Mohammad Ali, Besharat, Ali, Moghadamzadeh

Abstract

Purpose: Sexual desire (SD) refers to individual differences in the internal force which determines sexual functions. This study investigated the relationship between openness to experience and intelligence with SD. The role of weight and age in moderating the relation between openness and intelligence with SD was also examined.

Methods: A total of 168 participants were collected using grab sampling from 3 universities in Tehran, Iran (n=168; age range: 18 to 35; Mean = 23; Standard Deviation = 3.58). All participants completed measures of intelligence (Raven's Progressive Matrices), Openness to experience (measured through the NEO), and sexual desire (Hurlbert Index of SD).

Results: The data of the study were analyzed by using Pearson's correlation coefficient and regression. The results found no significant relationship between openness to experience and intelligence with SD. Moreover, sex and weight did not moderate the relationship between openness and intelligence with SD. Findings from the current study provide empirical support for the consistent link between intelligence and SD at older ages. There is also a curvilinear relationship between weight and SD.

Conclusions: These findings suggest that intelligence or openness would not have an influence on SD, and only age plays a role in moderating the association between intelligence and SD.

Introduction

Sexual desire is an intrinsic motivational force (DeLamater & Sill, 2005) or a mental state which determines sexual activity (Carvalho & Nobre, 2011; Wood et al., 2006). Sexual desire has three dimensions including drive, wish, and motivation. Drive is the biological dimension of the physiology of glands, nerves, and anatomy. Wish is the cultural dimension that reflexes the values, rules and meanings of sexual expression. Motivation is the psychological dimension is affected by the personal mental states such as happiness or sadness, and interpersonal states like mutual love, inconsistency, disrespect, extramarital, and length of relationship (Levine, 2003). Sexual desire is the most sexual experience of men and women (Regan & Atkins, 2006). A popular traditional linear model of sexual desire is the sexual response cycle beginning with desire and then arousal, orgasm and finally ending with resolution (Basson, 2000; Levine, 2003).
Openness to experience is one of the Big Five personality traits (McCrae, 1990) which means the width, depth and permeability of consciousness that needs increasing experiences (McCrae & Costa, 1997a). Openness includes active imagination, aesthetics, interest in internal emotion, variety seeking, and curiosity (Costa & McCrae, 1992; McCrae & Costa, 1997b; McCrae, 1993, 2007b). It associates with mental health (Malouff et al., 2005; Steel et al., 2008), Creativity (Feist, 1998; George & Zhou, 2001; McCrae, 1987), crystal intelligence (Geary, 2005; Moutafi et al., 2005), sexuality (Donnellan et al., 2004; McCrae, 1994; McCrae & Sutin, 2009) and social perception (McCrae & Sutin, 2009; Sneed et al., 1998; Staudinger et al., 1998). Sexual desire is intertwined with the whole personality (Chalichman, 1990). People with a high rate of openness experience more sexual arousal, and they hold a more liberal attitude toward sex (Rempel & Baumgartner, 2003). Although Eysenck (1976) discussed the relationship between personality characteristics and sexuality and suggested some hypotheses about the relation between personality traits and sexuality, little is known about the relationship between openness to experience and sexual desire. Research on the extent to which openness is associated with sexuality has inconsistent findings. For example, one research has demonstrated that women with high openness report increased sexual satisfaction (Donnellan et al., 2004). Though, another research showed that openness is not associated with sexual satisfaction in women (Heaven et al., 2000). This study demonstrated that neuroticism and extraversion have a relationship with high-risk sexual behavior and openness to experience effects on this relationship indirectly (see Schmitt, 2004).

The meaning of intelligence is based on culture (Scribner, 1975), so defining it is controversial (Legg & Huter, 2007). Wechsler (1939) explained intelligence as a global capacity to do goal-oriented activities, logical thinking, and adapt to the environment. The nature of intelligence is biological and rational (Piaget, 1999). Bühler (1933) differentiates between three stages of targeted behavior: instinct, training and intellect. Real intelligence appears in the intellect stage in which an individual discovers the environment with insight and contemplation, so the invention is the biological result of intellect. Intelligence as an important factor is associated with some variables like sexuality. For example, according to Greengross and Miller (2011) intelligence is associated with sexual desire and sexual satisfaction. DeMartino (2013) also claims that intelligent women report more sexual drive and orgasm, but Hopcroft (2006) believed that intelligence decreases the frequency of sex. Freud (1916) claimed that in the mental development period, powerful drives result in sexual interests while in adulthood sexual drives come into superiority. In fact, instead of repressing sexual drive, intelligent people directed it into curiosity and investigation, which are the substitution for sexual activity. In a study, the relationship between cognitive functions and sexuality was evaluated in older adults. The results showed that there is a significant positive relationship between cognitive functions and sexuality at this age (Hartmans et al., 2015), but the association between intelligence and SD is poorly understood.

There is a positive correlation between body image with sexual function and sexual satisfaction (Pujols, Meston & Seal, 2010; Weaver & Byers, 2006). Being also a strong predictor of understanding sexual attractiveness (Wade, 2000), body respect has a positive relationship with concerns about weight, sexual beauty and sexual desire (Basson, 2000). The lower the testosterone and self-respect in obese men and women, the lower sexual desire experienced (Melehan, & et al., 2006; Kinzl et al., 2001; Wang, & et al., 2011). The purposes of the current study are: 1) the examination of the likely relationship between openness to experience and intelligence with sexual desire; 2) evaluating the relationship between underweight, normal weight, overweight and obesity with sexual desire; 3) the specification of the moderator roles of weight and age in the relationship between openness to experience and intelligence with SD.

**Method**

**Participants and procedure**

The sample in this study was ungraduated students (94 females, 74 males) from age 18 to 35
(M = 35, 23, SD = 3.58) from the universities of Tehran who participated as volunteers. They completed Raven’s Progressive Matrices (RPM-60; Raven, 1941), openness to experience of NEO test (NEO; McCrae & Costa, 2004), and Hurlbert Index of Sexual Desire (HISD-25; Hurlbert, 2010). The incentives considered for the participants were the responses to sexual desire and IQ tests. For those who were curious about the result of the correlations in the project, the results were emailed.

**Measures**

**Raven’s Progressive Matrices (RPM)**
The RPM is a 60-item scale with 6 to 8 choices considered as a nonverbal questionnaire measuring fluid intelligence (Raven, 1941). RPM assessed abstract reasoning in educational settings. It is used in measuring Spearman’s g factor and as a reliable intelligence test (Carpenter et al., 1990). RPM has a good internal consistency, predictive validity and test-retest reliability (Burke, 1972; Raven, 1960, 2000).

**NEO-FFI Personality Inventory (NEO-FFI)**
The NEO-FF is a 5-scale inventory including the openness to experience (McCrae & Costa, 2004). Openness consists of 12 items to which participants answer the Likert scale ranging from 1 (very uncharacteristic of me) to 5 (very characteristic of me). The overall score ranges from 12 (lower openness) to 48 (high openness). Cronbach’s α for openness to experience was 84% (Rubinstein & Strul, 2007).

**Hurlbert Index of Sexual Desire (HISD)**
The HISD consists of 25 items to which subjects express agreement or disagreement on a five-point Likert scale from 0 (always) to 4 (never) (Hurlbert, 2010). The overall score ranges from 0 (lower desire) to 100 (high desire). The HISD has been shown to have internal consistency, content validity, good split-half and test-retest reliability (Miri et al., 2011; Teimourpour et al., 2014).

**Body Mass Index (BMI)**
The body mass index (BMI) is a formula assessing the body weight relative to height in humans (Obese, 1998). BMI was based on self-reported height and weight classified into four groups: underweight, normal weight, overweight and obesity.

**Results**

Mean scores and standard deviations (SD) for all scales are presented for intelligence, openness and sexual desire in Table 1. As indicated, the score of students’ intelligence is about 2 standard deviations more than the average intelligence.

| Variable                  | Mean  | S.D. |
|---------------------------|-------|------|
| Intelligence              | 118.16| 9.55 |
| Openness to Experience    | 44.92 | 5.28 |
| Sexual Desire             | 62.37 | 17.42|

The Kolmogorov-Smirnov test showed the variables were normally distributed. Table 2 presents the Pearson product-moment correlations between measures of intelligence, openness, sexual desire and weight. As shown in table 2, no significant relations were discovered between intelligence and openness to experience with SD among university students.

| Variable                  | 1     | 2   | 3   | 4   |
|---------------------------|-------|-----|-----|-----|
| 1. Intelligence           | -     |     |     |     |
| 2. Openness to Experience | .067  | -   |     |     |
| 3. Sexual Desire          | .080  | .106| -   |     |
| 4. Weight                 | -.103 | -.122| .022| -   |

Having entered moderators, sex and weight, our findings indicated that these variables did not play a role in moderating the associations between creativity and openness to experience with SD in the students. In the end, concerning the role of age as a moderator in the relationship between intelligence and SD, our results indicated a significant positive correlation between intelligence and SD at older ages among students (r = .352; p < .05; see Table 3).

The Pearson product-moment correlation between underweight, normal weight, overweight
and obesity with SD is presented in Table 4. As indicated, there is a curvilinear relationship between SD and the 4 scales of weight. Therefore, there are negative relations between underweight and obesity with SD. Positive relationships were also indicated between normal weight and overweight with sexual desire among the students.

Table 3. The relationship between intelligence and sexual desire in terms of age among university students (n = 168)

| Intelligence (age groups) | Sexual desire |
|---------------------------|--------------|
| .063 (18-21)               | .002 (22-25)  |
| .352* (26-35)             |

Note. *p < .05

The results of the Pearson correlation coefficient revealed that there is no association between openness and intelligence with SD, but there are significant positive relationships between normal weight and overweight with SD and negative relationships between underweight and sexual desire. To evaluate the rate of moderating effects of weight and age on the relationship between openness and intelligence with SD multiple regression analysis was performed. The results showed the moderating variables did not affect on the relationship between openness to experience and intelligence with sexual desire.

Table 4. The Pearson correlation between underweight, normal weight, overweight and obesity with sexual desire (n = 168)

| Sexual Desire | Underweight | Normal Weight | Overweight | Obesity |
|--------------|-------------|---------------|------------|---------|
| -.447*       | .541**      | .348*         | -.623      |

Note. *p < .05, ** p < .01

Discussion

The current study found no relationship between openness and intelligence with sexual desire. These findings are consistence with previous studies (Bourdage et al., 2007; Halpern et al., 2000; Miri et al., 2011). A positive relation between intelligence and SD at older ages was found (26-35 years). Smart teens postpone sexual activities in order to achieve goals (Halpern et al., 2000). In general, cognitive strategies help people control appetite signs such as hyperresponsiveness to food cues and erotic stimuli (Demos et al., 2012). In the study of Hartmans et al (2015), the correlation between fluid intelligence and sexual activity at old ages (mean age: 71) was positive. Based on this study, intelligent people, especially women with high fluid intelligence, perceived sexuality as an important thing in life. Inadequate emotional intimacy is a factor related to low sexual desire (Basson, 2001), and women, in the first place, experiencing sexual desire in the sexual relationship (Goldhammer & McCabe, 2011) shows that as women at older ages are more likely to have sexual partner experience more sexual desire. From an evolutionary point of view, it can be probably said to have a better generation, intelligent people experience more sexual desire, but because of being goal-oriented and doing something important for humankind, they put sexual activity off.

Trapnell and Metson (1996) believed that sexual intrapersonal aspects like sexual imaginaries, sexual attitude and masturbation are associated with openness, but sexual interpersonal aspects such as sexual experience and number of sexual partners do not (as cited in Meston et al., 1998). In general, religious orientation has more effect on SD than openness to experience.

There is a positive relation between normal weight and overweight with SD, and a negative relationship between underweight and obesity with sexual desire. These findings are consistence with previous studies (Campbell et al., 2012; Esposito et al., 2007; Katznelson et al 1996; Smith, 2004; Warnock et al., 1997). Some previous studies (Han et al., 2011) indicated that overweight people experience lower sexual
desire, which is inconsistence with the current study. It can be mentioned that the sexual desire of these people could be a result of being fat or having muscles. Fatness by reducing the amount of testosterone, decreases sexual desire, on the other hand, having muscles help increase testosterone and ultimately increases sexual desire (Katznelson et al., 1996; Smith, 2004). Since obese women have lower sexual desire and women’s sexual desire is based on the environment, it can be concluded that most problems of these women are rooted in the lack of self-esteem, unsatisfying relationships and collective stigmatization (Kinzl et al., 2001). Underweight people also have lower testosterone, that’s why they experience less sexual desire (Campbell et al., 2012; Kratzik et al., 2007; Warnock et al., 1997). Using weight as a moderating variable did not impact the relationship between openness to experience and intelligence with sexual desire. In general, the more people access to satellite and foreign media, the more people report dissatisfaction with their body image (Ricciardelli, & et al., 2007). Easy availability of these media and easy accessibility of social networks, probably cause more unsatisfactory with body image. In the end, with these findings, we can prevent early sex in people, especially adolescents, by focusing more on sex education in people with lower intelligence.

Limitations

Using the available sampling method is one of the limitations of this study. Another limitation is whether the overweight comes from the fat or muscle because the fat decreases the amount of Testosterone and muscle increases it. The sample group was only university students which limit the generalization.

Conclusions

There was no relationship between openness to experience with sexual desire. The weight did not moderate the relationship between openness to experience and intelligence with SD. Age moderates the relationship between intelligence and sexual desire just at old ages (26-35). The association between weight and intelligence also was evaluated which showed there was a significant positive correlation between normal weight and overweight with the SD, and a negative relationship between underweight and obesity was shown.

Conflict of interest

The author(s) declared no conflicts of interest concerning the research, authorship, and publication of this article.

Acknowledgments

We thank Amirhosain Mehrsafar (University of Tehran, Tehran) for his assistance in statistical methods. We gratefully thank the University of Tehran for allowing us to data collecting.

Reference

Basson, R. (2000). The female sexual response: A different model. Journal of Sex &Marital Therapy, 26, 51-65.

Basson, R. (2001). Using a different model for female sexual response to address women's problematic low sexual desire. Journal of Sex &Marital Therapy, 27(5), 395-403.

Bourdage, J. S., Lee, K., Ashton, M. C., & Perry, A. (2007). Big Five and HEXACO model personality correlates of sexuality. Personality and Individual Differences, 43, 1506-1516.

Buhler, K. (2013). The mental development of the child: A summary of modern psychological theory (Vol. 68). Routledge.

Burke, H. R. (1972). Raven's Progressive Matrices: Validity, reliability, and norms. The Journal of Psychology, 82, 253-257.

Campbell, K. L., Foster-Schubert, K. E., Alfano, C. M., Wang, C. C., Wang, C. Y., Duggan, C. R., Mason, C., Imayama, I., Kong, A., Xiao, L. & Bain, C. E. (2012). Reduced-calorie dietary weight loss, exercise, and sex hormones in postmenopausal women: randomized controlled trial. Journal of Clinical Oncology, JCO-2011.

Carpenter, P. A., Just, M. A., & Shell, P. (1990). What one intelligence test measures: a theoretical account of the processing in the Raven Progressive Matrices Test. Psychological review, 97, 404.

Chalichmen. (1990). Archive of sexual behaviour, 19,5-13.

Costa, P. T., & McCrae, R. R. (1992). Normal personality assessment in clinical practice: The
NEO Personality Inventory. Psychological assessment, 4, 5.
DeLamater, J. (2012). Sexual expression in later life: a review and synthesis. Journal of sex research, 49, 125-141.
DeMartino, M. F. (2013). Sex and the intelligent women. Springer.
Demos, K. E., Heatherton, T. F., & Kelley, W. M. (2012). Individual differences in nucleus accumbens activity to food and sexual images predict weight gain and sexual behavior. Journal of Neuroscience, 32, 5549-5552.
Donnellan, M. B., Conger, R. D., & Bryant, C. M. (2004). The Big Five and enduring marriages. Journal of Research in Personality, 38, 481-504.
Esposito, K., Ciotola, M., Giugliano, F., Bisogni, C., Schisano, B., Autorino, R., Cobellis, L., De Sio, M., Colacurci, N. & Giugliano, D. (2007). Association of body weight with sexual function in women. International Journal of Impotence Research, 19, 353-357.
Feist, G. J. (1998). A meta-analysis of personality in scientific and artistic creativity. Personality and social psychology review, 2, 290-309.
Freud, S. (1916). Leonardo da Vinci: A psychosexual study of an infantile reminiscence. Moffat, Yard.
Geary, D. C. (2005). Evolution of General Intelligence. American Psychological Association, 8, 253-305.
George, J. M., & Zhou, J. (2001). When openness to experience and conscientiousness are related to creative behavior: an interactional approach. Journal of applied psychology, 86, 513.
Goldhammer, D. L., & McCabe, M. P. (2011). A qualitative exploration of the meaning and experience of sexual desire among partnered women. The Canadian Journal of Human Sexuality, 20, 19.
Greengross, G., & Miller, G. (2011). Humor ability reveals intelligence, predicts mating success, and is higher in males. Intelligence, 39, 188-192.
Halpern, C. T., Joyner, K., Udry, J. R., & Suchindran, C. (2000). Smart teens don’t have sex (or kiss much either). Journal of Adolescent Health, 26, 213-225.
Han, T. S., Tajar, A., O’Neill, T. W., Jiang, M., Bartfai, G., Boonen, S., Casanueva FF, Finn JD, Forti G, Giwercman A, & Huhtaniemi, I. (2011). Impaired quality of life and sexual function in overweight and obese men: The European Male Ageing Study. European Journal of Endocrinology, EJE-10.
Hartmans, C., Comijs, H., & Jonker, C. (2015). The perception of sexuality in older adults and its relationship with cognitive functioning. The American Journal of Geriatric Psychiatry, 23(3), 243-252.
Heaven, P. C., Fitzpatrick, J., Craig, F. L., Kelly, P., & Sebar, G. (2000). Five personality factors and sex: Preliminary findings. Personality and Individual Differences, 28(6), 1133-1141.
Hopcroft, R. L. (2006). Sex, status, and reproductive success in the contemporary United States. Evolution and Human Behavior, 27, 104-120.
Katznelson, L. A., Finkielstein, J. S., Schoenfeld, D. A., Rosenthal, D. I., Anderson, E. J., & Klibanski, A. N. N. E. (1996). Increase in bone density and lean body mass during testosterone administration in men with acquired hypogonadism. The Journal of Clinical Endocrinology & Metabolism, 81, 4358-4365.
Kinzl, J. F., Trefalt, E., Fiala, M., Hotter, A., Biebl, W., & Aigner, F. (2001). Partnership, sexuality, and sexual disorders in morbidly obese women: consequences of weight loss after gastric banding. Obesity Surgery, 11(4), 455-458.
Kratzik, C. W., Schatzl, G., Lackner, J. E., Lunglmayr, G., Brandstätter, N., Rücklinger, E., & Huber, J. (2007). Mood changes, body mass index and bioavailable testosterone in healthy men: results of the Androx Vienna Municipality Study. BJU International, 100, 614-618.
Legg, S., & Hutter, M. (2007). Universal intelligence: A definition of machine intelligence. Minds and Machines, 17, 391-444.
Levine, S. B. (2003). The nature of sexual desire: A clinician’s perspective. Archives of Sexual Behavior, 32, 279-285.
Malouff, J. M., Thorsteinsson, E. B., & Schutte, N. S. (2005). The relationship between the five-factor model of personality and symptoms of clinical disorders: A meta-analysis. Journal of Psychopathology and Behavioral Assessment, 27, 101-114.
McCrae, R. R. (1987). Creativity, divergent thinking, and openness to experience. Journal of personality and social psychology, 52, 1258.
McCrae, R. R. (1990). Traits and trait names: How well is Openness represented in natural languages?. European Journal of Personality, 4, 119-129.
McCrae, R. R. (1993). Openness to experience as a basic dimension of personality. Imagination, Cognition and Personality, 13, 39–55.
McCrae, R. R. (1994). Openness to experience: Expanding the boundaries of Factor V. European Journal of Personality, 8, 251-272.
McCrae, R. R. (2007a). Encyclopedia of applied psychology: openness to experience. Academic Press.
McCrae, R. R. (2007b). Aesthetic chills as a universal marker of openness to experience. *Motivation and Emotion, 31*, 5-11.

McCrae, R., & Costa, P. (1997a). Personality trait structure as a human universal. *American Psychologist, 52*, 509-516.

McCrae, R. R., & Costa Jr., P. T. (1997b). Conceptions and correlates of openness to experience.

McCrae, R. R., & Costa, P. T. (2004). A contemplated revision of the NEO Five-Factor Inventory. *Personality and individual differences, 36*, 587-596.

McCrae, R. R., & Sutin, A. R. (2009). Openness to experience. Handbook of individual differences in social behavior (pp. 257-273). New York: Guilford.

Melehan, K. L., Hoyos, C. M., Yee, B. J., Wong, K. K., Buchanan, P. R., Grunstein, R. R., & Liu, P. Y. (2016). Increased sexual desire with exogenous testosterone administration in men with obstructive sleep apnea: a randomized placebo-controlled study. *Andrology, 4*(1), 55-61.

Meston, C. M., Heiman, J. R., Trapnell, P. D., & Paulhus, D. L. (1998). Socially desirable responding and sexuality self-reports.

Miri, M., Besharat, M., Asadi, M., & Shahyad, S. (2011). The relationship between dimensions of personality and sexual desire in females and males. *Procedia-Social and Behavioral Sciences, 15*, 823-827.

Moutafi, J., Furnham, A., & Crump, J. (2006). What facets of openness and conscientiousness predict fluid intelligence score?. *Learning and Individual Differences, 16*, 31-42.

Obese, N. W. O. (1998). Body Mass Index (BMI). *Obesity Research, 6*(2), 51S-209S.

Piaget, J. (1999). The psychology of intelligence: International Library of Psychology. New York: Routledge.

Pujols, Y., Meston, C. M., & Seal, B. N. (2010). The association between sexual satisfaction and body image in women. *The journal of sexual medicine, 7*, 905-916.

Raven, J. C. (1941). Standardization of progressive matrices, 1938. *British Journal of Medical Psychology, 19*(1), 137-150.

Raven, J. C. (1960). Guide to the standard progressive matrices: sets A, B, C, D and E. HK Lewis.

Raven, J. (2000). The Raven's progressive matrices: change and stability over culture and time. *Cognitive psychology, 41*, 1-48.

Regan, P. C., & Atkins, L. (2006). Sex differences and similarities in frequency and intensity of sexual desire. *Social Behavior and Personality: an International Journal, 34*, 95-102.

Rempel, J. K., & Baumgartner, B. (2003). The relationship between attitudes towards menstruation and sexual attitudes, desires, and behavior in women. *Archives of Sexual Behavior, 32*, 155-163.

Ricciardelli, L. A., McCabe, M. P., Williams, R. J., & Thompson, J. K. (2007). The role of ethnicity and culture in body image and disordered eating among males. *Clinical Psychology Review, 27*, 582-606.

Rubinstein, G., & Strul, S. (2007). The Five Factor Model (FFM) among four groups of male and female professionals. *Journal of Research in Personality, 41*(4), 931-937.

Schmitt, D. P. (2004). The Big Five related to risky sexual behaviour across 10 world regions: Differential personality associations of sexual promiscuity and relationship infidelity. *European Journal of Personality, 18*, 301-319.

Scribner, S. (1975). Book Review: Culture and Cognition: Readings in Cross-Cultural Psychology.

Smit, M. R. (2004). Changes in fat and lean body mass during androgen-deprivation therapy for prostate cancer. *Urology, 63*, 742-745.

Sneed, C. D., McCrae, R. R., & Funder, D. C. (1998). Lay conceptions of the five-factor model and its indicators. *Personality and Social Psychology Bulletin, 24*, 115-126.

Staudinger, U. M., Maciel, A. G., Smith, J., & Baltes, P. B. (1998). A First Look at Personality, Intelligence, and Facilitative Experiential Contexts. *Eur. J. Pers, 12*, 1-17.

Steel, P., Schmidt, J., & Shultz, J. (2008). Refining the relationship between personality and subjective well-being. Psychological bulletin, 134(1), 138.

Teimourpour, N., Bidokhti, N. M., Pourshahbaz, A., & Ehsan, H. B. (2014). Sexual desire in Iranian female university students: role of marital satisfaction and sex guilt. *Iranian Journal of Psychiatry and Behavioral Sciences, 8*, 64.

Wade, T. J. (2000). Evolutionary theory and self-perception: Sex differences in body esteem predictors of self-perceived physical and sexual attractiveness and self-esteem. *International Journal of Psychology, 35*, 36-45.

Wang, C., Jackson, G., Jones, T. H., Matsumoto, A. M., Nehra, A., Perelman, M. A., Swordlof, R.S., Traish, A., Zitzmann, M. & Cunningham, G. (2011). Low testosterone associated with obesity and the metabolic syndrome contributes to sexual dysfunction and cardiovascular disease risk in men with type 2 diabetes. *Diabetes care, 34*, 1669-1675.

Warnock, J. K., Bundren, J. C., & Morris, D. W. (1997). Female hypoactive sexual desire disorder due to androgen deficiency: clinical and
psychometric issues. *Psychopharmacology bulletin, 33*, 761.

Weaver, A. D., & Byers, E. S. (2006). The relationships among body image, body mass index, exercise, and sexual functioning in heterosexual women. *Psychology of Women Quarterly, 30*, 333-339.

Wechsler, D. (1939). The measurement of adult intelligence (2nd ed.). Baltimore, MD, US: Williams & Wilkins Co., 3-12.

Wood, J. M., Koch, P. B., & Mansfield, P. K. (2006). Women’s sexual desire: A feminist critique. *Journal of Sex Research, 43*, 236-244.

Submit your next manuscript to Journal of Sexual Health Psychology (JSHP): https://www.journalshp.com