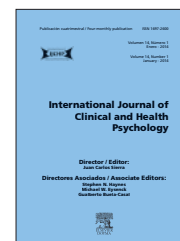




International Journal of Clinical and Health Psychology

www.elsevier.es/ijchp



THEORETICAL ARTICLE

A systematic review of sexual satisfaction

María del Mar Sánchez-Fuentes^a, Pablo Santos-Iglesias^b, Juan Carlos Sierra^{a,*}

^a Universidad de Granada, Spain

^b University of New Brunswick, Canada

Received July 11, 2013; accepted October 31, 2013

KEYWORDS

Sexual satisfaction;
Human sexuality;
Ecological theory;
Systematic review;
Theoretical study

PALABRAS CLAVE

Satisfacción sexual;
Sexualidad humana;
Teoría ecológica;
Revisión sistemática;
Estudio teórico

Abstract The present theoretical study is a systematic review of research publications in which sexual satisfaction was the dependent variable. After conducting a literature search in major electronic databases and following a selection process, we provide a summary of the main findings of 197 scientific papers published between 1979 and 2012. The review revealed the complexity and importance of sexual satisfaction, which was associated with the following variables and factors: a) individual variables such as socio-demographic and psychological characteristics as well as physical and psychological health status; b) variables associated with intimate relationships and sexual response; c) factors related to social support and family relationships; and d) cultural beliefs and values such as religion. In conclusion, we observed that sexual satisfaction is a key factor in individuals' sexual health and overall well-being. However, despite its importance, there is a lack of theoretical models combining the most important factors to explain sexual satisfaction.

© 2013 Asociación Española de Psicología Conductual. Published by Elsevier España, S.L. All rights reserved.

Resumen En el presente estudio teórico se realiza una revisión sistemática de investigaciones publicadas en las que la satisfacción sexual constituye la variable dependiente. Tras una búsqueda bibliográfica en las principales bases de datos electrónicas, y una vez realizado un proceso de selección, se resumen los principales resultados de 197 artículos científicos publicados entre 1979 y 2012. Se comprueba la complejidad y la relevancia de la satisfacción sexual, la cual se asocia con: a) variables individuales, como ciertas características socio-demográficas, psicológicas, así como con el estado de salud físico y psicológico; b) variables vinculadas con la relación de pareja y con la respuesta sexual; c) factores relacionados con el apoyo social y relaciones familiares; y d) creencias y valores culturales como la religión. Como conclusión se puede señalar que la satisfacción sexual constituye un factor clave, tanto de la salud sexual como del

*Corresponding author at: Facultad de Psicología, Campus Universitario de Cartuja, s/n. 18011, Granada, Spain.
E-mail address: jcsierra@ugr.es (J.C. Sierra).

bienestar general de las personas. No obstante, a pesar de su relevancia, se echan en falta modelos teóricos que aúnen los factores más importantes en la explicación de la satisfacción sexual.

© 2013 Asociación Española de Psicología Conductual. Publicado por Elsevier España, S.L. Todos los derechos reservados.

There are several definitions of sexual satisfaction. One of the most accepted definitions was proposed by Lawrance and Byers (1995), who defined it as "an affective response arising from one's subjective evaluation of the positive and negative dimensions associated with one's sexual relationship" (p. 268). Sexual satisfaction is a relevant component of human sexuality that is considered to be the last stage of the sexual response cycle (Basson, 2001; Sierra & Buela-Casal, 2004) and a sexual right (World Health Organization, 2010). It is also a key factor in individuals' overall quality of life. For example, better state of physical and psychological health (Scott, Sandberg, Harper, & Miller, 2012) and overall well-being (Dundon & Rellini, 2010) and quality of life (Davison, Bell, LaChina, Holden, & Davis, 2009) have been associated with high sexual satisfaction. Similarly, relational aspects such as high relationship satisfaction (Henderson, Lehavot, & Simoni, 2009), communication with one's partner (MacNeil & Byers, 2009), and sexual assertiveness (Haavio-Manila & Kontula, 1997) have been found to be related to greater sexual satisfaction. Some studies have found a relationship between good sexual functioning and high sexual satisfaction (Henderson et al., 2009). Other variables such as social support (Henderson et al., 2009), good relationships with the children and family, and higher socio-economic status (Ji & Norling, 2004) have also been associated with high levels of sexual satisfaction. Religiosity has also been taken into account to explain sexual satisfaction: low religious belief has been associated with greater sexual satisfaction (Higgins, Trussell, Moore, & Davidson, 2010).

Since sexual satisfaction can be affected by individual or relational characteristics as well as variables such as social support or religion, it is interesting to explain it in the framework of ecological theory (Bronfenbrenner, 1994). According to this theory, individual development is affected by the interaction between individual characteristics and environmental and social conditions, which are organized into four interrelated levels: the microsystem, mesosystem, exosystem, and macrosystem. This theory can be useful to develop predictive models and classify variables associated with sexual satisfaction. An example of this is the use of the ecological model to study sexual satisfaction. It was proposed by Henderson et al. (2009), who explored the effect of variables corresponding to the microsystem level (i.e., depression, child sexual abuse, and internalized homophobia), the mesosystem level (i.e., relationship satisfaction and sexual functioning), and the exosystem level (i.e., social support and parenthood) in women. Results revealed that depressive symptoms, internalized homophobia (in lesbians), satisfaction with the relationship, sexual functioning, and social support were variables associated with sexual satisfaction. In this adaptation of

ecological theory to the study of sexual satisfaction, the microsystem refers to individual characteristics (e.g., gender, age, personality, self-esteem), the mesosystem refers to intimate relationships, that is, the immediate environment of the individual (e.g., marital satisfaction, communication, sexual assertiveness, sexual functioning, sexual dysfunction), the exosystem refers to social networks or social status (e.g., family relationships, parenthood, social support, socioeconomic status), and the macrosystem refers to institutional and social factors (e.g., political ideology, religious beliefs) (Bronfenbrenner, 1994; Henderson et al., 2009).

Considering the importance of sexual satisfaction and the lack of review studies in this area, the aim of the present theoretical study was to conduct a systematic review of the variables associated with sexual satisfaction, taking into account the standards proposed by Perestelo-Pérez (2013). This study had two main objectives: first, to classify and summarize the variables associated with sexual satisfaction; second, since we intended to classify the variables according to the ecological theory proposed by Henderson et al. (2009), we expected the review to be useful to develop future research and predictive models of sexual satisfaction.

Method

Literature review

The literature search was conducted in the EBSCOhost and ProQuest search platforms, which include numerous databases on different subject areas, and in the following electronic databases: PsycINFO, PubMed, Scopus, and Web of Science. The search terms used were "sex* satisf*", "satisf* sex*", and "satisfaction with sex". We also used the following terms in Spanish: "*satisf* sex**", "*satisfacción con la relación sexual*", and "*satisfacción con la vida sexual*". The search was limited to the title of scientific articles published in English or Spanish through 2012, with no restriction of subject area.

Inclusion criteria

Of the research studies in which sexual satisfaction was the dependent variable or criterion, we selected only those that were aimed at explaining sexual satisfaction.

Procedure

First, we conducted the search in the above-mentioned platforms and electronic databases between January and

May 2013. After compiling the studies, we classified them by year of publication and read them, identifying those that met the inclusion criteria. When there were doubts about whether the studies met the inclusion criteria, they were read by two reviewers and selected or discarded by consensus. Finally, we recorded relevant information in an *ad hoc* database to sort the publications and summarize the main results.

Encoding results

We extracted the following information from each of the studies that met the inclusion criteria.

- Author(s) and year of publication.
- Study methodology. Study design was identified according to the classification proposed by Montero and León (2007).
- Sample. We recorded the number of participants, gender, sexual orientation, and type of sample (i.e., non-clinical adolescents, clinical adolescents, non-clinical college students, clinical college students, non-clinical general population, and clinical general population). General population was understood to refer to participants who were neither adolescents nor college students.
- Assessment instrument. We identified the instrument used to assess sexual satisfaction.
- Key findings. We identified the variables associated with sexual satisfaction and classified them according to the levels proposed by Henderson et al. (2009) based on the ecological theory (Bronfenbrenner, 1994): microsystem, mesosystem, exosystem, and macrosystem.

Results

Altogether, we found 290 articles, of which 93 were excluded for not meeting the inclusion criteria. Thus, we selected 197 articles, which were the subject of this review*.

The articles reviewed were published between 1979 and 2012. According to the methodology used, 171 (86.8%) were *ex post facto*, 14 (7.1%) were quasi-experimental, 8 (4.1%) were experimental, and 4 (2%) were instrumental. According to the type of sample used, 98 studies (49.7%) used non-clinical general population samples, 42 (21.3%) used clinical general population samples, 33 (16.8%) used non-clinical college student samples, and one study used a non-clinical adolescent sample. The remaining studies used samples of various types (e.g., non-clinical samples of college students and adolescents). Regarding gender, 55.8% of studies ($n = 110$) included men and women, 28.4% ($n = 56$) included only women, and 15.7% ($n = 31$) included only men. Finally, 99 studies (50.3%) included heterosexual participants, 2 (1%) included homosexuals, 26 (13.2%) included participants with different types of sexual orientation, and 70 (35.5%) studies did not provide any information about sexual orientation.

The authors of the articles reviewed assessed sexual satisfaction by using over 40 different instruments and items derived from self-reports or *ad hoc* questionnaires. The questionnaires most frequently used were: the Index of

Sexual Satisfaction (ISS; Hudson, Harrison, & Crosscup, 1981), used in 24 studies (12.2%); the Global Measure of Sexual Satisfaction (GMSEX; Lawrance & Byers, 1995), used in 19 studies (9.6%); the *Satisfaction with intercourse* and *Overall satisfaction* subscales of the International Index of Erectile Function (IIEF; Rosen et al., 1997) in 11 studies (5.6%); the Golombok-Rust Inventory of Sexual Satisfaction (GRISS; Rust & Golombok, 1985) in ten studies (5.1%); and the subscale of Derogatis Sexual Function Inventory (DSFI; Derogatis & Melisaratos, 1979) and the Pinney Sexual Satisfaction Inventory (PSSI; Pinney, Gerrard, & Denney, 1987) in six studies (3%). In addition, 25 studies (12.7%) used a single item, seven (3.6%) questionnaires were developed *ad hoc*, and 11 publications (5.6%) did not report the use of an instrument.

As for the classification of variables associated with sexual satisfaction, 36% ($n = 71$) of studies included microsystem variables, 26.4% ($n = 52$) used mesosystem variables, 0.5% ($n = 1$) referred to exosystem variables, 1% ($n = 2$) dealt with macrosystem variables, and 36% ($n = 71$) included variables from two or more levels. Table 1 lists the variables associated with sexual satisfaction, organized according to ecological theory levels.

Microsystem

Results show that a higher level of well-being was associated with increased sexual satisfaction (Dundon & Rellini, 2010). For example, the presence of depression, anxiety, or stress (De Ryck, Van Laeken, Nöstlinger, Platteau, & Colebunders, 2012), use of antidepressant drugs (Mosack et al., 2011), and spinal cord injuries as well as chronic diseases (e.g., rheumatoid arthritis, ankylosing spondylitis, diabetes mellitus, and hypertension; Akkuş, Nakas, & Kalyoncu, 2010; Althof et al., 2010; Mendes, Cardoso, & Savall, 2008) were associated with lower sexual satisfaction. Conversely, greater physical performance and better overall health were found to predict higher sexual satisfaction (McCall-Hosenfeld et al., 2008).

Some surgical procedures such as circumcision (Cortés-González, Arratia-Maqueo, Martínez-Montelongo, & Gómez-Guerra, 2009) and vasectomy (Arratia-Maqueo, Cortés-González, Garza-Cortés, & Gómez-Guerra, 2010) were not found to have an effect, while hysterectomy was associated with lower sexual satisfaction (Sözeri-Varma, Kalkan-Oguzhanoglu, Karadağ, & Özdel, 2011). Some studies also explored the effect of various drugs for the treatment of sexual dysfunctions. In this regard, most findings revealed a positive effect of such drugs on sexual satisfaction (Carson & Wyllie, 2010; Dinsmore & Wyllie, 2009).

Moreover, personality also influenced sexual satisfaction. For example, men and women reported greater sexual satisfaction when their partners had personality traits similar to theirs (Farley & Davis, 1980). Sexual victimization was also related to low satisfaction (Orlando & Koss, 1983).

Regarding gender roles, the masculine role in men (Daniel & Bridges, 2012) and the feminine role in women (Pedersen & Blekesaune, 2003) were associated with high sexual satisfaction. However, Rosenzweig and Dennis (1989) found that both men and women who perceived their role as feminine or androgenic reported greater sexual satisfaction

Table 1 Variables associated with sexual satisfaction, classified according to ecological theory levels.*Microsystem*

- Psychological disorders, psychotropic drugs
- Physical health, disease, disability, physical functioning, social functioning, vitality, physical exercise, care dependency, menopause, medical treatments
- Surgical procedures: circumcision, vasectomy, hysterectomy
- Pregnancy and type of delivery
- Tobacco, alcohol
- Well-being and quality of life
- Personality, selfishness, perfectionism, ability to solve problems
- Locus of control, attributions, autonomy, experiential avoidance, environmental mastery, personal growth, life satisfaction, self-actualization, differentiation of self, social desirability
- Self-esteem, self-concept, sexual self-concept, sexual self-confidence, body image, weight, body mass index, evaluation reflects
- Gender role, sexual role
- Sexual attitudes, sexual thoughts, sexual guilt, internalized homophobia, watching pornography, importance attributed to sex
- Sexual abuse, rape
- Socio-demographic variables: age, gender, race, sexual orientation, educational background, sexual information, previous sexual experience, number of sexual partners, residence location

Mesosystem

- Couple relationship: Relationship satisfaction, dyadic adjustment, intimacy, commitment, love, partner support, equity, household division of labor, mutual social behavior, stability, marital status, length of relationship, communication, conflict resolution, infidelity, marital therapy
- Attachment
- Sexual assertiveness
- Sexual functioning: Desire, arousal, erection, orgasm
- Sexual dysfunctions
- Sexual rewards and cost, equity of rewards and cost, frequency of sex, sexual behavior, hedonistic behavior, performance anxiety, sexual interest and motivation, propensity to excitation, contraceptives, lubricant
- Infertility

Exosystem

- Social support, discrimination
- Family relationships, affection, responsibility
- Parenthood
- Current status of life
- Stress: Financial, family and work stress
- Socioeconomic status, resources

Macrosystem

- Religion
- Spirituality
- Cultural conflicts

than those who perceived it as undifferentiated. As regards sexual attitudes, erotophilia (Hurlbert, Apt, & Rabehl, 1993) and low sexual guilt (Higgins et al., 2010) predicted greater satisfaction with sexual intercourse. The findings of studies on the effect of self-esteem and body image revealed that high self-esteem and a positive body image predicted greater sexual satisfaction (Higgins, Mullinax, Trussell, Davidson, & Moore, 2011; Pujols, Meston, & Seal, 2010). Finally, watching pornography was associated with lower sexual satisfaction (Yucel & Gassanov, 2010).

Finally, numerous socio-demographic variables were associated with sexual satisfaction. Regarding gender, some studies revealed that women reported more sexual satisfaction than men (Rehman, Rellini, & Fallis, 2011), while others found the opposite results (Ji & Norling, 2004).

However, among the studies reviewed, those whose results did not show any differences between men and women were more numerous (McClelland, 2011; Santos-Iglesias et al., 2009). As for age, some studies suggested that it had a negative effect on sexual satisfaction (De Ryck et al., 2012), while others indicated the opposite (Young, Denny, Young, & Luquis, 2000). Race was also explored. Results showed that being white was associated with increased satisfaction (McCall-Hosenfeld et al., 2008), while being black was associated with lower sexual satisfaction (Carpenter, Nathanson, & Kim, 2009). Concerning sexual orientation, homosexuality was associated with increased sexual satisfaction in some studies (Henderson et al., 2009). By contrast, Dixon (1985) reported that heterosexual men indicated greater satisfaction than homosexuals and

bisexuals, whereas McClelland (2011) did not find any significant differences as a function of sexual orientation. Finally, a high level of education (Carpenter et al., 2009) and a low number of sexual partners (Heiman et al., 2011) were generally associated with high sexual satisfaction.

Mesosystem

According to the results of the studies reviewed, sexual satisfaction was high among individuals who had a satisfactory relationship (Henderson et al., 2009), good dyadic adjustment (Dundon & Rellini, 2010), greater intimacy (Rubin & Campbell, 2012) and communication (MacNeil & Byers, 2009), and the support of their partner (Blackmore, Hart, Albani, & Mohr, 2011). As regards attachment, results suggested that high levels of anxious and avoidant attachment (Butzer & Campbell, 2008) or ambivalent attachment (Clymer, Ray, Trepper, & Pierce, 2006) were associated with low sexual satisfaction. Regarding length of the relationship, overall longer duration of the relationship was found to decrease sexual satisfaction (Rainer & Smith, 2012). In addition, having a partner (Pedersen & Blekesaune, 2003), cohabiting with a partner, being married (Lau, Kim, & Tsui, 2005), and having an exclusive relationship (Higgins et al., 2011) were associated with higher sexual satisfaction, while infidelity was considered to predict lower satisfaction (Yucel & Gassanov, 2010). Moreover, satisfactory resolution of conflicts (Mitchell & Boster, 1998) and marital therapy (Bennun, Rust, & Golombok, 1985; Botlani, Shahsiah, Padash, Ahmadi, & Bahrami, 2012) predicted greater levels of satisfaction with sexual intercourse. Finally, sexual assertiveness was also associated with high sexual satisfaction (Haavio-Mannila & Kontula, 1997; Hurlbert et al., 1993).

Numerous studies also revealed the existence of a relationship between sexual functioning and satisfaction. Desire, arousal, and orgasm consistency were associated with higher sexual satisfaction (Hurlbert et al., 1993). Conversely, lack of desire, vaginal dryness, erectile dysfunction, premature ejaculation, inability to reach orgasm, and pain during sex were associated with lower sexual satisfaction (Smith et al., 2012). Moreover, frequency of sex and variety of sexual behaviors were associated with increased sexual satisfaction (Haavio-Mannila & Kontula, 1997; Hurlbert et al., 1993).

Exosystem

Compared to studies with microsystem or mesosystem variables, we found fewer studies involving exosystem variables. Results suggested that social support (Henderson et al., 2009), good relationship with children and the family, and high socioeconomic status predicted greater sexual satisfaction (Ji & Norling, 2004).

Macrosystem

Results about the relationship between religion and sexual satisfaction are diverse. Davidson, Darling, and Norton (1995) did not find any differences in levels of sexual satisfaction as a function of religious practice. By contrast, Higgins et al. (2010) found that religiosity was associated

with low sexual satisfaction in white men and women. Lastly, Peitl, Peitl, and Pavlovic (2009) concluded that participants with schizophrenia and who professed the Roman Catholic religion reported greater satisfaction, whereas religion was not associated with sexual satisfaction in participants with depression or healthy participants.

Discussion

Of the articles reviewed, 66.2% were published between 2005 and 2012. This growing interest may be due to the fact that, in 2002, the World Health Organization (WHO), in cooperation with the World Association for Sexual Health (WAS), highlighted the importance of sexual health, including key factors such as information and sexual pleasure. The studies reviewed were conducted with a variety of sample types, although 35.5% of them did not report the sexual orientation of the participants. It would be interesting for future studies to include this information in order to further explore the relationship between sexual satisfaction and sexual orientation and try to clarify the conflicting results found to date.

It is worth noting that sexual satisfaction was assessed with a broad variety of instruments, of which only two were based on theoretical conceptualizations of sexual satisfaction: the New Sexual Satisfaction Scale (NSSS; Štulhofer, Buško, & Brouillard, 2010) and the Global Measure of Sexual Satisfaction (GMSEX; Lawrance & Byers, 1995). Both questionnaires are useful in both research and clinical practice, and both share the fact of considering the interpersonal context in which sex relations occur.

The review revealed that sexual satisfaction was influenced not only by individual and relational factors but also by more distal variables related to individuals' social and cultural environment. As a result, ecological theory was found to be useful to classify such variables and factors. As regards individual (i.e., microsystem) variables, results revealed that both physical and psychological health are associated with satisfaction. Considering that diseases such as arthritis, diabetes, or hypertension were associated with sexual problems (Akkuş et al., 2010; Althof et al., 2010) and with difficulties in maintaining an intimate relationship (Moin, Duvdevany, & Mazor, 2009), it is not surprising to note that sexual satisfaction decreased, since sexual functioning is a predictor of sexual satisfaction. Similarly, depression, anxiety, and stress were associated with decreased sexual arousal (Lykins, Janssen, Newhouse, Heiman, & Rafaeli, 2012; Mosack et al., 2011) and with difficulties in communicating with one's partner (Scott et al., 2012), which led to lower satisfaction with the sexual relationship. It is essential for clinical practitioners to report on the negative impact of physical disease, psychological disorders, and drugs on sexuality and to promote communication between partners about their sexual concerns and expectations.

Studies on the role of sexual attitudes (Hurlbert et al., 1993) and self-esteem (Higgins et al., 2011) have shown a positive relationship between such variables and sexual satisfaction. These results are not surprising given that individuals with more liberal sexual attitudes experience their sexuality without guilt, which is associated with

increased satisfaction (Higgins et al., 2010). In addition, high self-esteem is associated with less distracting thoughts during sex, leading to greater sexual satisfaction (Pujols et al., 2010).

Results on gender are contradictory (Petersen & Hyde, 2010; Rehman et al., 2011; Santos-Iglesias et al., 2009). A possible explanation for the differences between men and women reported by some studies may be the use of self-reports that include predictor items of sexual satisfaction. Lawrance and Byers (1995) found that men identified physical aspects of the relationship as rewards, while women identified relational aspects as rewards. Therefore, women are likely to express lower sexual satisfaction than men if the assessment instruments include items that refer to physical aspects. The opposite is likely to happen if questionnaires include more items that refer to relational aspects. Thus, although this hypothesis remains to be tested, when assessing sexual satisfaction it would be advisable to use self-reports composed of items that assess individuals' feelings about the quality of their sexual relationship rather than items related to physical or relational aspects (Lawrance & Byers, 1995).

Another socio-demographic variable explored in some studies was age, whose increase was found to have a negative impact on sexual satisfaction (De Ryck et al., 2012). Older age was associated with less frequent sexual activity (Lindau & Gavrilova, 2010), lower frequency of sexual thoughts (Moyano & Sierra, 2013), increased sexual dysfunction (Sierra, Vallejo-Medina, Santos-Iglesias, & Lameiras Fernandez, 2012; Trompeter, Bettencourt, & Barrett-Connor, 2012), and presence of chronic diseases. All these factors are known to decrease satisfaction. However, some studies revealed that older people reported being satisfied with their sexual relationship (Gades et al., 2009), suggesting that other predictors of sexual satisfaction such as greater intimacy with one's partner and/or positive sexual attitudes are able to mediate the negative effect of age (Sierra et al., in press).

As regards relational (i.e., mesosystem) variables, there was consensus in the findings. Individuals who had a satisfactory relationship and those who reported greater sexual communication and assertiveness reported greater sexual satisfaction (Henderson et al., 2009; Hurlbert et al., 1993; MacNeil & Byers, 2009). From the perspective of social exchange, relationship satisfaction can be considered as a reward that leads to higher sexual satisfaction (Lawrance & Byers, 1995). In addition, communication and sexual assertiveness make it more likely for partners to know about pleasant and unpleasant behaviors and therefore increase positive behaviors and decrease negative ones. This is likely to lead to greater overall and sexual satisfaction (MacNeil & Byers, 2005, 2009). It is also interesting to note the positive impact of marital therapy, which promotes communication, intimacy, and relationship satisfaction; as a result, sexual satisfaction increases (Bennun et al., 1985; Botlani et al., 2012). Overall, results suggest that good sexual functioning predicts high satisfaction (Heiman et al., 2011; Smith et al., 2012). However, our review highlighted the lack of studies using psychophysiological measures to explore the relationship between arousal and sexual satisfaction. Future experimental research on the relationship between

sexual response and satisfaction experimentally should clarify the role of arousal in sexual satisfaction.

Moreover, few studies addressed the relationship between social support (i.e., exosystem) and sexual satisfaction. A good family relationship and high socioeconomic level seemed to be positively related with sexual satisfaction (Ji & Norling, 2004). In fact, family, work, and financial stress were found to have a negative effect on sexual satisfaction (Lau et al., 2005).

Finally, regarding macrosystem variables, the relationship between religion and sexual satisfaction has led to contradictory results (Davidson et al., 1995; Higgins et al., 2010). Future studies should explore the relationship between religiosity and other variables such as satisfaction with the relationship, sexual guilt, and sexual attitudes. For example, Woo, Morshedien, Brotto, and Gorzalka (2012) indicated that the religiosity combined with sexual guilt led to a decrease in sexual desire. Moreover, Sierra, Ortega, and Gutiérrez-Quintanilla (2008) found that lower religious practice and left-wing ideology were factors associated with erotophilia. As a result, such relationships should be considered in studies exploring the effects of macrosystem variables on sexual satisfaction.

Despite the importance of sexual satisfaction and the multitude of variables associated, as explained above, it is worth noting that there are few theoretical approaches to the study of sexual satisfaction. The few exceptions to this are the proposals made by Lawrance and Byers (Interpersonal Exchange Model of Sexual Satisfaction; 1995), the Sexual Knowledge and Influence Model (Cupach & Metts, 1991; Metts & Cupach, 1989) and other perspectives such as the Sexual Scripts Theory, which may help explain the gender-based differences in sexual satisfaction (Simon & Gagnon, 1984, 1987). In this regard, the adaptation of ecological theory to the study of sexual satisfaction conducted by Henderson et al. (2009) is useful to classify the variables associated with sexual satisfaction, as we did in this systematic review. We consider that this proposal will facilitate the development of future predictive models of sexual satisfaction and reveal the relationships between the different variables and the possible mediating effects of some of them. Mesosystem variables, especially relationship satisfaction and sexual functioning, often function as mediating variables between the microsystem and the exosystem and sexual satisfaction. For example, psychological distress is associated with marital problems and lower sexual functioning, which lead to decreased sexual satisfaction. In turn, relationship satisfaction can mediate the relationship between social support and sexual satisfaction (Henderson et al., 2009).

In conclusion, this systematic review makes it clear that sexual satisfaction can be affected by many factors, and that the ecological theory framework is useful to classify them. Therefore, in the clinical setting, the assessment of variables from the microsystem, mesosystem, exosystem, and macrosystem levels will reveal which elements affect sexual satisfaction. Future studies should explore the relevance of each of these factors and the relationships between them.

Finally, a limitation of the review is related to the search criteria (i.e., terms limited to the title) and the fact that we included only scientific papers published in English or

Spanish in which sexual satisfaction was the dependent variable.

Appendix

The full list of the 197 articles reviewed, including sample characteristics, instruments used to assess sexual satisfaction, and key findings, can be consulted on the electronic version of the present article, available at: <http://zl.elsevier.es/mmc/355/355v14n01/appendix-sexual.pdf>

Funding

This study was part of a research project granted by the Spanish Ministry of Science and Innovation (Ref: PSI2010-15719) to the third author.

References

- Akkuş, Y., Nakas, D., & Kalyoncu, U. (2010). Factors affecting the sexual satisfaction of patients with Rheumatoid Arthritis and Ankylosing Spondylitis. *Sexuality and Disability, 28*, 223-232.
- Althof, S. E., Buvat, J., Gutkin, S. W., Belger, M., Stothard, D. R., & Fugl-Meyer, A. R. (2010). Sexual satisfaction in men with erectile dysfunction: Correlates and potential predictors. *Journal of Sexual Medicine, 7*, 203-215.
- Arratia-Maqueo, J. A., Cortés-González, J. R., Garza-Cortés, R., & Gómez-Guerra, L. S. (2010). Evaluación de la satisfacción sexual masculina posterior a la vasectomía. *Actas Urológicas Españolas, 34*, 870-873.
- Basson, R. (2001). Female sexual response: The role of drugs in the management of sexual dysfunction. *American College of Obstetrics and Gynecology, 98*, 350-352.
- Bennun, I., Rust, J., & Golombok, S. (1985). The effects of marital therapy on sexual satisfaction. *Scandinavian Journal of Behaviour Therapy, 14*, 65-72.
- Blackmore, D. E., Hart, S. L., Albiani, J. J., & Mohr, D. C. (2011). Improvements in partner support predict sexual satisfaction among individuals with multiple sclerosis. *Rehabilitation Psychology, 56*, 117-122.
- Botlani, S., Shahsiah, M., Padash, Z., Ahmadi, A., & Bahrami, F. (2012). The effect of attachment-based couple therapy on couples' attachment style, sexual intimacy and sexual satisfaction. *Interdisciplinary Journal of Contemporary Research in Business, 3*, 375-390.
- Bronfenbrenner, U. (1994). Ecological models of human development. In *The International Encyclopedia of Education* (2nd ed., Vol.3, pp. 1643-1647). Oxford: Elsevier.
- Butzer, B., & Campbell, L. (2008). Adult attachment, sexual satisfaction, and relationship satisfaction: A study of married couples. *Personal Relationships, 15*, 141-154.
- Carpenter, L. M., Nathanson, C. A., & Kim, Y. J. (2009). Physical women, emotional men: Gender and sexual satisfaction in midlife. *Archives of Sexual Behavior, 38*, 87-107.
- Carson, C., & Wyllie, M. (2010). Improved ejaculatory latency, control and sexual satisfaction when PSD502 is applied topically in men with premature ejaculation: Results of a phase III, double-blind, placebo-controlled study. *Journal of Sexual Medicine, 7*, 3179-3189.
- Clymer, S. R., Ray, R. E., Trepper, T. S., & Pierce, K. A. (2006). The relationship among romantic attachment style, conflict resolution style and sexual satisfaction. *Journal of Couple and Relationship Therapy, 5*, 71-89.
- Cortés-González, J. R., Arratia-Maqueo, J. A., Martínez-Montelongo, R., & Gómez-Guerra, L. S. (2009). ¿Tiene la circuncisión algún efecto en la percepción de la satisfacción sexual masculina? *Archivos Españoles de Urología, 62*, 733-736.
- Cupach, W. R., & Metts, S. (1991). Sexuality and communication in close relationships. In K. McKinney & S. Sprecher's (Eds.), *Sexuality in close relationships* (pp. 93-110). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Daniel, S., & Bridges, S. K. (2012). The relationships among body image, masculinity, and sexual satisfaction in men. *Psychology of Men & Masculinity.*
- Davidson, J. K., Darling, C. A., & Norton, L. (1995). Religiosity and the sexuality of women: Sexual behavior and sexual satisfaction revisited. *Journal of Sex Research, 32*, 235-243.
- Davison, S. L., Bell, R. J., LaChina, M., Holden, S. L., & Davis, S. R. (2009). The relationship between self-reported sexual satisfaction and general well-being in women. *Journal of Sexual Medicine, 6*, 2690-2697.
- De Ryck, I., Van Laeken, D., Nöstlinger, C., Platteau, T., & Colebunders, R. (2012). Sexual satisfaction among men living with HIV in Europe. *AIDS and Behavior, 16*, 225-230.
- Derogatis, L. R., & Melisaratos, N. (1979). The DSFI: A multidimensional measure of sexual functioning. *Journal of Sex and Marital Therapy, 5*, 244-281.
- Dinsmore, W. W., & Wyllie, M. G. (2009). PSD502 improves ejaculatory latency, control and sexual satisfaction when applied topically 5 min before intercourse in men with premature ejaculation: Results of a phase III, multicentre, double-blind, placebo-controlled study. *BJU International, 103*, 940-949.
- Dixon, D. (1985). Perceived sexual satisfaction and marital happiness of bisexual and heterosexual swinging husbands. *Journal of Homosexuality, 11*, 209-222.
- Dundon, C. M., & Rellini, A. H. (2010). More than sexual function: Predictors of sexual satisfaction in a sample of women age 40-70. *Journal of Sexual Medicine, 7*, 896-904.
- Farley, F. H., & Davis, S. A. (1983). Personality and sexual satisfaction in marriage. *Journal of Sex and Marital Therapy, 6*, 56-62.
- Gades, N. M., Jacobson, D. J., McGree, M. E., St. Sauver, J. L., Lieber, M. M., Nehra, A., Girman, C. J., & Jacobsen, S. J. (2009). Longitudinal evaluation of sexual function in a male cohort: The Olmsted county study of urinary symptoms and health status among men. *Journal of Sexual Medicine, 6*, 2455-2466.
- Haavio-Mannila, E., & Kontula, O. (1997). Correlates of increased sexual satisfaction. *Archives of Sexual Behavior, 26*, 399-419.
- Heiman, J. R., Long, J. S., Smith, S. N., Fisher, W. A., Sand, M. S., & Rosen, R. C. (2011). Sexual satisfaction and relationship happiness in midlife and older couples in five countries. *Archives of Sexual Behavior, 40*, 741-753.
- Henderson, A. W., Lehavot, K., & Simoni, J. M. (2009). Ecological models of sexual satisfaction among lesbian/bisexual and heterosexual women. *Archives of Sexual Behavior, 38*, 50-65.
- Higgins, J. A., Mullinax, M., Trussell, J., Davidson, J. K., & Moore, N. B. (2011). Sexual satisfaction and sexual health among university students in the United States. *American Journal of Public Health, 101*, 1643-1654.
- Higgins, J. A., Trussell, J., Moore, N. B., & Davidson, J. K. (2010). Virginity lost, satisfaction gained? Physiological and psychological sexual satisfaction at heterosexual debut. *Journal of Sex Research, 47*, 384-394.
- Hudson, W. W., Harrison, D. F., & Crosscup, P. C. (1981). A short-form scale to measure sexual discord in dyadic relationships. *Journal of Sex Research, 17*, 157-174.

- Hurlbert, D. F., Apt, C., & Rabehl, S. M. (1993). Key variables to understanding female sexual satisfaction: An examination of women in nondistressed marriages. *Journal of Sex and Marital Therapy*, 19, 154-165.
- Ji, J., & Norling, A. M. (2004). Sexual satisfaction of married urban Chinese. *Journal of Developing Societies*, 20, 21-38.
- Lau, J. T. F., Kim, J. H., & Tsui, H. Y. (2005). Mental health and lifestyle correlates of sexual problems and sexual satisfaction in heterosexual Hong Kong Chinese population. *Urology*, 66, 1271-1281.
- Lawrance, K., & Byers, E. S. (1995). Sexual satisfaction in long-term heterosexual relationships: The Interpersonal Exchange Model of Sexual Satisfaction. *Personal Relationships*, 2, 267-285.
- Lindau, S. T., & Gavrilova, N. (2010). Sex, health, and years of sexually active life gained due to good health: Evidence from two US population based cross sectional surveys of ageing. *BMJ: British Medical Journal*, 340, c810.
- Lykins, A. D., Janssen, E., Newhouse, S., Heiman, J. R., & Rafaeli, E. (2012). The effects of similarity in sexual excitation, inhibition, and mood on sexual arousal problems and sexual satisfaction in Newlywed couples. *Journal of Sexual Medicine*, 9, 1360-1366.
- MacNeil, S., & Byers, E. S. (2005). Dyadic assessment of sexual self-disclosure and sexual satisfaction in heterosexual dating couples. *Journal of Social and Personal Relationships*, 22, 169-181.
- MacNeil, S., & Byers, E. S. (2009). Role of sexual self-disclosure in the sexual satisfaction of long-term heterosexual couples. *Journal of Sex Research*, 46, 3-14.
- McCall-Hosenfeld, J. S., Freund, K. M., Legault, C., Jaramillo, S. A., Cochrane, B. B., Manson, J. E., Wenger, N. K., Eaton, C. B., McNeeley, S. G., Rodriguez, B. L., & Bonds, D. (2008). Sexual satisfaction and cardiovascular disease: The women's health initiative. *American Journal of Medicine*, 121, 295-301.
- McClelland, S. I. (2011). Who is the "Self" in self reports of sexual satisfaction? Research and policy implications. *Sexuality Research and Social Policy*, 8, 304-320.
- Mendes, A. K., Cardoso, F. L., & Savall, A. C. R. (2008). Sexual satisfaction in people with spinal cord injury. *Sexuality and Disability*, 26, 137-147.
- Metts, S., & Cupach, W. R. (1989). The role of communication in human sexuality. In K. McKinney & S. Sprecher (Eds.), *Human sexuality: The societal and interpersonal context* (pp. 139-161). Norwood, NJ: Ablex Publishing Corporation.
- Mitchell, M. M., & Boster, F. J. (1998). Conflict management satisfaction and relational sexual satisfaction. *Communication Research Reports*, 15, 388-396.
- Moin, V., Duvdevany, I., & Mazor, D. (2009). Sexual identity, body image and life satisfaction among women with and without physical disability. *Sexuality and Disability*, 27, 83-95.
- Montero, I., & León, O. G. (2007). A guide for naming research studies in Psychology. *International Journal of Clinical and Health Psychology*, 7, 847-862.
- Mosack, V., Steinke, E. E., Wright, D. W., Walker, C., Medina, M., Moser, D. K., & Chung, M. L. (2011). Effects of depression on sexual activity and sexual satisfaction in heart failure. *Dimensions of Critical Care Nursing*, 30, 218-225.
- Moyano, N., & Sierra, J. C. (2013). Relationships between personality traits and positive/negative sexual cognitions. *International Journal of Clinical and Health Psychology*, 13, 189-196.
- Orlando, J. A., & Koss, M. P. (1983). The effects of sexual victimization on sexual satisfaction: A study of the negative-association hypothesis. *Journal of Abnormal Psychology*, 92, 104-106.
- Pedersen, W., & Blekesaune, M. (2003). Sexual satisfaction in young adulthood: Cohabitation, committed dating or unattached life? *Acta Sociologica*, 46, 179-193.
- Peitl, M. V., Peitl, V., & Pavlovic, E. (2009). Influence of religion on sexual self-perception and sexual satisfaction in patients suffering from schizophrenia and depression. *International Journal of Psychiatry in Medicine*, 39, 155-167.
- Perestelo-Pérez, L. (2013). Standards on how to develop and report systematic reviews in Psychology and Health. *International Journal of Clinical and Health Psychology*, 13, 49-57.
- Petersen, J. L., & Hyde, J. S. (2010). A meta-analytic review of research on gender differences in sexuality: 1993 to 2007. *Psychological Bulletin*, 136, 21-38.
- Pinney, E. M., Gerrard, M., & Denney, N. W. (1987). The Pinney Sexual Satisfaction Inventory. *Journal of Sex Research*, 23, 233-242.
- Pujols, Y., Meston, C. M., & Seal, B. N. (2010). The association between sexual satisfaction and body image in women. *Journal of Sexual Medicine*, 7, 905-916.
- Rainer, H., & Smith, I. (2012). Education, communication and well-being: An application to sexual satisfaction. *Kyklos*, 65, 581-598.
- Rehman, U. S., Rellini, A. H., & Fallis, E. (2011). The importance of sexual self-disclosure to sexual satisfaction and functioning in committed relationships. *Journal of Sexual Medicine*, 8, 3108-3115.
- Rosen, R. C., Riley, A., Wagner, G., Osterloh, I. H., Kirkpatrick, J., & Mishra, A. (1997). The International Index of Erectile Function (IIEF): A multidimensional scale for assessment of erectile dysfunction. *Urology*, 49, 822-830.
- Rosenzweig, J. M., & Dennis, D. M. (1989). Dyadic adjustment sexual satisfaction in women and men as a function of psychological sex-role self-perception. *Journal of Sex and Marital Therapy*, 15, 42-56.
- Rubin, H., & Campbell, L. (2012). Day-to-day changes in intimacy predict heightened relationship passion, sexual occurrence, and sexual satisfaction: A dyadic diary analysis. *Social Psychological and Personality Science*, 3, 224-231.
- Rust, J., & Golombok, S. (1985). The Golombok-Rust Inventory of Sexual Satisfaction (GRISS). *British Journal of Clinical Psychology*, 24, 63-64.
- Santos-Iglesias, P., Sierra, J. C., García, M., Martínez, A., Sánchez, A., & Tapia, M. I. (2009). Índice de Satisfacción Sexual (ISS): Un estudio sobre su fiabilidad y validez. *International Journal of Psychology and Psychological Therapy*, 9, 259-273.
- Scott, V. C., Sandberg, J. G., Harper, J. M., & Miller, R. B. (2012). The impact of depressive symptoms and health on sexual satisfaction for older couples: Implications for clinicians. *Contemporary Family Therapy*, 34, 376-390.
- Sierra, J. C., & Bucla-Casal, G. (2004). Evaluación y tratamiento de las disfunciones sexuales. En G. Bucla-Casal y J. C. Sierra (Eds.), *Manual de evaluación y tratamientos psicológicos* (2ª ed., pp. 439-485). Madrid: Biblioteca Nueva.
- Sierra, J. C., Ortega, V., & Gutiérrez-Quintanilla, J. R. (2008). Encuesta de Opinión Sexual: Fiabilidad, validez y datos normativos de una versión reducida en muestras salvadoreñas. *Revista Mexicana de Psicología*, 25, 139-150.
- Sierra, J. C., Vallejo-Medina, P., Santos-Iglesias, P., & Lameiras Fernández, M. (2012). Validación del Massachusetts General Hospital-Sexual Functioning Questionnaire (MGH-SFQ) en población española. *Atención Primaria*, 44, 516-526.
- Sierra, J. C., Vallejo-Medina, P., Santos-Iglesias, P., Moyano, N., Granados, M. R., & Sánchez-Fuentes, M. M. (in press). Funcionamiento sexual en personas mayores: influencia de la edad y de factores psicosexuales. *Revista Internacional de Andrología*.
- Simon, W., & Gagnon, J. H. (1984). Sexual scripts. *Society*, 22, 53-60.
- Simon, W., & Gagnon, J. H. (1987). Sexual scripts: Permanence and change. *Archives of Sexual Behavior*, 15, 97-120.
- Smith, A. M. A., Patrick, K., Heywood, W., Pitts, M. K., Richters, J., Shelley, J. M., Simpson, J. M., & Ryall, R. (2012). Body mass index, sexual difficulties and sexual satisfaction among people in regular heterosexual relationships: A population-based study. *Internal Medicine Journal*, 42, 641-651.

- Sözeri-Varma, G., Kalkan- Oguzhanoglu, N., Karadağ, F., & Özdel, O. (2011). The effect of hysterectomy and/or oophorectomy on sexual satisfaction. *Climacteric*, 14, 275-281.
- Štulhofer, A., Buško, V., & Brouillard, P. (2010). Development and bicultural validation of the New Sexual Satisfaction Scale. *Journal of Sex Research*, 47, 257-268.
- Trompeter, S. E., Bettencourt, R., & Barrett-Connor, E. (2012). Sexual activity and satisfaction in healthy community-dwelling older women. *American Journal of Medicine*, 125, 37-43.
- Woo, J. S., Morshedien, N., Brotto, L. A., & Gorzalka, B. B. (2012). Sex guilt mediates the relationship between religiosity and sexual desire in East-Asian and Euro-Canadian college-aged women. *Archives of Sexual Behavior*, 41, 1485-1495.
- World Health Organization (2010). *Measuring sexual health: Conceptual and practical considerations and related indicators*. Available from: http://whqlibdoc.who.int/hq/2010/who_rhr_10.12_eng.pdf [retrieved October 7, 2013].
- Young, M., Denny, G., Young, T., & Luquis, R. (2000). Sexual satisfaction among married women. *American Journal of Health Studies*, 16, 73-84.
- Yucel, D., & Gassanov, M. A. (2010). Exploring actor and partner correlates of sexual satisfaction among married couples. *Social Science Research*, 39, 725-738.