FURTHER EXAMINATION OF MEASUREMENT PROPERTIES OF SPANISH VERSION OF THE SEXUAL DESIRE INVENTORY WITH UNDERGRADUATES AND ADOLESCENT STUDENTS

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Summary.—The factor structure and construct validity of a Spanish version of Spector, Carey, and Steinberg’s Sexual Desire Inventory was examined with structural equation modelling and a nonclinical sample (N = 608). Confirmatory factor analysis indicated that Dyadic and Solitary sexual desire scales measured two factorially distinct constructs. Their internal consistency reliabilities were .87 and .88, respectively. Structural equation analysis indicated that both subscales are distinguishable from similarly conceptualized correlates of sexual desire: the Impersonal subscale of the Sex Fantasy Questionnaire and the Erotophilia measure of the Sexual Opinion Survey. However, the data raised some questions about an empirical distinction between dyadic sexual desire and intimate sexual fantasy.

Despite general interest and popular usage of the nomenclature, the scientific understanding of sexual desire seems relatively limited. A consensual definition of sexual desire has not been adopted. Bancroft (1983) distinguished “sexual appetite or drive, which is not only the initiating force behind our sexual behaviour, but also our intrinsic arousability that influences the strength of the response to sexual stimulation” (p. 48). Dekker and Everaerd (1989) claimed sexual arousal may be divided into genital responses, peripheral responses, and central arousal (including the experience of sexual arousals and desire). Many theoretical models define sexual desire alternatively as an affective, cognitive, motivational, or dyadic construct. A substantial body of research has operationalized sexual desire in several ways as well, including reliance on behavioural indicators, such as the frequency of specific sexual practices and definitions that highlight the purely subjective features of sexual desire (Hawton, Catalan, & Fagg, 1991; Beck, 1995). Unfortunately, empirical studies are constrained by a lack of validated measures.

Measurement of Sexual Desire

A number of inventories specifically designed for assessing sexual desire have been published. The Hurlbert Index of Sexual Desire was proposed as a simple measure of desire (Apt & Hurlbert, 1992; Hurlbert, 1993). Good test-retest reliability ($r_{tt} = .86$ across 2 wk.), internal consistency (Cronbach $\alpha = .89$), and evidence supporting validity were reported. This scale originally...
was developed for women, although it was modified for use with men and partners of clients with hypoactive sexual desire disorder (Apt, Hurlbert, & Powell, 1993). The Sexual Desire Questionnaire was designed by Beck, Bozman, and Qualtrough (1991) to measure sexual desire, including the frequency of desire, frequency of sexual activity with high sexual desire, frequency with which sexual desire but not sexual activity is experienced, and ways that individuals gauge their own sexual desire. However, its psychometric properties have not been established.

On the other hand, self-report scales for assessing sexual functioning have frequently comprised several aspects of sexual desire. Thus, the Derogatis Sexual Functioning Inventory (Derogatis & Melisaratos, 1979) was designed to provide a composite psychological profile with particular relevance for sexual behavior. This scale generates scores in ten domains, two of which are closely related to sexual desire. The Drive subscale assesses the frequency of many sexual behaviours, while the Fantasy subscale measures various sexual fantasies. More recently, Derogatis (1997) presented the Derogatis Interview for Sexual Functioning. This is a brief semistructured interview; a separate self-report version of the interview is also available. The items from both procedures provide scores on five domains: sexual cognition-fantasy, sexual arousal, sexual behavior-experience, orgasm, and sexual drive-relationship. Internal consistency and test-retest reliabilities were within the acceptable range. The domains assessed were ratified using factor analyses.

As Conte (1983) noted, many of these procedures have been developed through clinical practice and can also be employed to evaluate the effectiveness of sex therapy. In this way, Masters, Johnson, and Kolodny (1985) developed the Test of Inhibited Sexual Desire, which has recently shown adequate psychometric properties in a Spanish sample (Sierra, Zubeidat, Carretero-Dios, & Reina, 2003).

Related to the Hurlbert Index of Sexual Desire and the Sexual Desire Questionnaire, the Sexual Desire Inventory proposed by Spector, Carey, and Steinberg (1996) was specifically developed to evaluate sexual desire. Unlike many other available scales, King and Allgeier (2000) noted that the Sexual Desire Inventory did not assume previous sexual activity. In many instances, scales measuring sexual desire commonly assume sexually experienced persons. However, if sexual desire is defined as interest in or wish for sexual activity (Spector, et al., 1996), it should be plausible to assess sexual desire in the absence of overt sexual behavior. The Sexual Desire Inventory measures sexual desire as primarily a cognitive variable. Therefore, interest in sexual behavior and actual sexual behavior are isolated. The present study focused on this inventory, which is described below. First, certain cognitive and affective relevant constructs in studying sexual desire are introduced.
Desire and Sex Fantasies

Sexual fantasies constitute a central component in the maintenance of sexual desire (Kleinplatz, 1992). Sexual fantasy refers to any mental imagery which acquires an erotic or sexual meaning for the individual (Wilson, 1988). These fantasies can involve imagination of events outside the probable experience of the individual or mental representation of events that the person has previously experienced or expects to experience in the future (Masters, et al., 1985). Leitenberg and Henning (1995) noted that the essential element of a deliberate sexual fantasy was the ability to control what takes place in the imagination.

Infrequent experience of sexual fantasy has been shown to be positively related to sexual desire disorders (Nutter & Condron, 1985a, 1985b). Zubeidat, Sierra, and Ortega (2004) reported that a lower incidence of sexual desire dysfunction was concretely predicted by fantasies referring to intimate sexual relationships. Regarding the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 2000) definition of hypoactive sexual desire disorder, sexual fantasy and sexual desire seem difficult to isolate: “... is a deficiency or absence of sexual fantasies and desire for sexual activity” (p. 539). From a practical point of view, it would be pertinent to ask whether desire and fantasy could be measured separately.

Sexual fantasies can occur separately from sexual activity, or they can occur during solitary sexual activity or during sexual activity with a partner (Wilson, 1988). Regardless, several researchers have proposed measuring fantasies as an index of sexual arousal (Meuwissen & Over, 1991; Smith & Over, 1991).

Desire and Erotophilia

Measures of attitudes towards sexuality and sexual desire have been intermittently interchanged. For example, the Sexual Interest Questionnaire (Harbison, Graham, Quinn, McAllister, & Woodward, 1974) was presented as a measure of sexual desire, although it examines affective responses to five specific sexual activities. Concerning attitudes towards sexuality, erotophilia and erotophobia have been the most widely studied. Erotophilia and erotophobia dimensions were defined by Byrne and his colleagues as individual attitudinal dispositions to react to sexual cues in a positive or negative way (White, Fisher, Byrne, & Kingma, 1977). Likewise, erotophilia and erotophobia were conceptualized as the end-points of a continuum of emotional response to sexual stimuli (Byrne, 1977). The Sexual Opinion Survey (Fisher, Byrne, White, & Kelley, 1988) was designed to assess the construct through 21 items describing positive or negative affective-evaluative responses to a range of sexual activities and situations.

According to the theory of the Sexual Behaviour Sequence, individuals
who express positive sexual attitudes would accept rather than avoid sexually oriented stimuli (Byrne, 1982). Byrne reviewed studies indicating that erotophiles expressed greater positive affect than erotophobes in response to exposure to standard erotic themes, such as heterosexual intercourse. Later, erotophilia has been linked to lower scores on sexual preoccupation (Snell, Fisher, & Schuh, 1992), sex guilt (Hendrick & Hendrick, 1987; Fisher, et al., 1988; Ortega, Ojeda, Sutil, & Sierra, 2005), and sexual anxiety (Tang, 2002). The relevance of anxiety in sexual desire has been enhanced by use of some questionnaires, such as the Sexual Desire Conflict Scale (Kaplan & Harder, 1991). It was developed to measure women’s subjective discomfort with respect to sexual desire, so therefore, anxiety is examined with the experience of rather than actual interest in sexual desire.

Erotophilia-erotophobia was assumed to be a unidimensional personality construct. However, empirical evidence provided by factor analysis has shown separate and distinct evaluative dimensions of sexual responses: erotophilia, erotophobia, unconventional sex, and homo-orientation (Gilbert & Gamache, 1984; Rise, Traeen, & Kraft, 1993; Lameiras & Failde, 1997). Subsequently, Fisher, et al. (1988) admitted that the use of subscales derived from factor analytic solutions would yield stronger associations with a variety of sexually related variables.

**Sexual Desire Inventory**

Spector, et al. (1996) developed a self-administered questionnaire to measure sexual desire called the Sexual Desire Inventory. Exploratory maximum likelihood factor analyses with oblique rotation were conducted on the scale; results provided one general Sexual Desire factor and four content-specific factors: Masturbation which measured the frequency and strength of desire to masturbate, Erotica which was the frequency and strength of desire to use erotic materials, Attraction defined as strength of sexual desire for potential attractive sexual partners, and Dreams defined as frequency and strength of sexual desire during sexual dreams. The factors measuring desire for masturbation and erotic materials highly correlated with each other, but correlated less highly with the remaining factors. Analysis also indicated a stronger correlation between scores on the general factor and the Attraction items, which refer to desire for other individuals. Therefore, Spector, et al. (1996) speculated that interest in using erotic materials and masturbation represented interest in behaving sexually by oneself or solitary sexual desire. Solitary desire refers to an interest in sexual activities that do not involve a partner and may involve refraining from intimacy with others. Contrastingly, interest in or a wish to engage in sexual activity with another person would serve a different purpose, dyadic desire would also meet a need for closeness with another. To refine the inventory further, items were revised to refer
specifically either to partner-related or solitary desire. The principal components analysis identified two factors labelled Dyadic sexual desire (Items 1–9) and Solitary sexual desire (Items 10–13). The correlation between the two factors was .35. Internal consistency was expressed as high Cronbach coefficients α for Dyadic sexual desire (α=.86) and Solitary sexual desire (α=.96), although this estimation excluded one item in each subscale.

Spector (1992) stated that scores on Dyadic sexual desire correlated with the frequency of Dyadic sexual behavior (r=.34, p < .001), while scores on Solitary sexual desire correlated with the frequency of solitary sexual behavior (r=.80, p < .001). However, neither subscale correlated significantly with scores on social desirability. In another study, adequate test-retest reliability (rτ=.76 across 1 mo.) was obtained (Carey, 1995, cited by Spector, Carey, & Steinberg, 1998).

**Purpose of This Study**

The purpose of the present study (Montero & León, 2005) was to extend research on the measurement properties and construct validity of the Sexual Desire Inventory within a Spanish-speaking context. Participants given the original version of the inventory were undergraduate students (Spector, 1992; Spector, *et al.*, 1996; King & Allgeier, 2000), residents of geriatric facilities (Spector & Fremeth, 1996), and couples (Spector & Davies, 1995, cited by Spector, *et al.*, 1998). As mentioned above, sexual experience is not necessary according to the Sexual Desire Inventory (King & Allgeier, 2000) so Spanish undergraduate students as well as younger adolescents comprised the current sample.

This objective was accomplished in three ways. First, the factor structure and reliability were evaluated. Second, two additional sexual desire-related variables were incorporated in the examination of the inventory’s construct validity, intimate and impersonal sexual fantasy. Third, scores on the Sexual Desire Inventory were compared with those on an erotophilia measure.

To specify the factor structure of the Sexual Desire Inventory, three factor models representing a single dimension, two correlated dimensions, and two uncorrelated dimensions, respectively, were tested. Following Spector, *et al.*’s (1996) findings, it was hypothesized that the model containing two correlated dimensions would provide a better fit to the data. Reliability and intercorrelation between dyadic and solitary sexual desire were also estimated.

In the second step, the distinctiveness of both dyadic and solitary sexual desire with respect to intimate and impersonal fantasy was examined. Concerning sexual fantasies, Wilson (1978, 1988) supported that the intimate category was referred to enjoying a relationship with a sexual partner; the impersonal category was related to an interest in fetishes, magazines, and other
indirect sexual manifestations where little value is given feelings and personality. As noted earlier, dyadic sexual desire may involve a need for intimacy and sharing with another, while solitary desire may involve a wish to refrain from intimacy and closeness with others (Spector, et al., 1996). Therefore, it was hypothesized that intimate fantasy would be more strongly and positively associated with dyadic desire than with solitary desire, and impersonal fantasy would be more strongly and positively associated with solitary desire than with dyadic desire.

Finally, additional construct validity evidence by demonstrating the distinctiveness of dyadic and solitary sexual desire with respect to erotophilia was tested. In related research, positive relationship among erotophilia and tendency to desire has been reported (Freimuth, Hammond, Edgar, McDonald, & Fink, 1992; Hulbert, Apt, & Rabehl, 1993); however, no distinction was made in these studies between dyadic and solitary desire. Based on a sample of undergraduates, and using the Sexual Desire Inventory, Spector (1992) found that only scores on Solitary sexual desire correlated significantly and positively with erotophilia (r = -.28, p < .001 for females; r = -.27, p < .05 for males). Similarly, Zubeidat, Ortega, Del Villar, and Sierra (2003) reported that 10% and 4.6% of variability in solitary and dyadic desire were, respectively, accounted by erotophilia scores from a sample of adolescents. Consequently, for the current study it was hypothesized that erotophilia would be more strongly and positively associated with solitary than with dyadic desire.

In short, the following were expected from the present investigation: a factor structure of the Sexual Desire Inventory containing dyadic and solitary desire as two correlated dimensions, which also would provide reliable subscales; distinctiveness of dyadic and solitary desire with respect to intimate and impersonal fantasy; stronger positive correlation of intimate fantasy with dyadic desire than with solitary desire and a stronger positive correlation of impersonal fantasy with solitary desire than with dyadic desire; distinctiveness of dyadic and solitary desire with respect to erotophilia; and a stronger positive correlation of erotophilia with solitary desire than with dyadic desire.

**Method**

**Participants**

The sample included 608 Spanish individuals, 51.8% women and 48.2% men. Subjects ranged in age from 13 to 43 years (M = 20.9, SD = 4.8).

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2Direction of the correlation coefficients is negative because erotophilia was measured using a short version of the Sexual Opinion Survey (Fisher, et al., 1988), with lower scores reflecting higher erotophilia.
Among all respondents, 260 (157 women and 103 men) had a steady partner, and 68.9% were freshman to senior university students; 31.1% were students in the first, second, or fourth year of obligatory secondary education and the first and second years of high school.

**Measure**

*Sexual Desire Inventory* (Spector, *et al.*, 1996).—The 14 items were rated on a Likert scale anchored by 0: no desire and 8: strong desire. In some cases anchor points are different (not at all important and extremely important for Items 8 and 12; much less desire and much more desire for Items 9 and 13; frequency labels for Items 1, 2, 10, and 14). Item 14 asked about distress experienced during abstinence from sexual activity. Consequently, it was not included in the factor analysis; it was omitted from the Spanish version of the inventory for the same reason. In short, Items 1 to 9 refer to dyadic desire and 10 to 13 to solitary desire.

To ensure that the meaning and concept of the items remained unchanged in the Spanish version, the Sexual Desire Inventory was translated via the parallel-blind technique. This approach requires the participation of at least two people translating an inventory from the source (English) to the target language (Spanish). Then, these translators compare their individual work and collaborate on the final version.

*Intimate and impersonal sex fantasies.*—Wilson’s *Sex Fantasy Questionnaire* (Wilson, 1978, 1988) has four subscales called Exploratory, Intimate, Impersonal, and Sadomasochistic sex fantasies. Only two of these were given here. The Intimate category included topics such as lovemaking outside of the bedroom, intercourse, kissing passionately, and the Impersonal category includes topics such as being excited by silk or leather, obscene pictures or films, or using objects for stimulation. The published Spanish version (Eysenck & Wilson, 1981) has eight items in each subscale and uses a four-point rating Likert scale, anchored by 0: never and 3: often.

Sierra, Ortega, Martín-Ortiz, and Vera-Villaruel (2004) reported partial support for the dimensional structure of the Spanish version of the questionnaire via an exploratory factor analysis with a sample of 460 undergraduates. Four dimensions showed adequate convergent validity with the ratings in the Desired Sexual Behaviour subscale of the Sexual Interaction Inventory by LoPiccolo and Steger (1974).

*Erotophilia.*—The Sexual Opinion Survey, developed to assess sexual attitudes (Fisher, *et al.*, 1988), consists of 21 statements about sexuality including topics such as pornography, homosexuality, and heterosexual intercourse. Respondents express agreement with each statement using a 7-point Likert

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3 Spanish version of Sexual Desire Inventory is available from the first author.
scale anchored by 1: strongly agree and 7: strongly disagree. Carpintero and Fuertes (1994) carried out the adaptation to Spanish from the scale and provided preliminary results for a Spanish sample \((N=882)\). Lameiras and Failde (1997), evaluating the factor structure of the Spanish version, found four factors, which are similar to those obtained via the original version used on a sample of 1,827 Norwegian adolescents (Rise, et al., 1993). This measure has four subscales: Erotophilia \((\text{Cronbach } \alpha = .88)\), Erotophobia \((\text{Cronbach } \alpha = .63)\), Unconventional sex \((\text{Cronbach } \alpha = .67)\), and Homo-orientation \((\text{Cronbach } \alpha = .43)\). Given the low reliability coefficients, only the Erotophilia subscale was given \((\text{Items } 1, 3, 4, 8, 9, 17, 18, 19, \text{ and } 20)\). Nevertheless, because the Sexual Opinion Survey is scored from low to high, the direction of the anchor points were reversed for clarity of interpretation.

**Analyses**

The confirmatory factor analysis (CFA) option of LISREL 8.54 was used to examine the fit of the Sexual Desire Inventory items to three factor models: one general factor representing dyadic desire and solitary desire as a single construct; two correlated factors, representing one general dyadic desire factor \((\text{Items } 1-9)\) and one general solitary desire factor \((\text{Items } 10-13)\); and two orthogonal factors, representing the same clusters of items within the scale as uncorrelated factors.

Second, the correlation matrix of the items for each measure (dyadic sexual desire, solitary sexual desire, intimate sexual fantasy, impersonal sexual fantasy, and erotophilia) was assessed against a one-factor model to assess whether the scale was unidimensional. Then, four manifest indicators of each construct, represented by the scales, were formed to test the distinctiveness of the measures. This procedure was elected to avoid the use of item-level-factor analysis as well as to enhance the subject-to-degrees-of-freedom ratio for testing the relations of interest (Anderson & Gerbing, 1988). Next, several factor analytic solutions were compared to test the distinctiveness of the Sexual Desire Inventory: dyadic-solitary desire and intimate-impersonal sexual fantasy; and dyadic-solitary sexual desire and erotophilia. A null model that constrained all indicators to be orthogonal was included as a baseline for comparison purposes.

The indices of fit used to assess the goodness of fit of the estimated models were the ratio of chi-square to degrees of freedom \((\chi^2/df)\), the goodness-of-fit index \((\text{GFI})\), the Tucker-Lewis index \((\text{TLI}; \text{ Tucker } \& \text{ Lewis, 1973})\), and the relative noncentrality index \((\text{RNI}; \text{ McDonald } \& \text{ Marsh, 1990})\). In addition, the root mean square error of approximation \((\text{RMSEA}; \text{ Browne } \& \text{ Cudeck, 1989}; \text{ Steiger, 1990})\) was used. It is noted that a \(\chi^2/df\) ratio between 1 and 3 is indicative of good fit (Carmines & Mclver, 1981), allowing for an extension to a more liberal upper threshold limit of 5 (Jöreskog,
1970). GFI, TLI, and RNI greater than .90 are typically interpreted as indicating an adequate fit, although it may be more useful to compare the effectiveness of alternative models to fit the data. The TLI and RNI differ primarily in that RNI is monotonic with model complexity, whereas the TLI incorporates a correction for model complexity such that a more complex model may result in a poorer fit (McDonald & Marsh, 1990). Concerning RMSEA, the recommended value for a well-fitting model is below .05. Browne and Cudek (1993) suggested that values in the .05 to .08 range indicate a fair fit, while those above .10 indicate a poor fit.

Following Byrne (1998) and Du Toint and Du Toint (2001), an item-level polychoric correlation matrix and the asymptotic covariance matrix were used to estimate all models; the parameters were estimated with weighted least squares (WLS) procedure. Additionally, predicted correlations using a significance test of difference between dependent correlations (Cohen & Cohen, 1983) were tested.

**RESULTS**

**Factor Structure and Reliability**

Data of males and females were analyzed together because preliminary analyses yielded no significant differences in the covariance matrices by sex (Box's $M; F_{1,1097841} = 3.41, p = .07$).

The null model produced a poor fit ($\chi^2_{98} = 3769.09$, GFI = .57, RMSEA = .349). The single-factor model was a poor fit to the data ($\chi^2_{95} = 344.64$, GFI = .96, TLI = .91, RNI = .92, RMSEA = .105). The fit of the two-factor oblique model was an improvement over that of the single-factor model and appeared to fit the data reasonably adequately ($\chi^2_{64} = 244.06$, GFI = .97, TLI = .94, RNI = .95, RMSEA = .075). The two-factor orthogonal model did not adequately account for the data ($\chi^2_{65} = 833.52$, GFI = .91, TLI = .75, RNI = .79, RMSEA = .175).

Indicator loadings for the two-factor oblique model are shown in Table 1. As seen there, Items 1–9 had significant loadings on Factor 1, while Items 10–13 had large significant loadings on Factor 2. The items loading on each factor were summed and averaged to form the Dyadic sexual desire and the Solitary sexual desire scales, which had internal consistencies, measured by Cronbach alpha, of .87 and .88, respectively. The correlation between the two factors was .49 ($p < .001$).

**Construct Validity**

Prior to examining the relations among dyadic sexual desire, solitary sexual desire, intimate sexual fantasy, impersonal sexual fantasy, and erotophilia, each scale was submitted to confirmatory factor analysis to establish its unidimensionality. The results of these confirmatory factor analyses are
shown in Table 2 along with the means, standard deviations, and estimates of internal consistency, coefficient alpha. A one-factor model, using responses to individual scale items, provided a reasonably adequate fit to each of the correlation matrices for scores on subscales Dyadic Sexual Desire, Solitary Sexual Desire, Intimate Sexual Fantasy, Impersonal Sexual Fantasy, and Erotophilia. Although the TLI values were below the .90 benchmark for dyadic desire and erotophilia, their fit can be considered moderate in view of the other indices, and above all in relation to the RMSEA that provides an indication of the global fit of the model (Raykov, 1998) (RMSEA = .077 and .067, respectively). Therefore, having obtained evidence of the unidimensionality of these scales, each item from a given scale was randomly assigned to

<table>
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<tr>
<th>Item</th>
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<td>2.22</td>
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<td>9</td>
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<td>13</td>
<td>3.38</td>
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*p < .05.

**TABLE 1**
MEANS, STANDARD DEVIATIONS, AND STANDARDIZED LOADINGS REPORTED FOR SEXUAL DESIRE INVENTORY WITH TWO-FACTOR OBLIQUE SOLUTION

<table>
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<tr>
<th>Scale</th>
<th>Item</th>
<th>M</th>
<th>SD</th>
<th>α</th>
<th>$\chi^2$</th>
<th>df</th>
<th>GFI</th>
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*Note.*—All chi-square values were significant ($p < .001$). GFI = goodness-of-fit index; TLI = Tucker-Lewis index; RNI = relative noncentrality index; RMSEA = root mean square error of approximation.
one of four composites, which served as an indicator of that respective construct. Because there were only four items to measure solitary sexual desire, all of them were assigned to this construct. Examination of the correlation matrix among the manifest indicators showed the indicators of a given construct were generally more strongly correlated with each other than with the indicators of the other constructs.

Next, a four-factor model was estimated in which the underlying, correlated dimensions were dyadic sexual desire, solitary sexual desire, intimate sexual fantasy, and impersonal sexual fantasy. This model fits the data adequately ($\chi^2 = 299.50$, GFI = .98, TLI = .96, RNI = .96, RMSEA = .058). The standardized factor loadings were all in the range .75 and .93. Correlations (Table 3) supported the predicted relationship for intimate fantasy, which was more strongly and positively associated with dyadic desire ($r = .59$) than with solitary desire ($r = .28; t = 7.08, p < .01$). Also, the correlation involving impersonal fantasy and solitary desire ($r = .24$) was significantly higher than that involving impersonal fantasy and dyadic desire ($r = .09; t = 3.56, p < .01$).

### Table 3

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<tr>
<td>I. Dyadic Desire + Intimate Fantasy</td>
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<tr>
<td>II. Solitary Desire</td>
<td></td>
<td></td>
<td>.44</td>
<td></td>
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</tr>
<tr>
<td>III. Impersonal Fantasy</td>
<td></td>
<td></td>
<td>.13</td>
<td>.24</td>
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</tr>
<tr>
<td>$\chi^2 = 407.31$, GFI = .97, TLI = .93, RNI = .94, RMSEA = .071</td>
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<tr>
<td><strong>Three-factor Oblique (Model B)</strong></td>
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<tr>
<td>I. Solitary Desire + Impersonal Fantasy</td>
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<td></td>
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<tr>
<td>II. Dyadic Desire</td>
<td></td>
<td></td>
<td>.43</td>
<td></td>
<td></td>
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<tr>
<td>III. Intimate Fantasy</td>
<td></td>
<td></td>
<td>.30</td>
<td>.59</td>
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</tr>
<tr>
<td>$\chi^2 = 516.82$, GFI = .96, TLI = .92, RNI = .93, RMSEA = .081</td>
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<td><strong>Two-factor Oblique Model</strong></td>
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<tr>
<td>I. Dyadic Desire + Intimate Fantasy</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>II. Solitary Desire + Impersonal Fantasy</td>
<td>.43</td>
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<tr>
<td>$\chi^2 = 585.87$, GFI = .96, TLI = .90, RNI = .91, RMSEA = .088</td>
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<td><strong>Null Model</strong></td>
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<tr>
<td>$\chi^2 = 5661.70$, GFI = .63, TLI = NA, RNI = NA, RMSEA = .276</td>
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*Note.—All chi-square values were significant ($p < .001$). *$p < .05$. †$p < .01$. ‡$p < .001$. 
A number of additional models were developed and tested to explore further the distinctiveness of the dimensions of dyadic sexual desire, solitary sexual desire, intimate sexual fantasy, and impersonal sexual fantasy. Specifically, two three-factor models were estimated. In the first of these models (Model A), the manifest indicators of the dyadic desire and intimate sexual fantasy formed one factor, the solitary sexual desire formed a second factor, and the impersonal sexual fantasy formed the third factor. Although the RMSEA has risen to .071 (from .058) and the ratio has risen to 4.03 (from 3.32), this model presented an acceptable fit ($\chi^2_{101} = 407.31$, GFI = .97, TLI = .93, RNI = .94, RMSEA = .071). The second three-factor model (Model B) combined the manifest indicators of the solitary desire and impersonal sexual fantasy to form the first factor, left the dyadic desire as the second factor, and placed the intimate sexual fantasy as the third factor. This model did not sufficiently account for the data; the ratio was above the limit for the most lenient criteria (5.12), and the RMSEA was greater than the benchmark of .080 ($\chi^2_{101} = 516.82$, GFI = .96, TLI = .92, RNI = .93, RMSEA = .081).

The latter model was a two-factor model, with the manifest indicators of the dyadic desire and intimate sexual fantasy forming one factor and the manifest indicators of the solitary desire and impersonal sexual fantasy forming the second factor. Again, this model did not adequately fit the data ($\chi^2_{103} = 585.87$, GFI = .96, TLI = .90, RNI = .91, RMSEA = .088).

The substantive issue of this study was to examine the relationships between scores on the Sexual Desire Inventory and other correlates of sexual desire, and therefore several additional models were estimated. These models were examined to judge whether dyadic desire and solitary desire could be differentiated from erotophilia. Three alternative models were tested: a three-factor model representing one dyadic desire factor, one solitary desire factor, and one erotophilia factor; a two-factor model (Model A) that combined dyadic desire and erotophilia into one scale, and the solitary desire formed the second factor; and a two-factor model (Model B) that combined solitary desire and erotophilia to form the first factor and placed the dyadic desire as the second factor. The fit indices and factor correlations are presented in Table 4.

The results of this analysis showed an adequate fit to a three-factor model ($\chi^2_{51} = 180.02$, GFI = .98, TLI = .96, RNI = .97, RMSEA = .065). On the basis of the overall fit indices, the first two-factor model (Model A) produced a poor fit to the data ($\chi^2_{53} = 454.11$, GFI = .96, TLI = .88, RNI = .91, RMSEA = .112); the second two-factor model did not provide sufficient account for the data ($\chi^2_{53} = 470.71$, GFI = .96, TLI = .88, RNI = .90, RMSEA = .114). Contrary to expectations, erotophilia only correlated significantly with dyadic desire ($r = .16$, $p < .001$), but not with solitary desire ($r = .07$, $p = .08$). Furthermore, difference between correlations was statistically significant ($t = 2.10$, $p < .05$).
**TABLE 4**

<table>
<thead>
<tr>
<th>Model</th>
<th>Factor</th>
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<th>II</th>
<th>III</th>
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<td>Three-factor Oblique</td>
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<td>11</td>
</tr>
<tr>
<td>I. Dyadic Desire</td>
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<td>1</td>
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</tr>
<tr>
<td>II. Solitary Desire</td>
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<td></td>
<td>11</td>
<td>0.16*</td>
</tr>
<tr>
<td>III. Erotophilia</td>
<td></td>
<td></td>
<td>11</td>
<td>0.07</td>
</tr>
<tr>
<td>$\chi^2 = 180.02$, GFI = 0.98, TLI = 0.96, RNI = 0.97, RMSEA = 0.065</td>
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<tr>
<td>Two-factor Oblique (Model A)</td>
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<td>1</td>
</tr>
<tr>
<td>I. Dyadic Desire + Erotophilia</td>
<td></td>
<td></td>
<td>1</td>
<td>0.35*</td>
</tr>
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<td>II. Solitary Desire</td>
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<td>11</td>
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<td>$\chi^2 = 454.11$, GFI = 0.96, TLI = 0.88, RNI = 0.91, RMSEA = 0.112</td>
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<td>Two-factor Oblique (Model B)</td>
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<td>1</td>
<td>1</td>
</tr>
<tr>
<td>I. Solitary Desire + Erotophilia</td>
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<td></td>
<td>1</td>
<td>0.41*</td>
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<tr>
<td>II. Dyadic Desire</td>
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<tr>
<td>$\chi^2 = 470.71$, GFI = 0.96, TLI = 0.88, RNI = 0.90, RMSEA = 0.114</td>
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<tr>
<td>Null Model</td>
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<tr>
<td>$\chi^2 = 4356.21$, GFI = 0.63, TLI = NA, RNI = NA, RMSEA = 0.327</td>
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*Note.*—All chi-square values were significant ($p < 0.001$). *p* < 0.001.

**DISCUSSION**

Given the relevance of sexual desire measures among researchers and health and education professionals in sexuality, the psychometric properties of each new measure should be evaluated prior to being used. The aim of the current study was to provide evidence for construct validity and reliability of the Sexual Desire Inventory on a large Spanish sample, including undergraduates and adolescent students. An important first step in the establishment of construct validity was to examine the factor structure of the inventory. Consistent with the findings of Spector, et al. (1996) using exploratory principal components analysis, the present results ratified the bidimensionality of the inventory as a measure of dyadic and solitary sexual desire through confirmatory factor analysis. Alternatively, the possibility that the two kinds of desire functioned as independent constructs was tested; following Spector and Fremeth’s suggestion (1996) regarding their own findings with elderly people, the possibility that dyadic and solitary areas may be comprised of a single domain was also tested. However, as it was hypothesized, the two-factor oblique model provided the best fit to the data, resulting in an acceptable or moderate fit. Moreover, the Spanish version of the Sexual Desire Inventory showed good internal consistency for both dyadic and solitary desire, with the advantage that none of the items which specified the bifactorial structure of the questionnaire was excluded from reliability estimation. Likewise, a stronger relationship between dyadic and solitary
desires than the one obtained by Spector, et al. (1996) is reported in this paper. Nevertheless, several studies based on samples of differing age range had shown that dyadic and solitary desire were moderately to highly related (Spector & Fremeth, 1996; Conaglen, 2004).

According to the hypothesized relationships, intimate fantasies appeared more directly associated with dyadic desire than with solitary desire, whilst impersonal fantasies were more directly associated with solitary desire than with dyadic desire. These findings seemed to lend support to the idea of Spector, et al. (1996) that solitary desire enhances the individual's sexual needs, while dyadic desire would have a more emotional character, implying reciprocal attention to the sexual needs of both. To test the distinctiveness among types of sexual desire and types of sexual fantasy, structural equation modelling was used. Of the models tested, the four-factor model provided the best fit to these data; however, the moderate fit shown by the model which combined dyadic desire and intimate fantasies into one single factor suggested that the two measures were not sufficiently distinct. Comparison of the items comprising each of these two subscales suggests strong similarities. First, dyadic sexual desire and intimate sexual fantasy are primarily cognitive variables, which can be measured through the amount of thought directed toward sexual stimuli. Second, they are focused on the same source of the action: a partner. Third, dyadic desire and intimate fantasy are focused on in similar content areas. For example, the two subscales contain items that address an individual's thoughts about sexual activity with a partner in diverse situations: "When you are in romantic situations (such as a candle lit dinner, a walk on the beach, etc.) . . . ," Item 6 on the Sexual Desire Inventory, "Making love out of doors in a romantic setting, e.g., field of flowers, beach at night," Item 1 of the Intimate Sexual Fantasy subscale; "When you spend time with an attractive person (for example, at work or school) . . . ," Item 5 on the Sexual Desire Inventory, "Intercourse with someone you know but have not had sex with," Item 3 of the Intimate Sexual Fantasy subscale. In addition, it was not clear from the present results whether dyadic sexual desire and intimate fantasy should be treated as distinct concepts.

Interestingly, Spector, et al. (1996) noted that the Dyadic Desire subscale comprised items referring to internal and external triggers of desire. This distinction was proposed by Kaplan (1979). Similarly, Jones and Barlow (1990) differentiated between fantasies (internally generated sexual thoughts) and urges (externally provoked sexual thoughts). If, however, imagining sexual activity with a partner is included in dyadic desire, then intimate fantasy and dyadic desire overlap, resulting in the lack of the empirical independence found in the present study. The distinction between these constructs has not been studied previously. Clearly, further research is needed to ad-
dress the relationship between dyadic desire and intimate fantasy, but different measures for the constructs applied here should also be tested in such replications.

In another way, evidence to support the assumption that dyadic and solitary sexual desire were empirically distinct, as well as conceptually distinct from erotophilia, was provided. Of all the models tested through confirmatory factor analysis, only the model containing three dimensions showed acceptable fit to the data. However, an unexpected result was that erotophilia only was associated significantly with dyadic desire but not with solitary desire. One alternative interpretation of this finding is the possibility that erotophilia may be significantly correlated only with dyadic desire because they would share the affective-emotional aspects. In accordance with this result, using the Sexual Desire Inventory and the Attitudes subscale from the Aging Sexual Knowledge and Attitudes Scale (White, 1982), Spector and Fremeth (1996) reported that only dyadic desire was significantly related to more liberal attitudes toward sexuality for their elderly sample ($r = .31$, $p < .05$). At the same time, the Inventory of Dyadic Heterosexual Preferences (Purnine, Carey, & Jorgensen, 1996) included one factor labelled Erotophilia, which showed a moderate association with the Sexual Opinion Survey ($r = .54$, $p < .001$). Another consideration that cannot be ruled out is the correlation between scores on Erotophilia and Dyadic Sexual Desire, even when statistically significant, was very low in magnitude and could not have any real-world significance. Yet another explanation of the discrepancy between current results and those reported by Spector (1992) is that different measures of erotophilia were used. Specifically, Spector (1992) utilized a short version of the Sexual Opinion Survey comprising five items, while the subscale called Erotophilia from the Spanish version of the aforementioned questionnaire (Lameiras & Failde, 1997) was given here. The Sexual Opinion Survey was developed for assessing overall attitude towards sexuality; therefore, a variety of sexual cues were included. Obviously, different content areas of the items measuring erotophilia may affect the magnitude of correlation coefficients.

For some reasons, a relevant issue from the current study is that data for males and females were analyzed together. As shown in the results, no significant differences in the covariance matrices by sex were noted, so the samples were combined for all further analyses. In their first study to develop the Sexual Desire Inventory, Spector, et al. (1996) conducted analyses separately by sex because preliminary analyses indicated differences in the covariance matrices by sex. However, the overall pattern of dimensionality was similar across sex. Consequently, in their second study data for males and females were combined for analyses. Spector, et al. (1996) indicated that “no theoretical rationale existed to expect gender differences in the nature of de-
sire with respect to separate dimensions of solitary and dyadic desire” (p. 183). Another issue, albeit related, is that several studies have yielded scores for males on dyadic and solitary desire which were higher than those reported for women (Spector, 1992; Spector & Fremeth, 1996; Spector & Davies, 1995, cited by Spector, et al., 1998). Sex differences were beyond the scope of this paper, but later research may examine discrepancy between men and women responding to the Spanish version of the Sexual Desire Inventory.

As noted earlier, the Sexual Desire Inventory does not assume sexually experienced respondents. Therefore, comparing with the Spector, et al. sample (1996), age range was enlarged in this study by including adolescent students. The aim of this project was to adapt and examine a questionnaire on sexual desire, which could be used with a wider range of individuals. Nevertheless, studies should be conducted to assess age-specific variability on scores for sexual desire.

Regarding the nonrandom sampling procedure of this study, caution should be exercised before firm conclusions can be made. It remains clear that the validation of an inventory is treated as a programmatic process, involving numerous studies that test and extend the generalizability of results (Meston & Derogatis, 2002). Equally, the findings need to be replicated with Spanish clinical samples. On the other hand, a structural equation modeling approach was adopted. These procedures are based on comparing the fit to the data of alternative models. In spite of this, a moderate or adequate fit to the data was found in the most optimal cases, also testing unidimensionality of each subscale; but in no case were well-fitting models shown. Clearly, this Spanish version could be improved with research on construct validity across diverse samples. However, despite these limitations, present findings have important implications for the role of thoughts and attitudes in sexual activity. The results of the present study would serve as an important preliminary step in examining these relationships.

REFERENCES


SPANISH VERSION: SEXUAL DESIRE INVENTORY


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