

Development of the Sexual Arousal and Desire Inventory (SADI):  
A Multidimensional Scale of Subjective Sexual Arousal and Desire in Men and Women

Rachel R. Toledano

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## ABSTRACT

Development of a Multidimensional Model of the Subjective Experience of Sexual Arousal and Desire in Men and Women

Rachel R. Toledano, Ph.D.  
Concordia University, 2006

The psychological experience of the sexual response cycle has, in recent years, been theoretically redefined to take into account the multidimensional nature of its different stages and the important biopsychosocial factors that influence them. The first chapter of this thesis advocates a four-dimensional model to describe the subjective experience of sexual arousal and desire in both men and women, with three positive dimensions including an evaluative, a motivational, and a physiological factor, as well as a fourth aversive or inhibitive negative factor. An adjective-rating questionnaire, called the Sexual Arousal and Desire Inventory (SADI), was developed to evaluate this multidimensional model of sexual arousal and desire. A sample of 195 women and 195 men completed the questionnaire to convey their subjective experiences of sexual arousal and desire. Results supported the four-factor model to describe men and women's experiences of sexual arousal and desire, suggesting they involve similar experiences. Further inquiry into the questionnaire's psychometric properties as a measure of subjective sexual arousal and desire and of the four-dimensional model revealed excellent reliability and validity, and is covered in chapter one as well. Chapter two examines whether the presence or absence of specific sexual cues, including the ejaculation ending and the soundtrack of an erotic film segment, would alter the subjective experience of sexual arousal and desire of men and women. The third and final chapter of this thesis introduces a Quebec French translation of the SADI. In a preliminary study, 310 women and 59 men completed the questionnaire. Results supported the four-factor model in this French version of the SADI and suggested that this model is adequate to describe the subjective experience of sexual arousal

and desire of Quebec Francophone populations. A more equal sample of men and women will need to be evaluated in order to confirm the validity of these results in both sexes.

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## **Contributions of Authors**

### **Chapter 1**

Chapter 1 of this thesis entitled “The Sexual Arousal and Desire Inventory (SADI): A multidimensional scale to assess subjective sexual arousal and desire” has been published in the *Journal of Sexual Medicine* (2006) and was co-authored by Toledano, R.R. and Pfaus, J.G. Toledano is the first author of this paper having developed the studies included in this chapter, having gathered the data, conducted the statistical analyses and written the published manuscript. Pfaus supervised this work in its entirety and contributed to the development of the studies and ideas included in this chapter and to the writing of the published manuscript.

### **Chapter 2**

Chapter 2 of this thesis entitled “Auditory cues alter the valence of subjective sexual arousal and desire induced by an erotic film” was co-authored by Toledano, R.R., Mihai, L., Young, T., Ryder, A.G., and Pfaus, J.G. Toledano is the first author of this paper having developed the study included in this chapter, gathered the data, conducted the statistical analyses, and written the paper. Pfaus is senior author, having supervised this work in its entirety and contributed to the writing of the paper which has been submitted for publication. Mihai and Young participated in gathering the data for the study included in this chapter. Ryder is collaborating with Pfaus on a large-scale project to assess sexual attitudes across different cultures and in relation to different types of stimuli. He will also participate in the writing of the paper and was critical in drafting the preliminary presentation of the data.

### **Chapter 3**

Chapter 3 of this study entitled “L’Inventaire de l’Excitation et du désir sexuel (IEDS): The Québec French version of the Sexual Arousal and Desire Inventory (SADI)” was co-authored by Toledano, R.R., Ryder, A.G., and Pfaus, J.G. Toledano is the first author of this paper having developed the study included in this chapter, gathered the data, conducted

the statistical analyses and written the paper. Pfaus is senior author, having supervised this work in its entirety and contributed to the development of the studies included in this chapter and to the written paper which will be submitted for publication. Ryder is collaborating with Pfaus on a large-scale project to assess sexual attitudes across different cultures and in relation to different types of stimuli. He will also participate in the writing of the paper.

## GENERAL INTRODUCTION

Sexual arousal and desire comprise two appetitive components of the sexual response cycle. What has now become the traditional model of the human sexual response, called the “EPOR model”, was described by Masters and Johnson (1966) as being composed of four sequential phases linked to the activation of sympathetic and parasympathetic arousal. The response begins with the Excitement phase, a period that includes arousal and desire (Kaplan, 1979), and that leads individuals to initiate sexual activity. Next is the Plateau phase during copulation and genital sexual stimulation. This culminates in the Orgasm phase, during which the sympathetic arousal induced by sexual stimulation is “released” in pleasurable contractions of the pelvic floor musculature. Orgasm is followed by the Resolution phase, during which the heightened sympathetic activation of smooth muscle (e.g., heart, lungs) during copulation returns to a normative state via parasympathetic actions.

The EPOR model was based largely on observations of bodily responses during sexual arousal and intercourse in men, and emphasized a cascade of sexual responses that formed around a build-up and release of sympathetic sexual arousal. Although at the time the model represented a paradigmatic breakthrough around which the scientific study of human sexual behavior could evolve, its exclusive focus on physiological responses have since been criticized (Althof et al, 2005; Basson, 2003; Basson, 2002; Basson, 2001; Stoleru et al., 1999) because it failed to take into account important psychological processes and experiences that alter the flow of the cycle and the magnitude of each response. Indeed, it was shown subsequently that humans (and especially women) could engage in sexual intercourse without an increase in sexual arousal (Basson, 2002; Townsend, 1995), that arousal could occur without desire (Basson, 2002; Delizonna et al., 2001), and that sexual intercourse

could occur without orgasm or any resolution, as happens in cases of anorgasmia (McMahon, 2004; Meston, 2004).

Several non-linear models have been proposed that emphasize the overlapping nature of the different phases of the sexual response cycle. For example, Pfaus (1996, 1999) developed the Incentive Sequence Model, whereby appetitive and consummatory sexual responses are conceived of as overlapping Venn diagrams in which the behavioral stream moves from left to right, that is from appetitive to consummatory phases, with the overlap consisting of precopulatory behaviors. This model emphasizes that the division between these two phases is not necessarily fixed and that certain responses can be placed into both phases, for example solicitation and foreplay. The author describes that, for both men and women, the appetitive phase manifests itself in terms of sexual desire, with distinct, but not exclusive, subclasses of fantasy, sexual excitement, and preparatory behaviors. The consummatory phase is described by behaviors that are directed toward genital stimulation and orgasm and includes such precopulatory behaviors as solicitation, arousal, foreplay and refractory periods between successive copulations. It is important to note that in the Incentive Sequence Model, sexual desire and arousal are considered conceptually and temporally distinct (Pfaus, 1999). This indicates that, although sexual arousal is generally conceptualized as an appetitive response, it is placed into the overlapping precopulatory category because it can be induced by fantasy or visual stimulation that is distal to the observer. This means that contact with the sexual incentive is made "psychologically" and that sexual desire and arousal, although they remain conceptually distinct, can be viewed as overlapping phases.

Current models of the human sexual response cycle favour a more multidimensional approach that takes subjective psychological events, including an

individual's sexual history and expectations, along with moment-to-moment alterations in sensory stimulation and its cognitive processing, into consideration around the physiological outflow (Basson, 2003; Basson, 2001; Mah, 2002; Pfaus, 1999). To date, most of the research conducted on sexual arousal has been aimed at understanding its peripheral and physiological components (i.e., penile or vaginal blood flow or volume). In the case of sexual desire, the focus has been mainly on measures of behavioral frequency, such as masturbation or intercourse frequency, incidence of sexual thoughts, and number of sexual contacts leading to orgasm (Leiblum & Rosen, 1988). These methods have been successful in providing the field with a wide range of information that has become useful both in research and applied settings. Nonetheless, the emphasis has remained mostly on physiological and behavioral responses related to sexual arousal and desire. It has become apparent, however, that physiological and behavioral aspects alone are not sufficient to fully describe the range of experiences involved in these areas of human sexuality (Rosen & Beck, 1988). Only recently have investigators begun to incorporate subjective aspects of sexual arousal and desire, such as cognitions and emotions, into their research applications (see below).

For the purpose of the studies included in this thesis, sexual arousal has been defined as the physiological responses that accompany or follow sexual desire, for example experiencing penile erection or vaginal lubrication, and involving the more physiological aspects of wanting sex. Sexual desire has been defined as an energizing force that motivates a person to seek out or initiate sexual contact and behavior, and involving the more psychological aspects of wanting sex. It is however important to note that subjectively, sexual arousal and desire are considered and perceived of as being interrelated and that they overlap with each other. They are only considered to

be distinct constructs in theory, although in practice they clearly appear to be psychologically connected with one another and to behaviourally overlap in sexually normally functioning human beings, as is suggested in the Incentive Sequence Model (Pfaus, 1999).

### **Diagnostic categories for sexual disorders**

The Diagnostic and Statistical Manual of Mental Disorders Fourth Edition Text Revised (DSM-IV-TR, 2000) presents different categories of sexual disorders found under the rubric Sexual and Gender Identity Disorders. These disorders include Sexual Desire Disorders, Sexual Arousal Disorders, Orgasmic Disorders, Sexual Pain Disorders, and Sexual Dysfunction Due to a General Medical Condition. DSM-IV-TR states that, "the Sexual Dysfunctions are characterized by disturbance in sexual desire and in the psychophysiological changes that characterize the sexual response cycle and cause marked distress and interpersonal difficulty". The DSM-IV-TR divides the sexual response cycle into four specific phases, including desire, excitement, orgasm, and resolution, after Masters and Johnson's EPOR model (1966). The focus of the present thesis will be on the arousal and desire phases. According to the DSM-IV-TR (2000), the desire phase, "consists of fantasies about sexual activity and the desire to have sexual activity" and the excitement phase, "consists of a subjective sense of sexual pleasure and accompanying physiological changes". Physiological changes such as penile tumescence and erection, and vaginal lubrication and expansion, and swelling of the external genitalia, are expected to take place during this arousal phase.

The accuracy and reliability of existing diagnostic classifications have been, in recent years, repeatedly criticized for failing to properly address both the subjective and objective aspects of women's sexual response cycle (Basson, 2005; Basson, et al.,

2003; Basson, 2002). The main argument is that the classification system for the sexual disorders found in the DSM-IV-TR is based on Masters and Johnson's EPOR model, which is erroneous because it is based largely on observations of male physiological sexual responses, and places women into a male context (notwithstanding the fact that Masters and Johnson proposed different expressions of orgasm for men and women to account for women's abilities to have multiple orgasms). Therefore, current diagnostic criteria for sexual dysfunctions do not accurately reflect women's sexual response cycle, nor does it accurately reflect the subjective aspect of men's sexual response cycle (Althof et al, 2005). A new, evidence-based conceptualization of women's sexual response cycle which combines psychological and biological factors with contextual and interpersonal factors led to proposals to develop new categories of sexual dysfunction for women, in which emphasis would be placed on the essential differences between psychological/subjective and physiological/objective aspects of women's sexual arousal disorders (Basson, 2005; Basson, 2003; Basson, 2002). The aim would be to ensure that the context of sexual problems, along with women's priorities and subjective experiences would be taken into consideration, as suggested by Everaerd et al. (2000).

### **Theoretical considerations regarding the human sexual response cycle**

Levine (1987) defined sexual arousal by emphasizing the psychobiologic factors that are inherent to it. He discussed how sexual desire often precedes but also accompanies sexual arousal, and its motivating role in generating sexual behaviors. Levine suggests that levels of sexual desire are affected by biologic drives, cognitive wish, and emotional willingness. He suggests as well that these three main factors of



sexual desire change in a predictable way based on the stage of the life cycle, the quality of a person's relationship, and the rules that a couple sets related to their sexual interactions with each other. This is an early example of a multidimensional perspective of the construct of sexual desire in human beings.

Basson (2005; 2003; 2002; 2001) also suggested a multidimensional model of normative female sexual response based on clinical samples. In this model, she proposes that a woman is initially in a sexually neutral stage although she is willing to become receptive to sexual stimuli. She explains that a woman may have multiple motivating factors that lead to the desire to initiate or seek out sexual contact, such as a desire to please her partner, a desire to feel emotionally connected, a desire to express loving feelings, or a desire to give and to receive physical pleasure. According to Basson, these motivating factors lead a woman to the willingness to become aware of sexual stimuli and to consciously focus on them when they are present. Cognitive and emotional processing of such stimuli then occurs under the influence of previous physiological and psychological experiences. If the cognitive and emotional feedback is positive, a state of subjective sexual arousal is activated. With continued sexual stimulation, sexual excitement grows and intensifies, leading to the actual desire for sex itself, in other words leading to what is known as sexual desire. Sexual satisfaction is attained, in the presence, or even absence, of an orgasm. Orgasms can occur in women if stimulation continues long enough and that the woman is able to stay focused on the pleasurable sensations. Both cognitive and physiological responses to appetitive and consummatory sexual stimulation are heightened during the ovulatory phase of the menstrual cycle relative to other phases (Wallen, 1995), and it appears that there are large individual differences in the manner and ability of women to express sexual desire.

Although the presence of increased vaginal blood flow and volume does not predict subjective arousal or desire in women (Laan et al., 2002), penile erection is generally predictive of subjective sexual arousal and desire in men (Nobre et al. 2004). Rosen and Beck (1988) have argued that because men and women's physiological and psychological sexual experiences differ, there exists a necessity for assessment approaches that are tailored to each gender's pattern of sexual response. The main argument made is that women's subjective sexual experiences are crucial because, unlike men who have a visible and palpable erection that allows them to know that they are experiencing sexual arousal, women only experience vaginal lubrication and increased blood flow, which are much more subtle and indistinct signs of sexual arousal that may go unnoticed. Several studies have shown that when both physiological and subjective sexual arousal are assessed, men show a significantly higher concordance between the two measures than do women. Women may show physiological signs of sexual arousal without subjectively reporting that they actually "feel" sexually aroused (Laan et al., 1995). Several studies using visual erotic stimuli have demonstrated a poor correlation between objective and subjective measures of sexual arousal in women who complained of low sexual arousal (Heiman, 1980; Meston & Gorzalka, 1995; Meston & Heiman, 1998). Althof et al. (2005) suggest that for men, sexual arousal is a relatively unidimensional construct whereas for women, it should generally be viewed as a multidimensional domain.

However, Delizonna et al. (2001) demonstrated that men too can exhibit a lack of concordance between measures of physiological and subjective sexual arousal. They conducted a study in which they used subjective and objective parameters of sexual arousal to compare the experience of a mechanically attained erection, through the use of a penile vacuum versus an erotically stimulated erection. Men without

sexual dysfunction were asked to reach a full erection either by using a penile vacuum or by self-stimulating while watching an erotic video. Although erection was successfully attained through use of the penile vacuum, it was not accompanied by a subjective state of sexual arousal. Thus, the mere physical presence of an erection did not seem to evoke mental feelings of sexual arousal, making attention to the psychosexual components of men's sexual experience a critical component of their sexual response cycle. These findings seem to suggest that for men, just like for women, sexual arousal and desire are multidimensional constructs. Indeed, Nobre et al. (2004) reported that men with trait negative affect about sex displayed lower subjective awareness of arousal along with higher physiological arousal in response to a sexual stimulus, whereas men with trait positive affect showed high concordance between physiological and subjective arousal.

Another study examining the neuroanatomical correlates of visually evoked sexual arousal in human males led to the proposal of a neurobehavioral model of sexual arousal, comprising perceptual-cognitive, emotional, motivational, and physiological components (Stoleru et al., 1999). For the purpose of their study, the authors developed a Likert-type rating scale that assessed perceived sexual arousal. The authors suggested that the cognitive component comprises a process of appraisal through which a stimulus is categorized as a sexual incentive and qualitatively evaluated as such. The emotional component includes the specific hedonic quality of sexual arousal, which refers to the pleasure associated with arousal and with the perception of specific bodily changes, such as vaginal lubrication or penile erection. The motivational component was described as comprising of the processes that direct behavior to a sexual goal, such as an urge to express overt sexual behavior. The physiological component, which includes autonomic and endocrinological factors,

such as respiratory or cardiovascular functioning, results in a physiological readiness for sexual behavior. This study once again suggests the idea that, just like in women's sexual response cycles, subjective/psychological factors are crucial in men's sexual response cycles, albeit these factors may be experienced differently by each gender.

Mah and Binik (2005; 2002) also argued in favour of a multidimensional model of the psychological experience of orgasm applicable to both men and women. These authors originally described a two-dimensional model, which included both a cognitive-affective dimension and a sensory dimension (Mah & Binik, 2002). They argued, however, that by separating the cognitive-affective dimension into two separate and distinct dimensions would most likely provide a more powerful three-dimensional model that would allow researchers to study the impact of one dimension on the other and to evaluate change in one dimension independent of changes in the others. In a latter study, Mah and Binik (2005) again suggested that the experience of orgasm in men and women, including orgasm pleasure and satisfaction, is related to cognitive-affective aspects of the experience, to an even greater extent than to the sensory aspect. Their findings also suggested that relationship satisfaction played an important role in the orgasm experience, thereby reiterating that psychosocial factors play a crucial role in this phase of the human sexual response cycle, and that the phases of this cycle are best described in multidimensional terms.

Based on these findings, Mah (2002) once again argued for a three-dimensional model of the orgasm experience applicable to both genders and involving sensory, evaluative, and affective dimensions of this phase of the human sexual response cycle. Based on this model, he developed an adjective-rating questionnaire called the McGill-Mah Orgasm Questionnaire which adequately describes the three-

dimensional nature of both men and women's orgasms, along with the evaluative and affective differences in the orgasm experience as a function of sexual context.

Rook and Hammen (1977) proposed a cognitive perspective on the experience of sexual arousal in which they present an analysis of specific cognitive events such as labelling of physiological arousal, monitoring of sexual arousal cues, varieties and consequences of self observations and effects of expectations, which all play a role in affecting the way interpersonal events and physiological factors are experienced and perceived as sexual. They emphasize the idea that theories of sexual arousal should take into account the complexity and multi-dimensionality of the construct rather than focusing on single factors.

Subjective sexual arousal has been defined, from the perspective of Mosher's (1980) involvement theory, as the presence of awareness of physiological sexual arousal, sexual affects, and affect-cognition blends. This awareness amplifies the perception of sexual stimulation, sexual cognitions, sexual behaviors, and physiological responses in a positive feedback loop (Mosher et al., 1988). Subjective sexual arousal is said to be inherently psychologically complex and motivationally mediated, as opposed to physiological aspects of sexual arousal, which can be directly defined and measured via vaginal photoplethysmographs and penile strain gauges for example.

Mosher et al. (1988) underline the importance of having clearly defined operational definitions when measuring or developing theory related to a construct, such as sexual arousal or sexual desire. Bentler and Abramson (1981) suggest that a single factor only rarely captures the essence of an important construct and that it is usually best to consider the multiple factors involved when describing, defining, or measuring such constructs. Cook (1985) discussed convergent operationalism, which

promotes the use of multiple factors in defining an important construct because each factor is in and of itself imperfect, and because it will allow one to provide convergent validity of the construct while also testing its theoretical applications.

### **Gender differences in experimentally provoked sexual desire and arousal**

Sexual fantasy and erotic films have often been used to provoke sexual arousal and desire in experimental settings. Studies that have compared the frequency and content of men and women's sexual fantasies have documented important gender differences. For example, men have been reported to be more liberal and more likely to engage in sexual fantasy and be sexually aroused by their fantasies than women (Ellis & Symons, 1990; Halderman et al., 1985). However, women's fantasies are more likely than men's to include descriptions of the context, setting, and feelings of a sexual encounter, and to contain familiar partners (Ellis & Symons, 1990). Women's fantasies have been reported to contain more affection and commitment, and to emphasize themes of tenderness and emotionality than those of men. Women are also more likely than men to imagine themselves as recipients of sexual activity while men tend to imagine their sexual partners as the recipients. Women are also more likely than men to be more emotionally than physically aroused by their fantasies. Men's sexual fantasies are reported to be more specific in content with greater attention to details related to physical appearance of their sexual partners, sexual acts, and to include a greater variety of visual content than women's fantasies. Men also tend to have more fantasies involving strangers, multiple partners, or anonymous partners, than women (Ellis & Symons, 1990). In summary men's fantasies seem to be more frequent, more visually and sexually specific, and more active and promiscuous,

whereas women's fantasies tend to be more contextual, intimate, emotional, and passive.

Gender differences in response to erotic films have also been demonstrated, with women generally reporting less arousal than men (Murnen & Stockton, 1997). In their meta-analysis reviewing 46 studies, Murnen and Stockton (1997) suggested that possible social and biological influences could account for this finding, including acculturation, experience with and availability of erotic material, and the attitudes of people toward such material. Counter-evidence to this gender difference has also been demonstrated, however, when women view a "female-centered" erotic film that rather than a typical mainstream film (i.e., presumably "male-centered"). Women reported significantly more sexual arousal while viewing a female-centered film relative to a male-centered film (Laan et al., 1994). Further support for this came from a study that explored gender differences in sexual responsiveness to erotic films that had been selected for their differential appeal to men and women (Janssen et al., 2003). Overall, men found the film segments more sexually arousing than women, but that gender differences in arousal were negligible for female-selected clips, but substantial for male-selected segments. In addition, the study revealed that when men and women imagined themselves as a participant in the film, it contributed positively to ratings of sexual arousal. This last finding is consistent with that of Koukounas and Over (1997), who suggested that males' subjective sexual arousal and penile tumescence were greater when they employed a participant-oriented rather than a spectator-oriented attentional focus while viewing an erotic film segment.

If sexual arousal and desire are to be perceived of as multidimensional constructs, how can they be studied objectively and subjectively? What measures are currently available?

### **Objective measures of sexual arousal**

Physiological sexual arousal in women is characterized by vaginal lubrication and increases in vaginal blood flow. Generally, physiological sexual arousal in women is measured with three primary psychophysiological assessment devices that rely on indirect measures of vasocongestion, including the vaginal photoplethysmograph, devices that indirectly measure heat dissipation, and pulsed-wave Doppler ultrasonography. The most commonly used of these devices is the photoplethysmograph which can detect differences between engorged and unengorged vaginal tissues through the use of a light reflectance method (Heiman, 1977; Meston, 2000). Physiological sexual arousal in men is characterized by penile tumescence and by the presence of an erection, which results from blood flowing toward and remaining in the penis. It can be measured objectively through penile strain gauges. These psychophysiological tools have provided a wealth of data on physiological arousal however, such instruments can sometimes be considered invasive and not always standardized in multi-centre, clinical outcome studies.

### **Subjective measures of sexual arousal**

The tools most commonly used to assess subjective components of sexual arousal and desire include event-logs and diaries, interview assessments, and self-administered questionnaires (SAQ) (see Rosen, 2002 for review). Event-logs and diaries are usually completed after each instance of sexual activity to assess sexual frequency, functioning, and satisfaction. They are deemed sensitive and reliable measures in areas with discrete and observable endpoints such as number of attained erections or orgasms for example. However, Althof et al. (2005) present evidence to



suggest that when it comes to measuring more multi-dimensional, subjective areas of sexual functioning, SAQs are more reliable and sensitive tools.

Concerns regarding the use of event-logs and diaries are related to issues of intrusiveness, potential insensitivity to treatment outcome, as well as issues of compliance in filling them out. The logs are sometimes filled out days after the sexual encounter, and have even been shown to have sometimes been filled out prior to the sexual event. In terms of psychometric theory, diaries are also usually forms of nominal measurements asking yes/no types of question (e.g., did you have an erection hard enough to achieve penetration?). In terms of level of measurement precision, nominal scales are considered the least accurate and the least sophisticated. Interview protocols are also widely used in clinical settings, although they are deemed cumbersome in research settings that focus on outcome and efficacy studies.

Having established the importance of subjective components of sexual arousal and desire in both men and women, the availability of measurement scales that allow for valid and reliable assessments of such subjective components is crucial. Because subjective sexual arousal and desire are theoretically conceived of as being multi-dimensional constructs, and because subjective experiences are intrinsically difficult to measure, they are usually best captured by SAQ measures. Despite their shortcomings, SAQs are for the most part the measurement tool of choice when assessing complex aspects of human experience (Derogatis & Coon, 1993).

### **Psychometric theory of psychological measures**

In terms of psychometric theory, self administered sexuality questionnaires are usually designed on an ordinal or an interval scale. Ordinal scales are more sophisticated than nominal scales in that they possess the characteristic of “greater

than”, meaning that they allow to rank order data (e.g., from most to least favorite colors). Interval scales are even more sophisticated in that they possess equal intervals between scale numbers (e.g., IQ scores or Celsius temperature scale). The most sophisticated level of precision in measurement scales is obtained through use of ratio scales, which not only possess equal intervals between scale numbers but also possess a so-called “true zero”, as may be the case with a Likert-scale (Glass & Stanley, 1970). A ratio scale can for example measure the presence and degree of intensity of subjective sexual desire or arousal as well as the complete absence of subjective sexual desire and arousal.

An SAQ measure which uses a ratio scale allows investigators to better capture the complexity and nuances of a subject’s subjective experience because the subject can choose from several response options. Also, Likert-type SAQ data can be submitted to all kinds of complex forms of statistical analyses (Althof et al., 2005). Needless to say, scale precision is directly and inversely related to measurement error and therefore use of the most sophisticated measurement scales is preferable when possible. A limitation of SAQs is that a person may not accurately report his or her subjective experiences, however this limitation is intrinsic to the measurement of a subjective construct. In order for an SAQ measure to be considered psychometrically sound, it must demonstrate internal reliability and consistency, along with face, construct, convergent, and discriminant validity. The measure must also show sensitivity, specificity and responsiveness when used as a diagnostic assessment tool in clinical populations.

Measurement error is one of the biggest threats to valid and reliable research findings therefore Mosher et al. (1988) conducted a statistical evaluation of the psychometric properties required for valid measurement of subjective sexual arousal.

The authors suggest that, “ a multiple indicator approach, using internally consistent scales, can, when cast in a correlational matrix somewhat similar to a multitrait-multimethod matrix, yield considerable information about stability, reliability, and validity of multiple measures of subjective sexual arousal”. Therefore, by administering several psychometrically sound self-administered assessment scales of subjective sexual desire and arousal along with a newly developed multidimensional assessment scale of the same constructs, one would be able to, through obtaining a correlation matrix of mean scores on all of these different scales across different erotic conditions, evaluate the psychometric validity and reliability of this new scale.

When a SAQ measures several dimensions of a construct, meaning that it is considered to be a multi-dimensional measure, a factor analysis can allow one to determine how many of these dimensions or factors exist within the larger scale. Items of the scale load onto each other when they belong to the same factor. Through an intercorrelation matrix, it is possible to determine which items correlate highly with each other to form a particular factor or subscale. The correlation coefficients provide a gauge of the degree of similarity that exists between items of the scale, in other words, the degree to which the items share something in common. The squared value of a correlation coefficient, which is called a coefficient of determination, is interpreted as the proportion of variance shared by two items. Shared variance is another way of quantifying how much two items have in common.

Factor analysis examines the intercorrelation matrix to obtain a smaller matrix of a few important and meaningful factors or subscales. These factors should, to some degree, be independent of each other, each reflecting a different dimension of the same construct. When developing a measurement scale, the decision to keep or to discard an item can be made based on theory or logic. A commonly accepted rule of

thumb is that an item should possess a factor loading  $\geq .30$  to be retained. Each factor explains part of the variance in the construct being measured, and all factors put together provide a value of total variance explained in the construct by the scale in its entirety.

The factor structure of a SAQ can be very useful in informing theory regarding a particular construct. For example, as mentioned earlier, sexual arousal has often been described and defined through mostly physiological observations although it is now a widely accepted point of view that sexual arousal is in fact a complex construct which is best described in multi-dimensional terms, which take into account all of the biopsychosocial factors involved. If, for example, through factor analysis, a SAQ is found to be made up of three main factors which all together explain an important portion of the total variance explained in the construct that it measures, then this factor analysis has provided clues into the need for a theory that would take into account the multidimensional nature of that construct. More particularly, it would indicate that this construct is made up of at least three important factors or dimensions.

In terms of psychometric theory of psychological measurement, a SAQ is deemed internally consistent and reliable if it can consistently measure the same construct from one time to another. A reliability coefficient is considered to be good if it falls somewhere between .70 and .80 according to Kaplan et al. (1997). A commonly used statistic to obtain a reliability coefficient is called Cronbach  $\alpha$  coefficients, which gives the lowest estimate of reliability that can be expected.

Furthermore, a SAQ is considered valid when it measures the construct that it says it should measure. It is important to note that a measure can be reliable without being valid. In order to be considered psychometrically sound however, the measure

should possess both good reliability and validity. Several types of validity exist. Content validity refers to whether a measure has an adequate representation of the conceptual domain that it is measuring. This type of validity relates to whether the items in the scale are appropriate for the domain of interest. Content validity is a function of logic rather than being determined through statistical testing. Another type of validity is face validity, which refers to whether a scale appears to measure what it says it measures. Predictive validity looks at the correlation between scores obtained in the present and future outcome. A test has good predictive validity when it can successfully predict future outcome.

Another type of validity is concurrent validity, which looks at the correlation between scores on two or more measures that evaluate aspects the same construct. There are two types of evidence of concurrent validity, including convergent validity, which is when a measure correlates well with other measures believed to assess the same construct, and divergent validity, which evaluates the extent to which the measure is independent from other related measures of the same construct. In other words, a measure should correlate with other similar measures while also measuring something unique. The measure should do more than simply duplicate what other measures already assess. Construct validity is the extent to which a measure assesses a psychological trait or construct. It is a process that demonstrates the relation between the measure under study and other measures that assess aspects of the same construct.

When evaluating the psychometric properties of a SAQ to be used with clinical populations for diagnostic purposes, it is also important to look at the measure's level of sensitivity, which is its capacity to yield a positive result for a person with the diagnostic condition, also called a true positive, and specificity, which is the measure's capacity to yield a negative result for a person without the diagnostic

condition, known as a true negative. Sensitivity and specificity are types of external validity, which will not be further discussed being that clinical applications are not within the scope of the present thesis.

According to Talmadge et al. (1990), a good measure of human sexuality should be brief, efficient, simple, cost-effective, and easy to administer and to score. A good measure should also address a specific construct, should be useful in research or clinical settings, and should possess good psychometric properties. As mentioned earlier, the tools most commonly used to assess the physiological or subjective components of sexual arousal and desire include event-logs and diaries, interview assessments, physiological measures, and self-administered questionnaires. Several psychometric, self-administered questionnaires exist, including the Golombok-Rust Inventory of Sexual Satisfaction (Rust & Golombok, 1986), the Sexual Interaction Inventory (LoPicollo et al., 1974), and the Derogatis Sexual Functioning Inventory (Derogatis, 1997). Recently developed scales also include the Female Sexual Function Index (FSFI), which assesses key factors involved in female sexual function, including, desire, subjective arousal, orgasm, and pain (Rosen et al., 2000), and the Sexual Desire Inventory (SDI), which measures sexual desire as a primarily cognitive construct, focusing mostly on the amount and strength of thought that is dedicated to pursuing a sexual stimulus (Spector et al., 1996).

The focus of these measures, however, is often on the couple, rather than the individual, sometimes even being gender-specific. They also generally provide an overview of a person's general level of sexual functioning, without focusing specifically on sexual arousal or desire. When they do focus specifically on one of these constructs, these measures tend to fail to reflect their multidimensional nature. Given what is currently available, and the limitations of each of these methods of

assessment, one of the aims of this thesis was to develop a multidimensional assessment scale that would simultaneously evaluate different components of the subjective experience of sexual desire and arousal in men and women, as well as to evaluate its psychometric properties.

### **Structure of the present thesis**

The present thesis is composed of three chapters. The first chapter has been published (Toledano & Pfaus, 2006), the second is currently submitted, and the third is in preparation. Following are brief descriptions of the studies conducted in each chapter, along with their findings.

## CHAPTER 1

Chapter 1 is composed of two main studies. The aim of the first study of Chapter 1 was to develop a multidimensional assessment scale for the subjective experience of sexual desire and arousal in men and women, and to assess its psychometric properties. To begin, a list of adjectives and phrases that may reflect different aspects of the experience of subjective sexual desire and arousal was generated. These were compiled following extensive discussions in random internet sex chat rooms and through one-on-one interviews. Subsequently, a descriptor-based, self-administered questionnaire was developed using the McGill Pain Questionnaire [15] and the McGill-Mah Orgasm Questionnaire (Mah, 2002) as models. We refer to this as the Sexual Arousal and Desire Inventory (SADI).

In this first study, a total of 390 participants, mostly Canadian undergraduate students in their twenties, rated 54 adjective or phrase descriptors as they applied to their normative experience of sexual arousal and desire, on a 0-5 point Likert scale. Principal component analyses (PCAs) were then conducted to derive factors that the descriptors loaded onto. These factors were then analyzed as subscales of the SADI and gender differences in ratings on each subscale were assessed. Finally, the internal validity of the scale was statistically analyzed.

Results of the first study showed that the descriptors loaded onto four factors that accounted for 41.3% of the total variance explained. Analysis of the descriptor loadings broke these factors down into an Evaluative factor, a Physiological factor, a Motivational factor, and a Negative factor. Factor analysis demonstrated that all items of the SADI loaded onto one or two of these four factors with factor loadings  $\geq .30$ , confirming the scale's validity. Men and women's subjective experiences of sexual desire and arousal on the Physiological and Motivational factors were not



significantly different, although on the Evaluative and Negative factors statistically significant differences were found between the genders. Mean scores on the Evaluative factor were higher for men than women, whereas mean scores on the Negative factor were higher for women than men. Internal consistency estimates of the SADI and its subscales confirmed strong reliability. This study showed that the SADI can be used as a statistically valid and reliable research tool to help establish an empirically based, normative perspective of the subjective experience of sexual arousal and desire in both men and women.

The second study of Chapter 1 further evaluated the psychometric properties of the SADI, and examined whether the different subscales of the SADI would be different when men and women used erotic fantasy versus exposure to an erotic film segment to generate increases in subjective arousal and desire. A total of eighty men and women were asked to complete the SADI after being presented with either a 3-minute female-centered erotic film segment that was rated as highly arousing by both women and men in a study conducted by Janssen et al. (2003), or following a 3-minute period of erotic fantasy, for which they were instructed to think about a sexual experience of their choice that would make them feel sexually aroused. To examine convergent validity, subjects were asked to complete 4 other scales that measure subjective sexual arousal, desire, attitude, or affect. To examine divergent validity, subjects were also asked to complete two additional measures, one related to depression and the other, to anxiety.

Results of this second study indicated that mean scores on the evaluative, motivational, and physiological subscales of the SADI were significantly higher in the fantasy condition than in the erotic clip condition. Women had significantly higher mean scores than men on the physiological subscale in the fantasy condition. Men had significantly higher means than women on a measure of affective sexual arousal and on a

measure of sexual desire in both the fantasy and the erotic film condition. Cronbach  $\alpha$  coefficients, as measured across the 2 erotic conditions, were robust for the SADI and its subscales, demonstrating excellent reliability. Evidence of convergent validity between the SADI subscales and other scales that measured the same constructs was also strong. Divergent validity was confirmed between the SADI subscales and the other scales that did not measure levels of sexual arousal, desire, or affect, such as the BDI-II. This study seemed to confirm that the SADI has excellent psychometric properties and that it can be used with confidence to evaluate different underlying aspects of subjective sexual arousal and desire in both men and women.

**The Sexual Arousal and Desire Inventory (SADI):  
A Multidimensional Scale to Assess Subjective Sexual Arousal and Desire**

Rachel R. Toledano, MA and James G. Pfaus, PhD

Center for Studies in Behavioral Neurobiology, Department of Psychology  
Concordia University, Montréal, QC, H4B 1R6 CANADA

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**Abstract**

*Introduction.* Sexual arousal and desire are integral parts of the human sexual response that reflect physiological, emotional, and cognitive processes. Although subjective and physiological aspects of arousal and desire tend to be experienced concurrently, their differences become apparent in certain experimental and clinical populations in which one or more of these aspects are impaired. There are few subjective scales that assess sexual arousal and desire specifically in both men and women.

*Aims.* 1) To develop a multidimensional, descriptor-based Sexual Arousal and Desire Inventory (the SADI) to assess subjective sexual arousal and desire in men and women; 2) to evaluate convergent and divergent validity of the SADI; and 3) to assess whether scores on the SADI would be altered when erotic fantasy or exposure to an erotic film was used to increase subjective arousal.

*Methods.* Adult men and women (N=195/gender) rated 54 descriptors as they applied to their normative experience of arousal and desire on a 0-5 point Likert scale. Another sample of men and women (n=40/gender) completed the SADI and other measures after viewing a 3-min female-centered erotic film or engaging in a 3-min period of erotic fantasy.

*Main Outcome Measures.* Principal components analyses derived factors that the scale descriptors loaded onto. These factors were categorized as subscales of the SADI and gender differences in ratings and internal validity were analyzed statistically. Factors were considered subscales of the SADI, and mean ratings for each subscale were generated and related to the other scales used to assess convergent and divergent validity. These scales included the Feeling Scale, the Multiple Indicators of Subjective Sexual Arousal, the Sexual Desire Inventory, and the Attitudes Toward Erotica Questionnaire, the Beck Depression Inventory-II and the Beck Anxiety Inventory.

*Results.* Descriptors loaded onto four factors that accounted for 41.3% of the variance. Analysis of descriptor loadings  $\geq .30$  revealed an Evaluative factor, a Physiological factor, a Motivational factor, and a Negative/Aversive factor based on the meaning of the descriptors. Men and women's subjective experiences of sexual desire and arousal on the Physiological and Motivational factors were not significantly different, although on the Evaluative and Negative factors statistically significant differences were found between the genders. Mean scores on the Evaluative factor were higher for men than women, whereas mean scores on the Negative factor were higher for women than men. Internal consistency estimates of the SADI and its' subscales confirmed strong reliability. Mean scores on the evaluative, motivational, and physiological subscales of the SADI were significantly higher in the fantasy condition than in the erotic clip condition. Women had significantly higher mean scores than men on the physiological subscale in the fantasy condition. Cronbach's  $\alpha$  coefficients demonstrated excellent reliability of the SADI subscales. Evidence of convergent validity between the SADI subscales and other scales that measured the same constructs was strong. Divergent validity was also confirmed between the SADI subscales and the other scales that did not measure levels of sexual arousal, desire, or affect, such as the BDI-II.

*Conclusion.* The SADI is a valid and reliable research tool to evaluate both state and trait aspects of subjective sexual arousal and desire in men and women.

*Key Words:* Sexual Arousal; Sexual Desire; Research Tool; Human Sexuality; Erotic Stimuli; Convergent Validity; Divergent Validity; Psychometric Analyses

## Introduction

Sexual arousal and desire are integral parts of the human sexual response. Although both components are likely experienced concurrently under normal circumstances (Pfaus, 2005), their differences become apparent in experimental and clinical populations in which one or both are impaired. This has led to successive renditions of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV-TR) (American Psychiatric Association, 2000) to include distinct definitions of sexual arousal and desire disorders. An overwhelming need for evidence-based conceptualizations of the human sexual response, which take into account the multiple factors involved, including interpersonal, religious, social, psychological and biological factors, has been identified (Basson, 2005; Basson et al., 2005; Basson et al., 2004; Lue et al., 2004). This multidimensional view of human sexuality has led to recommendations for revised definitions of sexual disorders found in the DSM-IV-TR. The current definitions focus mainly on the absence of sexual fantasies and sexual desire prior to sexual activity and arousal, however, the frequency of this type of desire is known to vary considerably among people without sexual complaints. DSM-IV definitions also focus on the presence of an erection in men and of genital swelling and lubrication in women, which have been shown to correlate poorly with subjective sexual arousal (Basson, 2005; Delizonna et al., 2001; Laan et al., 1994; Sakheim et al., 1984; Van Lussen & Laan, 2004), thus creating a lack of clear operational criteria in the DSM for the diagnosis of male or female sexual dysfunctions (Basson, 2005; Basson et al., 2005; Lue et al., 2004; Segraves, 1998). New definitions that would reflect the importance of the subjective experience of sexual encounters, along with the multidimensionality and interrelated nature of the factors involved in the human sexual response cycles are needed.

The current study used the DSM definitions as a template for defining sexual arousal and desire, while keeping in mind the nature of the debate regarding the current classification. Sexual arousal can be defined as increased autonomic activation that prepares the body for sexual activity and decreases the amount of sexual stimulation necessary to induce orgasm. This includes both parasympathetic increases in blood flow to genital tissues and sympathetic increases in blood flow to striated and smooth muscles that participate in different sexual responses, such as increased heart and breathing rate. Sexual arousal also includes a central component that increases neural “tone” or preparedness to respond to sexual incentives. This concept was defined as “arousability” by Whalen (1966), and may form around an intricate interaction of hormone priming and noradrenergic activation of different regions of the brain. In turn, awareness of those peripheral and central sensations constitutes subjective sexual arousal.

In contrast, sexual desire can be defined as “wanting” or “craving” sexual activity or fantasy, as defined originally by Robinson and Berridge (1993) for the desire to obtain drug reward, and extended to the willingness to obtain sexual rewards (Pfaus, 1999; Pfaus et al., 2003). Although subjective assessments of sexual desire and arousal reflect an awareness of physiological state changes, they are also likely to reflect cognitive evaluations of such changes and their emotional meaning (Basson, 2005; Delizonna et al., 2001). Indeed, strikingly similar multidimensional models of sexual arousal and desire that comprise interrelated and coordinated perceptual-cognitive, emotional, motivational, and physiological components were proposed recently for women by Basson et al. (Basson, 2005; Basson et al., 2005; Basson et al., 2004) and for men by Stoleru et al. (Stoleru et al., 2003 ; Stoleru et al., 1999).

The tools most commonly used to assess the physiological or subjective components of sexual arousal and desire include event logs and diaries, interview assessments, physiological measures, and self-report questionnaires (see Rosen, 2002 for review). Event logs and diaries are usually completed after each instance of sexual activity to assess sexual functioning and satisfaction; however, to date, there have been few standardized or validated forms of such logs (Rellini & Meston, 2006). Interview protocols are used widely in clinical settings, although they are deemed cumbersome in research settings. Physiological measures, such as data from vaginal photoplethysmographs and penile strain gauges, have provided a wealth of data on physiological arousal; however, such instruments are invasive and not always standardized. In the case of vaginal photoplethysmographs, it is virtually impossible to place the device in the same position every time in the same individual, making multiple tests difficult to interpret. Moreover, physiological arousal does not always correlate with subjective awareness of sexual arousal or desire. This is especially true in women (Alexander et al., 2004; Basson et al., 2005; Basson et al., 2004; Goetsch, 2005; Laan et al., 2002; Meston & Gorzalka, 1996; Pfaus, 1999; Van Lussen & Laan, 2004) but has also been observed in men depending on their degree of awareness of erectile cues (Delizonna et al., 2001; Sakheim et al., 1984).

Several psychometric, self-report questionnaires exist for both basic and clinical research, including the Golombok-Rust Inventory of Sexual Satisfaction (Rust & Golomb, 1986), the Sexual Interaction Inventory (LoPiccolo & Stegar, 1974), and the Derogatis Sexual Functioning Inventory (Derogatis, 1997; Derogatis, 1975). Recently-developed scales also include the Female Sexual Function Index (FSFI), which assesses key factors involved in female sexual function, including, desire, subjective arousal, orgasm, and pain (Rosen et al., 2000; Turna et al., 2005), and the



Sexual Desire Inventory (SDI), which measures sexual desire as a primarily cognitive construct, focusing on the amount and strength of thought that is dedicated to pursuing a sexual stimulus (Spector et al., 1996). These measures provide an overview of a person's general level of sexual functioning, without focusing specifically on sexual arousal or desire. However, the focus of these measures is often on the couple, rather than the individual, and at least one is entirely gender-specific. Despite a growing body of evidence of the multidimensional nature of sexual desire and arousal, much of the research conducted on sexual arousal has been aimed at understanding peripheral and physiological components (e.g., penile or vaginal blood flow or volume). In the case of sexual desire, the objective focus has been mainly on measures of behavioral frequency, such as masturbation or intercourse frequency, incidence of sexual thoughts, and number of sexual contacts leading to orgasm (Leiblum & Rosen, 1988).

Sexual arousal and desire can be provoked in experimental situations by engaging in sexual fantasy and watching erotic films. Differences in stimulus type and intensity can be correlated with differences in objective and/or subjective assessments of arousal and desire, and therefore can also aid in the development of experimental and clinical assessment tools.

Sexual fantasy has been defined as "almost any mental imagery that is sexually arousing or erotic to the individual" (Leitenberg & Henning, 1995). The thoughts people engage in can either enhance or inhibit sexual desire and arousal, and sexual thoughts can be arousing even in the absence of physical stimulation (Leitenberg & Henning, 1995). The content of a person's sexual imagery is normally adapted to ensure achievement of sexual arousal. Because fantasies are typically private, people can engage in any type they enjoy, without fear of rejection or

embarrassment. Sexual fantasies are believed to vary with feelings about sexuality, perceived opportunities for sexual encounters, and the mental and physical well-being of the person (Halderman et al., 1985). Engaging in sexual thoughts and imagery increase subjective sexual arousal, and arousal levels correlate positively with the vividness and content of the imagery in the absence of direct erotic stimulation (Smith & Over, 1987).

Studies that have compared the frequency and content of men and women's sexual fantasies have documented important gender differences. For example, men have been reported to be more likely to engage in sexual fantasy and be sexually aroused by their fantasies than women (Ellis & Symons, 1990; Halderman et al., 1985). However, relative to men, women's fantasies are more likely to include descriptions of the context, setting, and feelings of a sexual encounter, and to contain familiar partners (Ellis & Symons, 1990). Women's fantasies have been reported to contain more affection and commitment, and to emphasize themes of tenderness and emotionality than those of men. Women are also more likely than men to imagine themselves as recipients of sexual activity while men tend to imagine their sexual partners as the recipients. Women are also more likely than men to be more emotionally than physically aroused by their fantasies. Men's sexual fantasies are reported to be more specific in content with greater attention to details related to physical appearance of their sexual partners, sexual acts, and to include a greater variety of visual content than women's fantasies. Men also tend to have more fantasies involving strangers, multiple partners, or anonymous partners, than women (Ellis & Symons, 1990). In summary men's fantasies seem to be more frequent, more visual and sexually specific, and more active and promiscuous, whereas women's fantasies tend to be more contextual, intimate, emotional, and passive.

Erotic films also elicit sexual arousal and desire. Such films typically induce higher levels of genital and subjective sexual arousal than stories, slides, or fantasy instructions (Heiman, 1977; Koukounas & Over, 1997; Laan & Everaerd, 1995). Smith and Over (1987) found that the level of subjective sexual arousal induced through an erotic film was significantly higher than that induced by fantasy. Moreover, it was suggested that both men and women report greater arousal in response to explicit sexual stimuli such as sexual scenes involving intercourse, compared to stimuli showing more romantic content without explicit sexual scenes (Heiman, 1977). Erotic film segments also have the advantage of being commercially available, easily edited, and standardized, and are widely employed in psychophysiological studies on sexual arousal and desire (Koukounas & McCabe, 1997; Laan & Everaerd, 1995; Laan et al., 1994).

Gender differences in responses to erotic films exist, with women generally reporting less arousal than men (Murnen & Stockton, 1997). In their meta-analysis reviewing 46 studies, Murnen and Stockton (1997) suggested that possible social and biological influences could account for this finding, including acculturation, experience with, and availability of, erotic material, and the attitudes of people toward such material. Counter-evidence to this gender difference has been demonstrated, however, as women report significantly more sexual arousal while viewing a “female-centered” film relative to a more mainstream “male-centered” film (Laan et al., 1994). Further support for this came from a study that explored gender differences in sexual responsiveness to erotic films that had been selected for their differential appeal to men and women (Janssen et al., 2003). Overall, men found the film segments more sexually arousing than women; however, gender differences in arousal were negligible for female-selected clips, but substantial for male-selected clips. In

addition, the study revealed that when men and women imagined themselves as a participant in the film, it contributed positively to ratings of sexual arousal. This last finding is consistent with those of Koukounas and Over (1997), who suggested that males' subjective sexual arousal and penile tumescence were greater when they employed a participant-oriented rather than spectator-oriented focus while viewing an erotic film.

The main purpose of the present study was to develop a multidimensional assessment scale that would evaluate the subjective experience of sexual arousal and desire in men and women. In the first phase, we generated adjectives and phrases that reflect different aspects of the experience of sexual arousal and desire. These were summed into a descriptor-based, self-rating questionnaire, using the McGill Pain Questionnaire (Melzack & Torgerson, 1971) and the Orgasm Rating Scale (Mah & Binik, 2002) as models. The intercorrelations of the descriptors were subjected to factor analysis to derive factors that represented subscales of the inventory, which were further evaluated for internal validity.

In the second phase, we evaluated further the psychometric properties the SADI, including its reliability, convergent validity, and divergent validity. To evaluate convergent and divergent validity, correlations were made between the SADI subscales and participant scores on the Feeling Scale (FS) (Byrne et al., 1974), the Multiple Indicators of Subjective Sexual Arousal (MISSA) (Mosher et al., 1988), the Sexual Desire Inventory (SDI) (Spector et al., 1996), the Attitudes Toward Erotica Questionnaire (ATEQ) (Lottes et al., 1993), the Beck Depression Inventory (BDI-II) (Beck et al., 1996), and the Beck Anxiety Inventory (BAI) (Beck et al., 1988) following a 3-minute period of sexual fantasy or the viewing of a 3-min erotic film segment. Thus, the SADI was used in the first phase as a "trait" measure of normative

sexual arousal and desire in retrospective analyses, whereas the second phase examined whether it could be used as a “state” measure of the arousal and desire provoked by the different stimulus conditions.

## **Part A - Development of the SADI**

### **Methods A**

#### *Participants*

Participants were recruited by word of mouth, in undergraduate and graduate classes at Concordia University in Montreal, and through an information booth posted in the same university. Questionnaires were filled out in paper-pencil form either individually in the privacy of a room in a laboratory or in large groups in university classrooms. Exclusion criteria included reporting a score of 3, 4, or 5 (often to always) on a scale from 0 to 5 (0 = “never”, to 5 = “always”) to the question, "Do you experience difficulty engaging in sexual activity?" Participants were also asked to rate their level of fluency in the English language on a scale from 0 to 5 (0 = “very poor”, to 5 = “very fluent”). Participants who rated their level of English fluency as lower than 3 were excluded from the study. No incentives were provided for participation. All participants were assured of anonymity and confidentiality of responses and signed a participant consent form. All procedures were approved by the Concordia University Human Research Ethics Committee.

#### *Preliminary descriptor generation*

A list of 86 English descriptors was compiled by interviewing approximately 500 men and women in the general population, in person and via random internet sex chat rooms, about words or phrases that they would use to subjectively describe their positive and negative experiences of sexual arousal and desire (as in Mah & Binik, 2002; Melzack & Torgerson, 1971). Item generation continued until no new words

were suggested in the last 10 individuals questioned. Items that described negative experiences of sexual arousal and desire, or that were opposite to those items deemed to describe a positive subjective experience, such as "aversion," "repulsion," and "displeasure," were included to discern those participants that answered opposite items in the same direction, and to reflect aversive or inhibitory components of sexual desire and arousal that may be experienced.

The original list contained 67 positive and 19 negative terms. Two identical lists with these descriptors were given to 176 female and male undergraduates (N=88/gender), who were asked to think of their normative sexual experiences and assign a rating of each word as it applies. One list asked the subjects to rate the descriptors with reference to their sexual arousal (defined as "the physiological responses that accompany or follow sexual desire and pleasure"), whereas the other list asked them to rate the descriptors with reference to sexual desire (defined as "an energizing force that motivates a person to seek out or initiate sexual contact and behavior"). Ratings were assessed on 5-point Likert scales for each term that ranged from 0 = "does not describe at all" to 5 = "describes it perfectly".

Principal components analysis (PCA) with varimax rotation, using SPSS for Windows (Version 13.0), was employed to obtain statistically-based factors and to determine the descriptors that were found to be statistically relevant to each factor with factor loadings  $\geq 0.30$  (see below) (Tabachnick & Fidell, 2001). Pairwise deletion was used for missing values in participants' descriptor ratings. This first pass revealed 4 factors that accounted for 37.8% of the overall intersubject variance for all descriptors, and a total of 54 words with factor loadings of 0.3 or greater *for both lists*. There were no differences between the lists in terms of the factors generated or the factor loadings for the words. Despite our explicit differentiation of sexual arousal

and desire, more than 90% of the subjects asked why they were filling out the same form twice. Accordingly, we compiled the 54 descriptors into a single list for sexual arousal *and* desire. Our introduction to the inventory retained the different definitions but noted that these two aspects co-occur in sexual situations (see Appendix A for the SADI in its final form).

#### *Final descriptor list*

The final form of the SADI was composed of two parts. The first part gathered demographic information about the participants, such as sex, age, nationality, religion, and sexual orientation. In the second part of the SADI, subjects were asked to rate the list of 54 descriptors as they pertained to their personal experiences of sexual desire and arousal. Participants were provided the same definitions of sexual arousal and desire as an introduction to the SADI, and were asked to remember as best they can the last time they felt sexual arousal and desire. They were then instructed to rate each descriptor on the same 0-5 Likert scale (0 = “does not describe it at all”, to 5 = “describes it perfectly”) as it applied to their sexual experience keeping the definitions provided in mind. A total of 390 participants (195 men and 195 women) between the ages of 16 and 62 years volunteered to complete the final form of the SADI. The majority of the sample was composed of young, Canadian, heterosexual, undergraduate students (Table 1).

#### **Results A**

Principal components analysis (PCA) with varimax rotation was conducted as in the preliminary factor analysis, using SPSS for Windows (Version 13.0). Pairwise deletion was used for missing values in participants' descriptor ratings. Table 2 contains a list of the descriptors and their factor loadings. Table 3 provides a list of the means and SDs for the 54 descriptors used in the SADI.

PCA identified the presence of four factors named on the basis of the descriptors that clustered in the factor. The first represented an “Evaluative” (or cognitive-emotional) component, the second reflected a “Physiological” (autonomic and endocrine) component, the third represented a “Motivational” component, and the fourth reflected a “Negative/Aversive” (or inhibitory) component of sexual desire and arousal. The percent of total variance explained by the four factors was 41.3%, with the Evaluative factor accounting for 15.6%, the Physiological factor accounting for 9.8%, the Motivational factor accounting for 4.8%, and the Negative factor accounting for 11.1%. All of the 54 descriptors retained in the SADI loaded onto at least one of the four factors (Table 4).



**Table 1**

Demographic information for the 390 participants in Study 1 Part A

	<u>All Participants</u>	<u>Women</u>	<u>Men</u>
Mean Age	22.97 (SD = 5.52)	23.18 (SD = 5.21)	22.75 (SD = 5.82)
Age Range	16 to 62	17 to 50	16 to 62
Religion (number of participants)			
Catholicism	155	84	71
Protestantism	46	28	18
Judaism	87	35	52
Islam	9	6	3
Other	33	15	18
No Religion	52	24	28
Level of Education completed (number of participants)			
Elementary School	3	0	3
High School	55	17	38
College or Cegep	93	22	71
Trade School	9	3	6
Undergrad Program	220	150	70
Graduate Program	9	3	6
Postgraduate Program	1	1	0
Sexual Orientation (number of participants)			
Heterosexual	365	184	181
Homosexual	14	6	8
Bisexual	11	6	5
Average Number of Times Masturbate/Week			
0	144	99	45
1-4	196	87	109
5-8	33	5	28
9 or more	17	5	12

(Table 1 continued)

Demographic information for the 390 participants

	<u>All Participants</u>	<u>Women</u>	<u>Men</u>
Average Number of Times Sexual Intercourse/Week			
0	100	57	43
1-4	225	110	115
5-8	52	22	30
9 or more	13	7	6
Average Number of Times Other forms of Sex Play/Week			
0	134	71	63
1-4	189	98	91
5-8	45	14	31
9 or more	22	13	9
Average Number of Times Think about Sex/Week			
0	3	3	0
1-5	105	85	20
6-10	95	52	43
10-15	48	25	23
15 or more	139	31	108

**Table 2**  
Factor loadings for the 54 descriptors of the SADI

<u>Variable</u>	<u>Evaluative</u>	<u>Negative/Aversive</u>	<u>Physiological</u>	<u>Motivational</u>
Anticipatory	0.232	-0.078	0.189	<b>0.518*</b>
Tingly all over	0.184	-0.031	<b>0.628*</b>	-0.062
Restrained	-0.123	<b>0.505*</b>	0.029	0.274
Anxious	0.277	<b>0.470*</b>	-0.190	0.143
Driven	<b>0.494*</b>	0.124	0.055	<b>0.381*</b>
Frigid	-0.069	<b>0.644*</b>	0.115	-0.185
Sensitive to touch	0.001	-0.033	<b>0.525*</b>	0.274
Sluggish	-0.025	<b>0.487*</b>	0.082	-0.052
Urge to satisfy	<b>0.377*</b>	-0.153	0.156	<b>0.457*</b>
Enthusiastic	<b>0.508*</b>	-0.173	0.182	0.177
Unhappy	-0.278	<b>0.574*</b>	0.031	0.263
Wet/Hard	<b>0.535*</b>	-0.085	0.294	0.031
Resistant	0.101	<b>0.574*</b>	-0.068	-0.317
Frustrated	-0.058	<b>0.452*</b>	0.001	<b>0.472*</b>
Lustful	0.216	-0.091	<b>0.449*</b>	<b>0.348*</b>
Entranced	0.202	0.066	<b>0.470*</b>	0.100
Aversion	0.070	<b>0.641*</b>	0.080	-0.159
Hot	<b>0.525*</b>	-0.035	<b>0.362*</b>	0.038
Tempted	<b>0.501*</b>	0.030	0.088	<b>0.310*</b>
Passionate	<b>0.516*</b>	-0.063	0.289	0.220
Fantasize about sex	<b>0.402*</b>	0.066	<b>0.317*</b>	0.195
Repressed	0.080	<b>0.705*</b>	-0.094	0.041
Disturbed	-0.112	<b>0.717*</b>	-0.041	0.175
Flushed	0.054	0.081	<b>0.599*</b>	0.154
Impatient	0.248	0.255	-0.015	<b>0.477*</b>
Sensual	<b>0.603*</b>	-0.148	0.296	0.048
Breathe faster/Pant	<b>0.369*</b>	0.113	<b>0.494*</b>	-0.110
Displeasure	-0.097	<b>0.565*</b>	0.060	-0.062
Stimulated	<b>0.566*</b>	-0.175	<b>0.332*</b>	0.082
Tingling in gut	0.211	0.135	<b>0.547*</b>	-0.157
Forget about all else	<b>0.398*</b>	-0.011	0.212	0.069
Repulsion	-0.111	<b>0.648*</b>	-0.038	0.075
Sexy	<b>0.712*</b>	-0.078	0.224	0.043
Quivering sensations	<b>0.332*</b>	0.148	<b>0.613*</b>	-0.055
Insensible	-0.024	<b>0.507*</b>	-0.073	0.204
Seductive	<b>0.640*</b>	-0.067	0.291	0.082
Genitals reddish	0.064	-0.005	<b>0.571*</b>	0.110
Unattractive	-0.176	<b>0.439*</b>	0.164	0.015
Good	<b>0.549*</b>	-0.182	0.047	0.036
Throbs in genital area	0.205	-0.076	<b>0.635*</b>	0.161
Warm all over	<b>0.533*</b>	-0.024	<b>0.539*</b>	-0.166

(Table 2 continued)

Factor loadings for the 54 Descriptors of the SADI

<u>Variable</u>	<u>Evaluative</u>	<u>Negative/Aversive</u>	<u>Physiological</u>	<u>Motivational</u>
Excited	<b>0.669*</b>	-0.090	<b>0.338*</b>	0.121
Tingling genital area	<b>0.372*</b>	-0.053	<b>0.668*</b>	-0.006
Uninterested	-0.247	<b>0.524*</b>	-0.123	-0.149
Pleasure	<b>0.657*</b>	-0.310	0.232	-0.038
Heart beats faster	<b>0.476*</b>	-0.032	<b>0.436*</b>	-0.130
Happy	<b>0.653*</b>	-0.063	0.138	-0.050
Angry	-0.076	<b>0.517*</b>	-0.022	0.194
Attractive	<b>0.705*</b>	-0.115	0.118	0.086
Powerful	<b>0.641*</b>	0.121	-0.101	0.016
Naughty	<b>0.480*</b>	0.206	-0.072	<b>0.372*</b>
Alluring	<b>0.363*</b>	0.002	0.203	<b>0.427*</b>
Lethargic	0.133	<b>0.550*</b>	0.078	-0.102
Horny	<b>0.571*</b>	0.018	0.067	<b>0.321*</b>

\* Descriptors with factor loadings  $\geq 0.300$

**Table 3**

Means and standard errors for the 54 descriptors of the SADI

---

<u>Variable</u>	<u>Mean</u>	<u>SEM</u>
Anticipatory	2.846	0.077
Tingly all over	2.754	0.077
Restrained	1.046	0.067
Anxious	2.218	0.086
Driven	3.020	0.074
Frigid	0.633	0.054
Sensitive to touch	3.279	0.075
Sluggish	0.590	0.052
Urge to satisfy	4.000	0.061
Enthusiastic	3.520	0.066
Unhappy	0.361	0.043
Wet/Hard	3.792	0.067
Resistant	0.9951	0.064
Frustrated	1.579	0.087
Lustful	3.551	0.069
Entranced	2.561	0.078
Aversion	0.600	0.053
Hot	3.548	0.069
Tempted	3.633	0.067
Passionate	3.956	0.061
Fantasize about sex	2.874	0.088
Repressed	1.544	0.088
Disturbed	1.015	0.073
Flushed	1.603	0.084
Impatient	2.618	0.081
Sensual	3.820	0.055
Breathe faster/Pant	3.297	0.072
Displeasure	1.220	0.087
Stimulated	2.933	0.090
Tingling sensation in gut	2.087	0.088
Forget about all else	2.759	0.083
Repulsion	0.864	0.069
Sexy	3.523	0.065
Quivering sensations	2.705	0.079
Insensible	0.600	0.053
Seductive	3.503	0.061
Genitals reddish	2.495	0.088
Unattractive	1.025	0.079
Good	2.844	0.098
Throbs in genital area	3.085	0.084

---

(Table 3 continued)

Means and standard errors for the 54 descriptors of the SADI

---

<u>Variable</u>	<u>Mean</u>	<u>SEM</u>
Warm all over	3.166	0.079
Excited	3.064	0.099
Tingling in genital area	3.387	0.077
Uninterested	0.383	0.041
Pleasure	3.630	0.070
Heart beats faster	3.359	0.075
Happy	2.951	0.098
Angry	1.182	0.090
Attractive	2.731	0.091
Powerful	3.054	0.076
Naughty	2.705	0.089
Alluring	2.064	0.087
Lethargic	1.610	0.092
Horny	3.810	0.071

---

**Table 4**

The 54 descriptors of the SADI and the factor(s) they load onto

---

<u>Evaluative</u>	<u>Negative/Aversive</u>	<u>Physiological</u>	<u>Motivational</u>
Driven	Restrained	Tingly all over	Anticipatory
Urge to satisfy	Anxious	Sensitive to touch	Driven
Enthusiastic	Frigid	Lustful	Urge to satisfy
Wet/Hard	Sluggish	Entranced	Frustrated
Hot	Unhappy	Hot	Lustful
Tempted	Resistant	Fantasize about sex	Tempted
Passionate	Frustrated	Flushed	Impatient
Fantasize about sex	Aversion	Breathe faster/Pant	Naughty
Sensual	Repressed	Stimulated	Alluring
Breathe faster/Pant	Disturbed	Tingling in gut	Horny
Stimulated	Displeasure	Quivering sensations	
Forget about all else	Repulsion	Genitals reddish	
Sexy	Insensible	Throbs in genital area	
Quivering sensations	Unattractive	Warm all over	
Seductive	Uninterested	Excited	
Good	Angry	Tingling in genital area	
Warm all over	Lethargic	Heart beats faster	
Excited			
Tingling genital area			
Pleasure			
Heart beats faster			
Happy			
Attractive			
Powerful			
Naughty			
Alluring			
Horny			

---

Pearson correlations between the 4 factors of the SADI were conducted as well and demonstrated statistically significant correlations between all 4 factors, as shown in Table 5.

PCA with varimax rotation, was also conducted for men and women separately. Tables 6 and 7 contain the list of descriptors and their factor loadings for men and women respectively. Tables 8 and 9 provide the means and SDs for the 54 descriptors used in the SADI as rated by men and women respectively. PCA identified the presence of the four interrelated factors for both men and women. For men, the percent of total variance explained by the four factors was 41.7%, with the Evaluative factor accounting for 17.0%, the Physiological factor accounting for 8.6%, the Motivational factor accounting for 4.6%, and the Negative/Aversive factor accounting for 11.6%. All of the 54 descriptors used in the SADI were statistically shown through PCA to belong to at least one of the four factors extracted for men.

For women, the percent of total variance explained by the four factors was 44.4%, with the Evaluative factor accounting for 12.4%, the Physiological factor accounting for 11.7%, the Motivational factor accounting for 6.2%, and the Negative/Aversive factor accounting for 12.4%. However, in the PCA conducted for women, 2 of the 54 descriptors used in the SADI were not statistically shown to belong to at least one of the four factors extracted. The descriptors “tingling in gut” and “forget about all else” both loaded onto the Evaluative factor at .274 and .251 respectively, demonstrating a trend toward belonging to this factor, although not reaching the minimum criteria of a factor loading  $\geq 0.3$ . These two descriptors loaded onto the Physiological and Evaluative factors, respectively, in the overall analysis with loadings  $> 0.3$ , and similarly in the analysis conducted for men. They were therefore retained in the final form of the SADI.



**Table 5**

Correlations between the 4 factors of the SADI

---

	<u>Evaluative</u>	<u>Negative</u>	<u>Physiological</u>	<u>Motivational</u>
<u>Evaluative</u>	1.00	-.309**	.849**	.631**
<u>Negative</u>	-.309**	1.00	-.154**	.221**
<u>Physiological</u>	.849**	-.154**	1.00	.540**
<u>Motivational</u>	.631**	.221**	.540**	1.00

---

\*\* Correlation is significant at the 0.01 level (2-tailed)

**Table 6**

Factor loadings for the 54 descriptors of the SADI (men)

<u>Variable</u>	<u>Evaluative</u>	<u>Negative/Aversive</u>	<u>Physiological</u>	<u>Motivational</u>
Anticipatory	0.262	0.109	0.040	<b>0.476*</b>
Tingly all over	0.263	-0.043	<b>0.546*</b>	-0.125
Restrained	-0.070	<b>0.602*</b>	-0.082	0.208
Anxious	<b>0.359*</b>	<b>0.468*</b>	-0.243	-0.054
Driven	<b>0.578*</b>	0.208	-0.069	0.214
Frigid	-0.004	<b>0.603*</b>	0.169	-0.264
Sensitive to touch	0.096	0.045	<b>0.440*</b>	<b>0.363*</b>
Sluggish	-0.053	<b>0.465*</b>	0.175	-0.179
Urge to satisfy	<b>0.392*</b>	-0.077	0.082	<b>0.494*</b>
Enthusiastic	<b>0.501*</b>	-0.156	0.186	0.191
Unhappy	-0.217	<b>0.656*</b>	0.040	0.165
Hard	<b>0.619*</b>	-0.109	0.210	0.012
Resistant	0.110	<b>0.451*</b>	-0.005	-0.512
Frustrated	-0.110	<b>0.576*</b>	-0.002	<b>0.308*</b>
Lustful	0.208	-0.047	<b>0.418*</b>	<b>0.455*</b>
Entranced	0.180	0.056	<b>0.510*</b>	0.133
Aversion	0.105	<b>0.571*</b>	0.165	-0.230
Hot	<b>0.590*</b>	-0.002	0.195	-0.026
Tempted	<b>0.558*</b>	0.139	-0.069	0.202
Passionate	<b>0.538*</b>	-0.034	0.180	0.237
Fantasize about sex	<b>0.468*</b>	0.094	0.139	0.100
Repressed	0.081	<b>0.683*</b>	-0.146	-0.020
Disturbed	-0.049	<b>0.763*</b>	-0.053	0.109
Flushed	0.055	0.128	<b>0.590*</b>	0.200
Impatient	0.230	<b>0.413*</b>	-0.021	<b>0.332*</b>
Sensual	<b>0.592*</b>	-0.164	0.239	0.035
Breathe faster/Pant	<b>0.427*</b>	0.068	<b>0.477*</b>	-0.134
Displeasure	-0.123	<b>0.492*</b>	0.151	-0.112
Stimulated	<b>0.592*</b>	-0.175	0.298	0.156
Tingling in gut	0.276	0.071	<b>0.561*</b>	-0.243
Forget about all else	<b>0.497*</b>	0.113	0.181	0.037
Repulsion	-0.045	<b>0.656*</b>	-0.001	-0.034
Sexy	<b>0.706*</b>	-0.060	0.206	0.004
Quivering sensations	<b>0.365*</b>	0.156	<b>0.578*</b>	-0.124

(Table 6 continued)

Factor loadings for the 54 descriptors of the SADI (men)

<u>Variable</u>	<u>Evaluative</u>	<u>Negative/Aversive</u>	<u>Physiological</u>	<u>Motivational</u>
Insensible	-0.008	<b>0.556*</b>	0.013	0.104
Seductive	<b>0.638*</b>	-0.060	0.246	0.041
Genitals reddish	0.036	0.063	<b>0.581*</b>	0.109
Unattractive	-0.145	<b>0.375*</b>	0.286	0.055
Good	<b>0.455*</b>	-0.210	0.079	0.090
Throbs in genital area	0.248	0.012	<b>0.604*</b>	0.248
Warm all over	<b>0.580*</b>	-0.106	<b>0.459*</b>	-0.158
Excited	<b>0.715*</b>	-0.030	0.282	0.127
Tingling genital area	<b>0.451*</b>	-0.034	<b>0.622*</b>	-0.009
Uninterested	-0.305	<b>0.453*</b>	-0.028	-0.192
Pleasure	<b>0.681*</b>	-0.350	0.186	0.093
Heart beats faster	<b>0.492*</b>	-0.091	<b>0.380*</b>	-0.100
Happy	<b>0.630*</b>	-0.116	0.128	-0.010
Angry	-0.027	<b>0.568*</b>	-0.032	0.125
Attractive	<b>0.684*</b>	-0.119	0.140	0.086
Powerful	<b>0.575*</b>	0.065	-0.143	-0.162
Naughty	<b>0.482*</b>	<b>0.307*</b>	-0.154	0.257
Alluring	<b>0.336*</b>	0.067	0.214	<b>0.435*</b>
Lethargic	0.078	<b>0.569*</b>	0.145	-0.119
Horny	<b>0.661*</b>	0.085	0.051	0.230

\* Descriptors with factor loadings  $\geq 0.300$ .

**Table 7**

Factor loadings for the 54 descriptors of the SADI (women)

<u>Variable</u>	<u>Evaluative</u>	<u>Negative/Aversive</u>	<u>Physiological</u>	<u>Motivational</u>
Anticipatory	<b>0.354*</b>	-0.255	0.152	<b>0.324*</b>
Tingly all over	<b>0.529*</b>	-0.023	<b>0.382*</b>	-0.084
Restrained	0.055	<b>0.464*</b>	0.242	-0.136
Anxious	-0.111	<b>0.485*</b>	0.059	<b>0.312*</b>
Driven	<b>0.311*</b>	0.028	0.079	<b>0.463*</b>
Frigid	-0.135	<b>0.673*</b>	0.212	-0.212
Sensitive to touch	<b>0.441*</b>	-0.055	0.064	-0.153
Sluggish	-0.036	<b>0.449*</b>	-0.029	0.135
Urge to satisfy	<b>0.408*</b>	-0.156	0.062	<b>0.394*</b>
Enthusiastic	<b>0.326*</b>	0.231	-0.099	<b>0.553*</b>
Unhappy	-0.027	<b>0.516*</b>	-0.188	-0.152
Wet	<b>0.594*</b>	-0.088	0.075	0.092
Resistant	-0.027	<b>0.670*</b>	0.034	-0.036
Frustrated	0.107	<b>0.365*</b>	-0.215	<b>0.427*</b>
Lustful	<b>0.423*</b>	-0.025	0.102	<b>0.379*</b>
Entranced	<b>0.519*</b>	0.094	0.100	0.174
Aversion	0.089	<b>0.679*</b>	-0.035	-0.114
Hot	<b>0.718*</b>	-0.177	0.245	0.137
Tempted	<b>0.385*</b>	-0.170	0.128	<b>0.370*</b>
Passionate	<b>0.667*</b>	-0.106	0.146	<b>0.333*</b>
Fantasize about sex	<b>0.610*</b>	0.059	0.267	0.232
Repressed	0.008	<b>0.764*</b>	-0.071	-0.123
Disturbed	-0.013	<b>0.684*</b>	-0.168	-0.128
Flushed	<b>0.521*</b>	0.081	-0.021	0.117
Impatient	0.093	0.012	-0.274	<b>0.627*</b>
Sensual	<b>0.558*</b>	-0.179	0.286	<b>0.425*</b>
Breathe faster/Pant	<b>0.494*</b>	0.069	-0.111	0.154
Displeasure	-0.003	<b>0.670*</b>	-0.199	0.040
Stimulated	<b>0.577*</b>	-0.263	-0.051	<b>0.327*</b>
Tingling in gut	0.274	0.171	0.228	0.069
Forget about all else	0.251	-0.359	0.196	0.066
Repulsion	0.072	<b>0.651*</b>	-0.261	-0.251
Sexy	0.147	-0.212	<b>0.510*</b>	<b>0.672*</b>
Quivering sensations	<b>0.483*</b>	0.055	<b>0.400*</b>	0.211
Insensible	-0.268	<b>0.463*</b>	0.082	0.229
Seductive	0.273	-0.125	<b>0.561*</b>	<b>0.547*</b>
Genitals reddish	0.222	-0.111	<b>0.719*</b>	0.141
Unattractive	0.138	<b>0.555*</b>	-0.339	-0.245
Good	0.165	-0.200	0.153	<b>0.655*</b>
Throbs in genital area	<b>0.309*</b>	-0.236	<b>0.608*</b>	0.096

(Table 7 continued)

Factor loadings for the 54 descriptors of the SADI (women)

Variable	Evaluative	Negative/Aversive	Physiological	Motivational
Warm all over	<b>0.703*</b>	0.019	0.285	0.130
Excited	<b>0.547*</b>	-0.384	0.134	<b>0.357*</b>
Tingling genital area	<b>0.520*</b>	-0.171	<b>0.436*</b>	0.076
Uninterested	-0.237	<b>0.644*</b>	0.036	-0.099
Pleasure	<b>0.399*</b>	-0.359	0.023	<b>0.313*</b>
Heart beats faster	<b>0.747*</b>	-0.060	-0.130	0.160
Happy	<b>0.456*</b>	-0.106	-0.004	<b>0.415*</b>
Angry	-0.089	<b>0.453*</b>	-0.087	-0.004
Attractive	0.023	-0.184	<b>0.413*</b>	<b>0.722*</b>
Powerful	0.260	0.150	0.283	<b>0.681*</b>
Naughty	0.256	0.082	-0.008	<b>0.574*</b>
Alluring	0.098	0.012	0.210	<b>0.654*</b>
Lethargic	-0.005	<b>0.387*</b>	0.095	0.185
Horny	<b>0.405*</b>	-0.081	-0.031	<b>0.458*</b>

\* Descriptors with factor loadings  $\geq 0.300$ .

**Table 8**

Means and standard errors for the 54 descriptors of the SADI (men)

---

<u>Variable</u>	<u>Mean</u>	<u>SEM</u>
Anticipatory	2.826	0.110
Tingly all over	2.590	0.110
Restrained	1.015	0.091
Anxious	2.236	0.123
Driven	3.046	0.101
Frigid	0.590	0.071
Sensitive to touch	3.179	0.101
Sluggish	0.646	0.075
Urge to satisfy	3.953	0.083
Enthusiastic	3.636	0.086
Unhappy	0.364	0.060
Hard	3.856	0.096
Resistant	0.974	0.089
Frustrated	1.020	0.097
Lustful	3.200	0.103
Entranced	2.410	0.105
Aversion	0.754	0.081
Hot	3.292	0.103
Tempted	3.590	0.098
Passionate	4.041	0.082
Fantasize about sex	3.451	0.097
Repressed	0.805	0.081
Disturbed	0.554	0.075
Flushed	1.769	0.109
Impatient	2.267	0.115
Sensual	3.779	0.081
Breathe faster/Pant	2.887	0.108
Displeasure	0.390	0.053
Stimulated	3.733	0.081
Tingling sensation in gut	2.482	0.114
Forget about all else	3.138	0.107
Repulsion	0.431	0.061
Sexy	3.472	0.090
Quivering sensations	2.451	0.111
Insensible	0.800	0.085

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(Table 8 continued)

Means and standard errors for the 54 descriptors of the SADI (men)

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<u>Variable</u>	<u>Mean</u>	<u>SEM</u>
Seductive	3.292	0.087
Genitals reddish	2.272	0.129
Unattractive	0.467	0.065
Good	3.759	0.091
Throbs in genital area	2.661	0.125
Warm all over	3.338	0.100
Excited	4.015	0.081
Tingling in genital area	3.046	0.115
Uninterested	0.420	0.060
Pleasure	3.918	0.080
Heart beats faster	3.610	0.093
Happy	3.918	0.082
Angry	0.313	0.060
Attractive	3.492	0.089
Powerful	3.020	0.104
Naughty	2.861	0.115
Alluring	2.554	0.083
Lethargic	0.800	0.089
Horny	4.144	0.076

---

**Table 9**

Means and standard errors for the 54 descriptors of the SADI (women)

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<u>Variable</u>	<u>Mean</u>	<u>SEM</u>
Anticipatory	2.865	0.110
Tingly all over	2.918	0.110
Restrained	1.077	0.093
Anxious	2.200	0.116
Driven	2.995	0.105
Frigid	0.677	0.081
Sensitive to touch	3.379	0.107
Sluggish	0.533	0.068
Urge to satisfy	4.046	0.086
Enthusiastic	3.405	0.098
Unhappy	0.359	0.058
Wet	3.728	0.089
Resistant	0.928	0.089
Frustrated	2.138	0.128
Lustful	3.903	0.082
Entranced	2.713	0.113
Aversion	0.446	0.064
Hot	3.805	0.084
Tempted	3.677	0.089
Passionate	3.872	0.016
Fantasize about sex	2.297	0.130
Repressed	2.282	0.084
Disturbed	1.477	0.113
Flushed	1.436	0.123
Impatient	2.969	0.106
Sensual	3.910	0.067
Breathe faster/Pant	3.708	0.083
Displeasure	2.051	0.139
Stimulated	2.133	0.135
Tingling sensation in gut	1.692	0.125
Forget about all else	2.379	0.082
Repulsion	1.297	0.113
Sexy	3.574	0.092
Quivering sensations	2.959	0.107
Insensible	0.400	0.059

---



(Table 9 continued)

Means and standard errors for the 54 descriptors of the SADI (women)

---

<u>Variable</u>	<u>Mean</u>	<u>SEM</u>
Seductive	3.713	0.080
Genitals reddish	2.718	0.118
Unattractive	1.585	0.129
Good	1.928	0.143
Throbs in genital area	3.508	0.100
Warm all over	3.000	0.119
Excited	2.113	0.149
Tingling in genital area	3.728	0.094
Uninterested	0.303	0.048
Pleasure	3.344	0.107
Heart beats faster	3.108	0.112
Happy	1.985	0.150
Angry	2.051	0.141
Attractive	1.969	0.134
Powerful	3.087	0.109
Naughty	2.549	0.132
Alluring	1.574	0.123
Lethargic	2.420	0.135
Horny	3.477	0.101

---

Mean scores for each of the four factors were calculated for men and women and are presented in Table 10. T-tests were conducted to evaluate whether there were statistically significant differences between the mean scores of men and women on each of the four factors of the SADI. No statistically significant differences were found between the mean scores of men and women for the Physiological and Motivational factors, however their mean scores did differ significantly for the Evaluative and Negative/Aversive factors. Mean scores on the Evaluative factor were significantly higher for men than for women ( $t(388) = 5.76, P < .001$ ), and mean scores on the Negative factor were significantly higher for women than for men ( $t(388) = 7.73, P < .001$ ). These results are depicted in Figure 1.

Chronbach's  $\alpha$  coefficients, which measure a scale's level of internal consistency based on the average inter-item correlation, were also obtained for scores on the SADI and its subscales. Internal consistency estimate for the SADI in this study was  $\alpha = .905$ , demonstrating strong evidence of overall scale reliability. The SADI Evaluative subscale's internal consistency coefficient was  $\alpha = .914$ , for the Negative/Aversive subscale, it was  $\alpha = .856$ , for the Motivational subscale, it was  $\alpha = .719$ , and for the Physiological subscale, it was  $\alpha = .850$ , demonstrating good reliability for the four subscales.

## **Part B – Evaluating the psychometric properties of the SADI using erotic fantasy and film.**

### **Methods B**

#### *Participants*

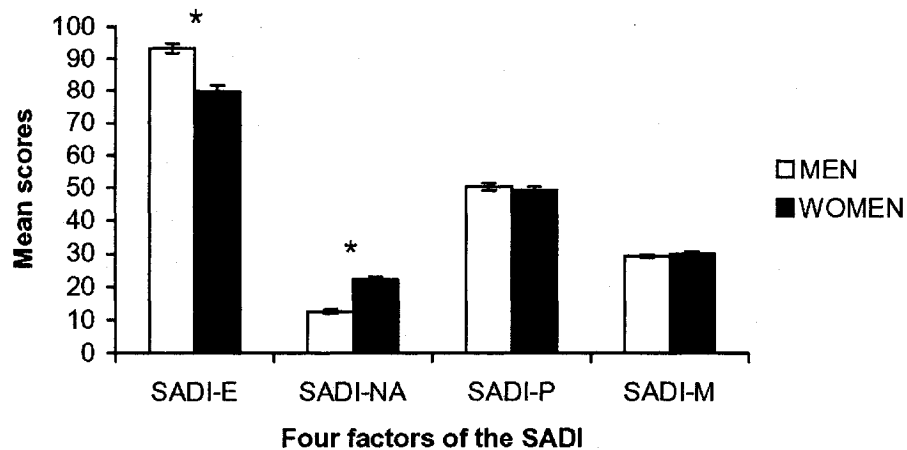
Two groups of 40 heterosexual participants were recruited for the erotic fantasy or film conditions. Forty men and 40 women between the ages of 19 and 49

**Table 10**

Means and standard errors of the four factors of the SADI for men and women

	<u>Men</u>		<u>Women</u>	
	<u>Mean</u>	<u>SEM</u>	<u>Mean</u>	<u>SEM</u>
Evaluative factor	93.30	1.49	79.93	1.78
Physiological factor	50.39	1.05	49.11	1.08
Motivational factor	29.46	0.56	30.19	0.58
Negative factor	12.58	0.75	22.06	0.97

### Men and women's mean scores on the 4 factors of the SADI



**Figure 1:** Means and standard errors of men and women on the four factors of the SADI. \* $P < 0.001$ , two-tailed t-test.

years volunteered to participate in a “study of subjective sexual responses”. Half in each group were randomly assigned to either the 3-min erotic fantasy condition or the 3-minute erotic film condition. Participants were recruited from undergraduate courses at Concordia University. They were assured anonymity and confidentiality of responses and were asked to sign an informed consent form prior to completing the studies. All participants met the language criterion described above. Participants were not paid.

### *Erotic Film*

The sexually-explicit erotic film segment was taken from the “Under a Gazebo” sequence of *Outdoor Ecstasy* (Adam & Eve Productions, Beverly Hills, CA) and depicts a heterosexual couple engaging in consensual petting (kissing, genital and non-genital touching), oral sex, and vaginal intercourse in and around an outdoor gazebo. The action is solicited and directed largely by the woman in the film. The sequence was previously rated as being equally and moderately arousing for both men and women (film #3, p. 246 (Janssen et al., 2003)). The film was presented here as a 3-min segment comprising 1 min of kissing and petting, 1 min of oral sex (both the man and the woman were alternatively receiver and giver), and 1 min of vaginal intercourse.

### *Measures and Scales*

To assess the states induced by the fantasy or film, the second paragraph of the SADI instructions was altered from its original form. For the fantasy condition, the paragraph read:

“Following is a list of words that might describe how you feel while you fantasize about a sexual experience. Take a few minutes to fantasize about a sexual experience or encounter. **Your fantasy can contain anything that you would find sexually arousing.** Please indicate to what extent each of the following words describes how you felt while fantasizing, by placing the number that describes the feeling most accurately.”

For the film condition, the paragraph read:

“Following is a list of words that might describe how you felt while viewing the video clip you just watched. Different people experience **sexual arousal and desire** in distinct, individual ways. There is no "right" or "wrong" answer. Please indicate to what extent each word describes how you felt while watching the video clip you were exposed to, by placing the number that describes the feeling most accurately.”

The rest of the SADI remained the same as in Part A.

The *Feelings Scale: Positive and Negative Affective Responses* (Byrne et al., 1974) allows individuals to report the degree to which they are experiencing different emotional states while being exposed to erotic material. It is a self-rating scale of 11 affective states, each represented by a 5-point Likert scale, six of which load onto a Positive Affect factor (FS-PA) and five of which load onto a Negative Affect factor (FS-NA). The questionnaire has good internal consistency, and has been used widely to test responses to erotic material (Becker & Byrne, 1985; Griffitt, 1975; Kelley et al., 1997).

The *Multiple Indicators of Subjective Sexual Arousal* (Mosher et al., 1988) includes three self-report subscales of subjective sexual arousal for both men and women, an overall Ratings of Sexual Arousal (MISSA-SA), a Ratings of Affective Sexual Arousal (MISSA-ASA), and a Ratings of Genital Sensations (MISSA-GS). Ratings are made on a 7-point Likert scale.

The *Sexual Desire Inventory* (Spector et al., 1996) is a self-administered questionnaire that assesses sexual desire as primarily a cognitive variable by measuring the amount and strength of thought directed toward approaching, or being receptive to, sexual stimuli along an 8-point Likert scale. This scale includes 14 questions, 3 of which are frequency items, loading onto two dimensions of sexual desire, Dyadic Sexual Desire and Solitary Sexual Desire. The two factors are

correlated significantly, and excellent internal consistency and test-retest reliability has been found.

The *Attitude Toward Erotica Questionnaire* (Lottes et al., 1993) assesses participants' attitudes regarding the possible harmful and positive effects of erotica, including the need to restrict and regulate the publication and use of erotic materials. Nine items form the Harmful scale (ATEQ-HS), seven items form the Positive scale (ATEQ-PS), and five items form the Restrict scale (ATEQ-RS). Participants rate items on a 5-point Likert scale. The questionnaire has excellent internal consistency and has been used to test effects of religiosity, sexual activity, exposure to erotica, and gender differences (Lottes et al., 1993).

The *Beck Depression Inventory II* (Beck et al., 1996) is a 21-item, self-report questionnaire in which each item reflects a depressive symptom. Participants rate items as to how characteristic they are of the way they have been feeling during the past 2 weeks. The measure has an excellent internal consistency and test-retest reliability in college-age and clinical samples, along with demonstrated convergent and divergent validity (Beck et al., 1996; Steer & Clark, 1997).

The *Beck Anxiety Inventory* (Beck et al., 1988) is a 21-item questionnaire exploring state anxiety with each item corresponding to common anxiety symptoms. Participants rate items on a 4-point Likert scale. The BAI has excellent internal consistency, high test-retest reliability, and demonstrated convergent and divergent validity in both outpatient (Beck et al., 1988) and nonclinical samples (Creamer et al., 1995).

#### *Procedure*

Testing was conducted individually for each participant in a clinical laboratory without windows that contained two chairs on either side of a desk and a TV and

VCR/DVD unit on a wheeled rack. The chairs could be positioned however the participants desired. A Sony stereo headphone was connected to the TV's audio source. Once in the laboratory, participants were asked to sign a consent form and provide demographic information (e.g., sex, age, nationality, religion, sexual orientation). Participants were instructed to fantasize or view the film, after which they filled out the questionnaires and put them through a slot in a box to ensure their anonymity. The only identifiers on the questionnaires were the participant's gender and group assignment.

For the 3-min fantasy condition, participants were instructed to fantasize for a period of 3 minutes about a sexual experience or situation that would lead them to feel sexually aroused. The content of the fantasy was left entirely up to the participants. Subjects entered the room and closed the door behind them. For the 3-min erotic film condition, subjects were instructed to imagine themselves as a participant in the scene while viewing the erotic film segment (Janssen et al., 2003; Koukounas & Over, 1997). Participants were provided with headphones prior to viewing the film, after which the experimenter left the room and shut the door. The task was typically completed for each participant during a 30-min period.

After fantasizing for 3 min, or following the 3-min erotic film segment, participants were asked to complete the following set of 5 scales, which were available in four different versions, each version being different regarding the order in which 5 scales were presented (to control for any order effects). The primary scales included the SADI, the SDI, the MISSA, the FS, and the ATEQ. The BAI and the BDI comprised a second set of scales which was administered in the erotic film condition, and which was always filled out after the participants completed the 5 sexually-relevant scales. All participants were debriefed as to the hypotheses of the



study immediately upon completing the questionnaires. None of the participants withdrew from the study, although they were free to do so at any time. These procedures were approved by the Concordia University Human Research Ethics Committee.

### *Statistical Analyses*

One goal of the present study was to evaluate the psychometric properties of the SADI using differences in “state” responses to fantasy and film as ways to vary responses on the SADI subscales. Convergent validity and divergent validity were assessed by obtaining a correlation matrix using Pearson’s  $r$  between the SADI subscales and scores on the other established measures. The reliability of the SADI was again evaluated by computing Cronbach’s  $\alpha$  coefficients to assess internal consistency across the 2 different conditions of elicited sexual arousal. Student’s  $t$ -tests were also conducted between mean scores of men and women on the BDI-II and BAI,  $P < 0.05$ .

Another goal was to evaluate whether different types of erotic stimulation elicited differences in subjective sexual arousal across genders using the SADI and other measures. A 2 x 2 between-subjects analysis of variance (ANOVA) was conducted for each SADI subscale and the other measures between conditions (erotic fantasy versus film), gender, and their interaction. For significant interactions, Tukey HSD post hoc comparisons of the individual means were conducted,  $P < 0.05$ .

### **Results B**

Demographic information for both samples is shown in Tables 11 and 12. Means and standard deviations for men and women for the different scales and their

subscales across the 2 erotic conditions are shown in Tables 13 and 14, respectively, and as a composite for the SADI in Figure 2.

**Table 11**

Demographic information for the 40 participants in the fantasy condition.

	<u>All Participants</u>	<u>Women</u>	<u>Men</u>
Mean Age	23.95 (SD = 4.76)	21.65 (SD = 1.63)	26.25 (SD = 5.72)
Age Range	19 to 41	19 to 24	21 to 41
Religion (number of participants)			
Catholicism	15	7	8
Protestantism	5	1	4
Judaism	4	3	1
Islam	0	0	0
Other	10	7	3
No Religion	6	2	4
Level of Education completed (number of participants)			
Elementary School	0	0	0
High School	4	3	1
College	25	14	11
Trade School	1	0	1
Undergrad Program	9	3	6
Graduate Program	0	0	0
Postgraduate Program	1	0	1
Sexual Orientation (number of participants)			
Heterosexual	39	19	20
Homosexual	0	0	0
Bisexual	1	1	0

**Table 12**

Demographic information for the 40 participants in the film condition.

	<u>All Participants</u>	<u>Women</u>	<u>Men</u>
Mean Age	24.40 (SD = 5.87)	23.15 (SD = 3.13)	25.65 (SD = 7.60)
Age Range	19 to 49	19 to 29	19 to 49
Religion (number of participants)			
Catholicism	21	11	10
Protestantism	6	4	2
Judaism	1	1	0
Islam	1	0	1
Other	3	1	2
No Religion	8	3	5
Level of Education completed (number of participants)			
Elementary School	0	0	0
High School	4	1	3
College	28	14	14
Trade School	0	0	0
Undergrad Program	7	5	2
Graduate Program	1	0	1
Postgraduate Program	0	0	0
Sexual Orientation (number of participants)			
Heterosexual	37	18	19
Homosexual	0	0	0
Bisexual	3	2	1

**Table 13**

Means and standard errors for the fantasy condition for men (N=20) and women (N=20)

<u>Scales and subscales</u>	<u>Women</u>		<u>Men</u>	
	M	SEM	M	SEM
SADI – Evaluative	71.90	4.45	65.40	5.16
SADI – Physiological	44.05	3.15	32.70	3.71
SADI – Motivational	29.65	1.55	28.15	2.49
SADI – Negative	6.60	1.63	9.70	1.93
SDI	60.90	2.26	70.00	3.61
MISSA – SA	22.40	1.21	22.15	1.10
MISSA – ASA	76.45	5.10	70.45	4.73
MISSA – GS	3.75	0.52	3.55	0.41
FS – PA	20.90	0.77	20.45	0.99
FS – NA	6.25	0.51	6.40	0.39
ATEQ – HS	24.55	1.54	23.15	0.94
ATEQ – PS	26.60	0.96	25.85	0.77
ATEQ –RS	13.30	0.55	14.20	0.44
BDI-II	N/A	N/A	N/A	N/A
BAI	N/A	N/A	N/A	N/A

**Table 14**

Means and standard errors for the film condition for men (N=20) and women (N=20)

<u>Scales and subscales</u>	<u>Women</u>		<u>Men</u>	
	M	SEM	M	SEM
SADI – Evaluative	55.45	3.77	62.75	5.49
SADI – Physiological	27.90	3.30	33.50	3.70
SADI – Motivational	21.25	1.65	23.80	2.12
SADI – Negative	5.15	1.25	8.10	1.74
SDI	63.60	3.20	73.25	2.45
MISSA – SA	19.20	1.20	21.65	1.30
MISSA – ASA	59.35	4.18	77.20	5.75
MISSA – GS	3.00	0.23	3.30	0.27
FS – PA	19.25	1.01	21.00	0.96
FS – NA	5.30	0.11	5.75	0.37
ATEQ – HS	17.90	0.97	18.95	0.76
ATEQ – PS	26.75	0.73	27.55	0.50
ATEQ –RS	13.10	0.47	14.55	0.60
BDI-II	11.75	0.22	5.80	1.49
BAI	3.60	0.71	6.40	1.74

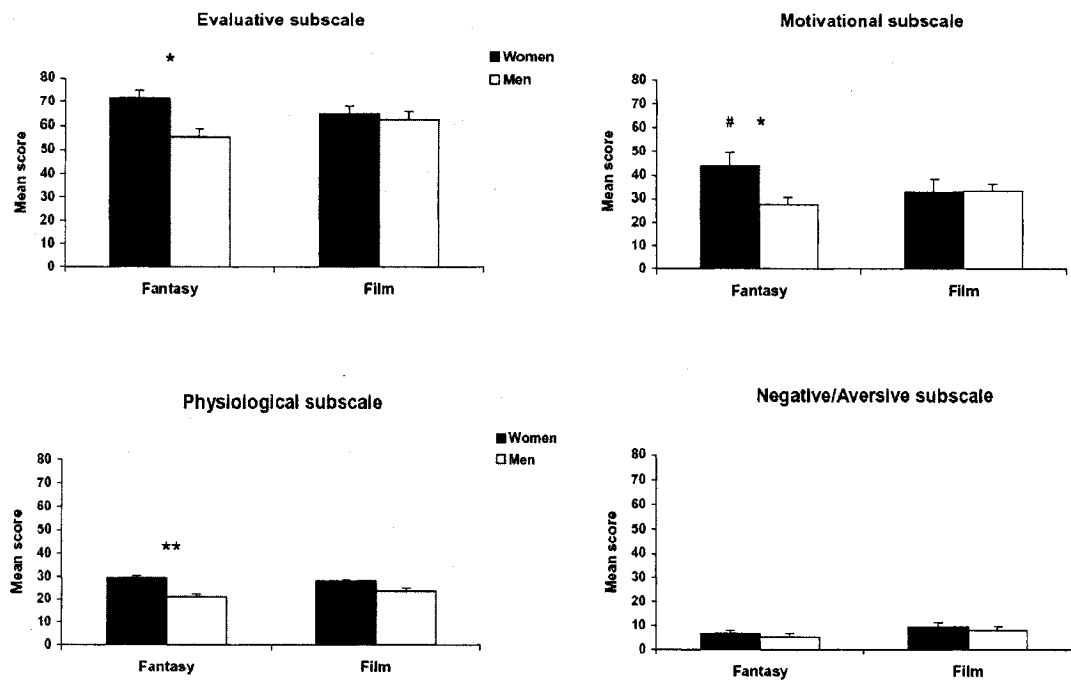


Figure 2: Means and standard errors of scores on the SADI subscales for men and women in both erotic conditions. \* $P < 0.05$ , main effect of condition (overall fantasy mean significantly greater than overall film mean). \*\* $P < 0.01$ , main effect of gender (women had higher scores overall than men). # $P < 0.05$ , condition x gender interaction (means for women were significantly greater than means for men in the fantasy condition, but not in the film condition).

Correlation coefficients were calculated between the scores on the SADI and the scores on all the other scales and subscales administered for each of the 2 erotic conditions. The correlation matrices are shown in Tables 15 and 16.

For the fantasy condition, results from the correlation matrix revealed that the Evaluative, Motivational, and Physiological subscales of the SADI were positively correlated with each other, and with the MISSA-SA, MISSA-ASA, and FS-PA subscales, all three of which are positive measures of sexual arousal and affect. The Motivational subscale of the SADI also positively correlated with the SDI, which measures subjective sexual desire. The Negative/Aversive subscale of the SADI was positively correlated with the MISSA-SA and the FS-NA subscales.

For the erotic film condition, results from the correlation matrix indicated many more statistically significant correlation coefficients between the SADI subscales and the other scales and subscales administered, than for the fantasy condition. Again, the three positive subscales of the SADI correlated positively with each other, and correlated positively with the SDI, MISSA-SA, MISSA-ASA, MISSA-GS, and FS-PA subscales. Additionally, the Motivational subscale of the SADI correlated positively with the ASEQ-PS subscale. The Negative/Aversive subscale of the SADI correlated positively with the MISSA-ASA subscale, which measures level of affective sexual desire, and with the FS-NA subscale which measures negative affect during an experience of sexual stimulation. The BAI scale correlated positively with all four subscales of the SADI.

Chronbach's  $\alpha$  coefficients were obtained for scores on the SADI in each of the two erotic conditions. Internal consistency for the SADI in the fantasy condition ( $\alpha = .954$ ) and in the film condition ( $\alpha = .960$ ) both demonstrated strong evidence of internal



**Table 15**

Correlations between the overall means of the subscales of the SADI and means of the other scales and subscales used in the fantasy condition (N=40)

<u>Scales and subscales</u>	SADI - Evaluative	SADI - Negative	SADI - Motivational	SADI - Physiological
SADI – Evaluative	1.00			
SADI – Negative	.151	1.00		
SADI – Motivational	<b>.833**</b>	.236	1.00	
SADI – Physiological	<b>.837**</b>	.252	<b>.715**</b>	1.00
SDI	.264	.148	<b>.406**</b>	.191
MISSA – SA	<b>.435**</b>	<b>.338*</b>	<b>.330*</b>	<b>.457**</b>
MISSA – ASA	<b>.658**</b>	.186	<b>.573**</b>	<b>.638**</b>
MISSA – GS	.226	.250	.139	.236
FS – PA	<b>.488**</b>	.061	<b>.509**</b>	<b>.408**</b>
FS – NA	-.098	<b>.335*</b>	-.016	.071
ATEQ – HS	-.025	.042	-.094	.030
ATEQ – PS	.187	-.067	.263	.155
ATEQ –RS	.156	.280	.252	.201
BDI-II	N/A	N/A	N/A	N/A
BAI	N/A	N/A	N/A	N/A

\* Correlation significant at the 0.05 level (2-tailed).

\*\* Correlation significant at the 0.01 level (2-tailed).

**Table 16**

Correlations between the overall means of the subscales of the SADI and means of the other scales and subscales used in the film condition (N=40)

Scales and subscales	SADI - Evaluative	SADI - Negative	SADI - Motivational	SADI - Physiological
SADI – Evaluative	1.00			
SADI – Negative	<b>.324*</b>	1.00		
SADI – Motivational	<b>.928**</b>	<b>.412**</b>	1.00	
SADI – Physiological	<b>.903**</b>	<b>.407**</b>	<b>.865**</b>	1.00
SDI	<b>.536**</b>	.097	<b>.595**</b>	<b>.410**</b>
MISSA – SA	<b>.805**</b>	.288	<b>.689**</b>	<b>.763**</b>
MISSA – ASA	<b>.803**</b>	<b>.336*</b>	<b>.715**</b>	<b>.767**</b>
MISSA – GS	<b>.578**</b>	.174	<b>.393*</b>	<b>.620**</b>
FS – PA	<b>.669**</b>	.212	<b>.554**</b>	<b>.531**</b>
FS – NA	-.078	<b>.490**</b>	.025	-.053
ATEQ – HS	.087	.201	.108	.032
ATEQ – PS	.298	-.177	<b>.356*</b>	.181
ATEQ – RS	.052	.038	.089	.075
BDI-II	.186	.129	.202	.290
BAI	<b>.511**</b>	<b>.506**</b>	<b>.476**</b>	<b>.583**</b>

\* Correlation significant at the 0.05 level (2-tailed).

\*\* Correlation significant at the 0.01 level (2-tailed).

reliability. For the fantasy condition, the evaluative subscale's internal consistency coefficient was  $\alpha = .909$ ; for the physiological subscale, it was  $\alpha = .897$ ; for the motivational subscale, it was  $\alpha = .844$ ; and for the negative/aversive subscale, it was  $\alpha = .813$ . These data demonstrate strong reliability for all four of the SADI subscales. For the film condition, the internal consistency coefficient for the Physiological subscale was  $\alpha = .926$ ; for the Evaluative subscale,  $\alpha = .903$ ; for the Motivational scale,  $\alpha = .883$ ; and for the Negative/Aversive subscale,  $\alpha = .824$ .

Summaries of the ANOVAs between the two erotic conditions, gender, and their interaction, are shown in Table 17 and as a composite for the SADI in Figure 2. Significant main effects of erotic condition were found for the SADI Evaluative ( $P < 0.05$ ) and Motivational ( $P < 0.05$ ) subscales, whereas a significant main effect of gender was found for the SADI Physiological subscale ( $P < 0.01$ ). In the first two cases, the fantasy condition elicited significantly higher scores overall than the film condition, whereas in the latter case, women reported significantly higher physiological arousal in both conditions compared to men. Significant main effects of erotic condition were also found for the FS Negative Affect subscale ( $P < 0.05$ ) and the ATEQ-Harm subscale ( $P < 0.01$ ). As with the SADI, scores were higher on these scales in the fantasy condition compared to the film condition. Significant main effects of gender were found on the SDI ( $P < 0.01$ ) and ATEQ-RS ( $P < 0.05$ ) summed across erotic condition, with women having significantly higher scores overall compared to men. Finally, a significant interaction of erotic condition and gender was found for the SADI Motivational subscale ( $P < 0.05$ ) and MISSA-ASA ( $P < 0.05$ ). Posthoc Tukey tests revealed that women had significantly higher scores than men on the SADI Motivational subscale in the fantasy condition, but

**Table 17**

Summary of ANOVAs evaluating the differences in levels of elicited sexual arousal induced through fantasy or film in men and women (N = 80)

	Condition F value	Gender F value	Condition x Gender F value
SADI – Evaluative	<b>4.021*</b>	0.007	2.099
SADI – Negative	0.847	3.333	0.002
SADI – Motivational	<b>4.882*</b>	0.685	<b>5.953*</b>
SADI – Physiological	0.070	<b>10.292**</b>	1.038
SDI	1.008	<b>10.010**</b>	0.009
MISSA – SA	2.363	0.836	1.259
MISSA – ASA	1.085	1.422	<b>5.762*</b>
MISSA – GS	1.785	0.018	0.446
FS – PA	0.345	0.482	1.380
FS – NA	<b>4.621*</b>	0.650	0.162
ATEQ – HS	<b>23.666**</b>	0.025	1.207
ATEQ – PS	1.485	0.001	1.042
ATEQ –RS	0.021	<b>5.092*</b>	0.279

\*  $P < 0.05$ . \*\* $P < 0.01$

did not differ from men in the film condition. Conversely, men had significantly higher scores than women on the MISSA-ASA in the film condition, but did not differ from women in the fantasy condition.

Finally, for the BDI-II, the mean score of women was significantly higher than the mean score of men ( $P < 0.01$ ), although neither group fell within the range of scores indicating clinical depression. No differences were found between men and women on the BAI.

### **Discussion and Conclusions**

The SADI is a 54-item, descriptor-based, multidimensional assessment scale that evaluates physiological, cognitive-emotional, and aversive or inhibitory components of the subjective experience of sexual desire and arousal in both men and women. PCA revealed four interrelated factors: an Evaluative factor, a Motivational factor, a Physiological factor, and Negative/Aversive factor that accounted for over 40% of the explained variance for all descriptors. Factor analysis confirmed the validity of the scale's structure, and estimates of internal consistency also confirmed strong evidence of the reliability of the SADI and its four subscales.

This study also found that men and women rated their subjective experience of sexual arousal and desire in nearly identical ways, suggesting that the SADI has very little gender bias. This finding is reminiscent of the lack of gender bias in other newly-formulated scales, including the Quality of Sexual Function scale (Heinemann et al., 2005). However, although there were no differences in mean scores between men and women on the Physiological and Motivational factors of the SADI, significant differences were found between their mean scores for the Evaluative and Negative/Aversive factors. Mean scores on the Evaluative factor were higher for men

than women, whereas scores on the Negative/Aversive subscale were higher for women than men. These differences suggest that men may allocate more emotional and cognitive resources to their sexual experiences than do women, that the cognitive-emotional overall impact of such experiences is stronger for men than it is for women, or that men recall their previous sexual experiences overall in a more positive light than women. There may also be more variables, including interpersonal, contextual, religious, societal, psychological, and biological, that lead women to evaluate their sexual experiences more negatively than men do.

The fact that the Evaluative factor accounted for the most variance indicates that physiologic changes alone are not sufficient to account for the range of experiences involved in sexual desire and arousal, which confirms a similar suggestion by Rosen and Beck (1988). In fact, as indicated by the number of descriptors that loaded onto both the Evaluative and Physiological factors concurrently, for example "Hot," "Stimulated," and "Excited," in addition to the positive correlation found between these two factors in the present study, it seems that Schachter and Singer's theory of cognitive arousal (1962), in which the experience of emotion is predicated on the occurrence of both physiological arousal and a state of "emotional" evaluation of it, is supported by our results.

Recent research on the effects of phosphodiesterase-5 inhibitors, such as sildenafil, on women's sexual arousal has shown that vaginal blood flow can increase without any corresponding increase in subjective sexual arousal (Laan et al., 2002). This suggests that appropriate cognitive labelling and emotional attribution are crucial to the subjective awareness of sexual arousal, and that the presence of genital arousal may not be sufficient to describe a given situation as sexually arousing (Basson et al., 2005). Rosen and Beck (1988) have argued that an individual's awareness or self-

report of internally-experienced desire and arousal is primary in defining a response as sexual, regardless of the nature or extent of physiological responses. It was also suggested that inclusion of a cognitive-subjective criterion for defining sexual response is essential and that, in most cases, one should expect a high level of concordance between physiological and evaluative dimensions of the sexual response [56]. This suggestion is also consistent with our findings. Instances of discordance between these response components, such as experiencing penile erection or vaginal lubrication but having no desire to pursue sexual contact, or vice-versa, highlight the need for a multidimensional scale to assess related responses, although it remains to be seen whether scores on the SADI subscales will track these clinical dimensions specifically.

The Negative/Aversive factor accounted for the second highest amount of variance. This factor taps into aspects of sexual aversion or inhibition. Descriptors such as "Aversion," "Repulsion," and "Lethargic," were consistently rated in the opposite direction from descriptors that loaded onto the three other factors. The Physiological factor accounted for the third largest amount of variance. This factor reflected the subjective sensations that accompany autonomic and endocrine changes that result from becoming sexually aroused. Descriptors such as "Sensitive to touch," "Throbs in genitals," and "Heart beats faster" loaded onto this factor. The Motivational factor accounted for the fourth highest amount of variance. This factor taps more directly into psychological processes that describe an individual's propensity or drive to act upon the desire to engage in sexual contact or behavior, similar to the concept of "sexual anticipating cognitions" (Bonierbale et al., 2006) that assess the willingness and desire to engage in sexual intercourse. The interrelated nature of the Evaluative, Physiological, and Motivational factors was demonstrated in

this study. Although certain items, such as "Anticipatory" loaded onto only one factor (e.g., the Motivational factor), other descriptors, such as "Horny" loaded onto two factors (e.g., the Motivational and Evaluative factors) and all four factors were found to correlate significantly with one another. These findings indicate that some descriptors carry connotations that span different factor domains. Such descriptors can be used to assess the interrelatedness of those domains, and act as internal standards for consistency.

#### *Convergent and Divergent Validity*

Results of this study confirmed that the SADI and its subscales have convergent validity with other established measures of sexual function. When sexual arousal was induced through erotic fantasy, the three positive subscales of the SADI (Evaluative, Motivational, and Physiological) correlated positively with the Sexual Arousal and Affective Sexual Arousal subscales of the MISSA, and with the Positive Affect subscale of the FS, which are all measures of sexual arousal, desire, and affect. The motivational subscale of the SADI correlated positively with the SDI, which is a measure of sexual desire. The negative/aversive subscale of the SADI correlated positively with the FS Negative Affect subscale, which measures negative sexual affect, and the Sexual Arousal subscale of the MISSA. When sexual arousal was induced through exposure to the erotic film segment, the SADI's Evaluative, Motivational, and Physiological subscales correlated positively with the SDI, the Sexual Arousal, Affective Sexual arousal, and Genital Sensations subscales of the MISSA, and with the Positive Affect subscale of the FS. The SADI Motivational subscale also correlated positively with the Positive Scale of the ATEQ, whereas the SADI Negative/Aversive subscale correlated positively with the Negative Affect subscale of the FS and the Affective Sexual Arousal subscale of the MISSA.



The finding of positive correlations between the SADI Negative/Aversive subscale and the Sexual Arousal and Affective Sexual Arousal subscales of the MISSA suggest that sexual arousal and its accompanying affective states may at times be experienced together with negative affective states and cognitions. Sexual arousal may also induce aversive or inhibitory cognitions, emotions, and physiological reactions in certain contexts or situations, for example in a laboratory setting. These interpretations may also be supported by the finding that the BAI correlated positively with all four subscales of the SADI in the erotic film condition. Subjects may have felt anxious about watching an erotic film in an environment that is not entirely private, such as the laboratory setting, or because they knew the experimenters were close by and aware of what they were watching. It is also possible for some people to misinterpret physiological indicators of sexual arousal, such as increased heart rate, feeling hot, or sweating, as signs of anxiety or other negative affective states (Van den Hout & Barlow, 2000). Because the BAI was not administered to participants of the fantasy condition, it is not known whether the correlation between sexual arousal and anxiety was specific to the condition of watching an erotic film and if it would have been replicated in the fantasy condition.

However, considering the fact that the SADI Negative/Aversive subscale correlated with the Sexual Arousal subscale of the MISSA in the fantasy condition, it can be hypothesized that the BAI might have also correlated positively with the subscales of the SADI in the fantasy condition. In any case, anxiety, which is usually perceived as a negative affective state, was positively correlated with sexual arousal in this study. This supports the idea that sexual experiences might sometimes be arousing even if experienced conjointly with some negative affective states. In fact, certain levels of anxiety can facilitate sexual arousal in men and women (Bancroft et

al., 2003; Bradford & Meston, 2006; Hale & Strassberg, 1990; Palace & Gorzalka, 1990; Palace & Gorzalka, 1992), and we note that the term “anxious” loaded onto both the Evaluative and Negative/Aversive factors in men, and the Motivational and Negative/Aversive factors in women.

The three ATEQ subscales (Harm, Positive, and Restrict) were not correlated with any of the four subscales of the SADI in the fantasy condition, and a small but significant correlation existed between the ATEQ Positive scale and the SADI Motivational subscale in the film condition. This seems to suggest that in general, participants’ attitudes toward erotica were not related to their levels of subjective sexual arousal or desire, especially in the fantasy condition. Perhaps the constructs measured by the ATEQ and the SADI are too distinct. Although we would argue that attitudes toward erotica, whether positive or negative, did not significantly alter the ability of the men or women in our sample to become sexually aroused, the positive correlation between the ATEQ positive scale and the SADI Motivational subscale in the film condition suggests an interaction of attitude and motivation, but only in a condition where the action is depicted on film rather than in the content of one’s fantasy (which may have been more effective in inducing arousal and desire). The general lack of correlation between the subscales of the SADI and the subscales of the ATEQ help to confirm the SADI’s divergent validity. In addition, none of the four subscales of the SADI correlated with the BDI-II, confirming the fact that, although sexuality can be negatively affected by depression, sexual arousal and depression are two very different constructs, and that the SADI and the BDI-II do not measure the same construct.

*Subjective Arousal Induced by Erotic Fantasy and Film*

This study also examined whether differences in subjective sexual arousal and desire could be elicited through 3 min of erotic fantasy compared to a 3-min erotic film segment, and whether there would be gender differences would emerge in these two erotic conditions. Mean scores of subjective sexual arousal were significantly higher in the fantasy condition than in the erotic film condition on the Evaluative and Motivational subscales of the SADI, and this effect was due almost exclusively to a larger effect of fantasy in women relative to men, for whom scores did not differ between fantasy and film. In fact, women had higher scores overall on the Physiological subscale relative to men in both fantasy and film conditions.

Past research has shown that erotic films induce higher levels of genital and subjective sexual arousal than stories, slides, or fantasy instructions (Heiman, 1980; Koukounas & Over, 1997; Laan & Everaerd, 1995; Smith & Over, 1987). The higher levels of subjective sexual arousal attained through sexual fantasy relative to the erotic film in this study suggest that the women were better than men at generating more sexual arousal and desire through this mode than they were as “participant observers” in the action depicted in the erotic film. However, sexual fantasy is positively correlated with sexual arousal and desire (Smith & Over, 1987), and it is possible that fantasies not directed by an experimenter provide a higher level of arousal for the participant. We did not provide any potential details or directions concerning the content of the fantasy, thus the ability to freely control the fantasy content may have generated stronger subjective sexual arousal in this condition.

It is also possible that the 3-min film segment was too short to induce sufficiently high levels of arousal in the men in our sample. Although Janssen et al (2003) used 3-min clips in their study, the one chosen for this study was given an

overall rating of 5-6 on a scale from 1 (not at all) to 10 (very strongly) by both men and women. It is possible that a longer version of the film might induce more arousal than fantasy in men, or that the action depicted in the sequence simply was not any more arousing for the men in our sample relative to their own fantasies. Future research should explore the possibility of a differential effect of time of exposure to an erotic film on levels of induced sexual arousal and desire.

Interestingly, the mean scores for the Negative Affect subscale of the FS and the Harm subscale of the ATEQ were also significantly higher for the fantasy condition than for the film condition. In terms of the Negative Affect subscale, this finding may be consistent with the idea discussed above that subjective sexual arousal may be high even when it is accompanied by negative affective states, or that it may be possible for participants to confuse or misinterpret physical or emotional cues related to sexual arousal, such as increased heart rate and feeling “hot”, as signs of anxiety or of a negative affective state. Alternatively, the lower scores in the film condition might reflect a lessening of any perceived negative aspect (e.g., guilt) of engaging in sexual fantasy when it is accompanied by sexually explicit visual and auditory stimulation.

Few gender differences were found in the second phase of the study. Regarding the SADI, the only significant difference found was that the scores for women were higher than men on the physiological subscale in the fantasy condition. This finding is not consistent with past research showing that men are more likely to engage in sexual fantasy and be sexually aroused by their fantasies than women (Ellis & Symons, 1990; Halderman et al., 1985). Because the specific content of participants' fantasies was not monitored or recorded in this study, it is difficult to know what led to this difference. It would appear that in our sample of university

students, the women were better able than men to elicit physiological feelings of sexual arousal and desire within the 3-min period of fantasy. Another gender difference found in the current study was that mean scores for men were significantly higher than women on the SDI in both erotic conditions, and on the Affective Sexual Arousal subscale of the MISSA in the film condition. However, women scored higher than men on this subscale of the MISSA in the fantasy condition, although the difference was not significant. The SDI is a trait measure of the frequency and intensity of desire in normative circumstances. The Affective Sexual Arousal subscale of the MISSA was used to determine the level of perceived arousal induced by fantasy or the film. It is interesting to note that women showed higher responses on the SADI Evaluative and Motivational subscales in the fantasy condition relative to the film condition, although in the film condition their scores were not lower than those of the men. Thus, the way that affective sexual arousal is processed using the MISSA diverges from the way it is processed using the SADI. Despite this difference, strong and significant correlations were obtained between the MISSA and SADI subscales. Finally, the mean score for women on the BDI-II was significant higher than the score for men, although neither group fell within the range of scores indicative of clinical depression.

The SADI used in the second phase assessed the state that participants were in following 3 min of erotic fantasy or exposure to an erotic film segment. In the first phase, the SADI was used to assess trait sexual function (e.g., when participants were asked to think of the last time they experienced sexual arousal and desire). We note that scores on all subscales in the second phase were generally lower than scores in the first phase (Figures 1 and 2), especially in the Evaluative subscale. Trait variables about sexual arousal and desire in the Phase A may be derived from memories of

actual sexual interactions with others, whereas the state variables assessed here may be more contrived (e.g., may have never occurred in the case of fantasy or with the suspension of disbelief in the case of the film). Alternatively, trait variables could also be influenced by retrospective bias. In either case, the internal consistency of the SADI subscales was extremely high and similar in value across both studies, indicating that the SADI can be used to assess either state or trait conditions.

Several limitations of the present study must be noted. First, our sample consisted mostly of young, heterosexual Canadian university students, most of which were from Montreal, Quebec. There is evidence that younger women and men from Montreal have more overtly positive attitudes toward sex and sexually explicit materials than elsewhere in Canada, North America, or Europe (Samson et al., 1993). Similar studies will need to be conducted using different populations of university students in different regions, and should be broadened to include people of different age groups, socioeconomic backgrounds, and sexual orientations. Another limitation of this study was the setting. Different results may have been found if the same study had been conducted in a home environment, where individuals might be more comfortable responding to questions pertaining to their sexuality. It would also be useful to include physiological measures of genital arousal, skin conductance, and heart rate to examine how SADI subscales (e.g., physiological) may reflect actual genital arousal. Finally, validation and refinement of any assessment tool is a time-consuming process that no one study can accomplish. It will be important in future studies to examine the clinical utility of the SADI and to compare trait- or state-induced scores on the SADI subscales with clinically-relevant assessment measures, for example, the DSFI (Derogatis, 1997; Derogatis, 1975), FSFI (Rosen et al., 2000),

GRISS (Rust & Golombok, 1986) and SFQ (Corty et al., 1996) in both normative and clinical populations.

It will also be necessary to continue to examine convergent and divergent validity of the SADI with respect to other scales that are currently available. It will also be important to examine whether patterns of scores on the different subscales can be matched consistently with different types of sexual disorders or dysfunctions. Should the SADI have predictive validity in clinical populations, the scale would be useful to both clinicians and researchers by providing a person's sexual arousal and desire profile, reminiscent to the profile obtained when one completes the Minnesota Multiphasic Personality Inventory (Hathaway & Meehl, 1951). Similar proposals have been made recently for other subjective scales, including the Sexual Function Questionnaire as a screening tool for different sexual disorders in women (Quirk et al., 2005), and the Sexual Health Inventory for Men as a screening tool for sexual disorders other than erectile dysfunction (Heruti et al., 2005). This would also make the scale useful in outcome and efficacy studies to evaluate how changes incurred through the administration of psychological therapies, drug or hormone therapy, or other interventions, are subjectively assessed by clients or research participants.

Finally, new conceptualizations about subjective and physiological sexual arousal that reflect perceptual-cognitive, emotional, motivational, and physiological components have been proposed for women by Basson et al. (Basson, 2005; Basson et al., 2005; Basson et al., 2004) and for men by Stoleru et al. (Stoleru et al., 2003; Stoleru et al., 1999). Within this framework, sexual arousal is viewed as driven by both biological and psychological factors that integrate internal state (e.g., hormonal state, level of physiological or subjective arousal) with external context and sexual stimuli to generate a "willingness" to be receptive to those stimuli. Although it is

difficult to state exactly how the SADI subscales might link to these interactive constructs, it is obvious that the new conceptualizations reflect an awareness of sensory and cognitive processing that are reflected in brain function and that are finely tuned to process the arousal produced by exposure to different sexual stimuli. It would be interesting to examine whether brain regions that are activated in fMRI or PET studies by different sexual stimuli would be reflected in different scores on the SADI subscales. It would also be important to assess the concordance of the Physiological subscale (or even individual descriptors within the subscale) with parasympathetic or sympathetic measures of arousal, or whether the Motivational subscale is altered by different values of predicted sexual reward. Such studies would further refine the SADI as a research tool.

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## CHAPTER 2

Chapter 2 comprises a single study in which the aim was to evaluate whether sexual arousal and desire scores on the SADI would differ if the content of an erotic sequence was altered to include or exclude the ejaculation scene that terminates the sequence, and to include or exclude the accompanying soundtrack. Men and women viewed a 10-min, sexually explicit film sequence that was rated of high arousal value by women and men in a study conducted by Janssen et al. (2003). The sequence ends with an ejaculation scene in the last 15 sec, which is preceded by a natural break in the action. Two versions of the sequence were created, one that contained the ejaculatory ending, and one that faded out immediately after the break in the action but before the ejaculation. Subjects were assigned randomly to view one of these two versions with or without the accompanying soundtrack, after which they filled out several subjective scales, including the SADI.

Results of this study showed that with the soundtrack included, both women and men rated the sequence with ejaculation as more arousing than the sequence without ejaculation. This overall rating was reflected by significant response differences on the Evaluative and Motivational subscales, but not the Physiological subscale, of the SADI for both groups. A trend toward significance was found on the Negative/Aversive subscale, on which men were higher than women after viewing the sequence without ejaculation. The opposite pattern of results was found with the soundtrack excluded, where women rated the sequence with ejaculation significantly higher on the Negative/Aversive subscale than men, whereas men rated the sequence without ejaculation higher on this subscale than women.

These results suggest that scenes of explicit ejaculation that terminate an erotic film sequence increase the evaluative and motivational properties of subjective sexual

arousal and desire in both women and men, but only when auditory cues signal a clear and gratifying end to the sexual interaction. In the absence of auditory cues, the same sequence may induce significantly less arousal and desire in both men and women, and increase ratings of subjective aversion in women.

**Auditory Cues Alter the Valence of Subjective Sexual Arousal and Desire Induced by an Erotic Film.**

Rachel R. Toledano, Loredana Mihai, Tiffany Young, Andrew G. Ryder, and James G. Pfaus

Department of Psychology, Concordia University  
Montreal, QC, H4B 1R6 CANADA

Please send all correspondence to J.G. Pfaus, Center for Studies in Behavioral Neurobiology, Department of Psychology, Concordia University, 7141 Sherbrooke W., Montréal, QC H4B 1R6 Canada. E-mail: [Jim.Pfaus@concordia.ca](mailto:Jim.Pfaus@concordia.ca)

For submission to *Archives of Sexual Behavior*. A preliminary report of these data was presented at the Annual Meeting of the International Academy of Sex Research, Amsterdam, The Netherlands, July 2006.

**Abstract** Evidence suggests that women and men differ in their subjective responses to sexually explicit film content, although “female-centric” erotica is less likely to engender a sex difference. Interestingly, some female-centric erotica contain scenes of explicit ejaculation that are commonly observed in “male-centric” erotica. The present study evaluated whether subjective sexual arousal and desire would differ if the ejaculation ending was or was not contained in the film sequence, and whether the inclusion of the accompanying soundtrack would alter the direction of the sexual responses. Two versions of a female-centric, sexually-explicit film sequence were created, one with and one without the ejaculatory ending. Subjects viewed one of these two versions with or without the accompanying soundtrack, after which they filled out several subjective scales, including the Sexual Arousal and Desire Inventory (SADI). Both women and men rated the two versions of the video clip as more arousing with the accompanying soundtrack than without on all three positive subscales of the SADI. With the soundtrack included, both women and men also rated the sequence with ejaculation as more arousing than the sequence without ejaculation. The opposite pattern of results was found with the soundtrack excluded, and women rated the sequence with ejaculation significantly higher on the Negative/Aversive subscale than men. These results suggest that scenes of explicit ejaculation that terminate an erotic film sequence increase the evaluative and motivational properties of subjective sexual arousal and desire in both women and men, but only when auditory cues signal a clear and gratifying end to the sexual interaction. In the absence of auditory cues, the same sequence may induce significantly less arousal and desire in both men and women, and increase ratings of subjective aversion in women.

**Keywords** Sexual arousal; Sexual desire; Visual and auditory cues; Human sexuality; Erotic stimuli.

## Introduction

Evidence suggests that women and men differ in their subjective responses to sexually explicit film content. Erotic films are used extensively to provoke sexual arousal and desire in clinical or experimental populations. Past research has also shown the effectiveness of erotic films in eliciting sexual arousal. Such films typically induce higher levels of genital and subjective sexual arousal than stories, slides, or fantasy instructions (Heiman, 1980; Koukounas & Over, 1997; Laan & Everaerd, 1995). Smith and Over (1987) found that the level of subjective sexual arousal induced through an erotic film was significantly higher than that induced by fantasy. Moreover, it was suggested that both men and women report greater arousal in response to explicit sexual stimuli such as sexual scenes involving intercourse, compared to stimuli showing more romantic content without explicit sexual scenes (Heiman, 1977). Erotic film segments also have the advantage of being commercially available, easily edited, and standardized, and are therefore widely employed in psycho-physiological studies on sexual arousal and desire (Koukounas & McCabe, 1997; Laan & Everaerd, 1995; Laan et al., 1994).

Gender differences in response to erotic films exist, with women generally reporting less arousal than men (Murnen & Stockton, 1997). In their meta-analysis reviewing 46 studies, Murnen and Stockton (1997) suggested that possible social and biological influences could account for this finding, including acculturation, experience with and availability of erotic material, and the attitudes of people toward such material. Counter-evidence to this gender difference has been demonstrated, however, when women view a “female-centered” erotic film rather than a typical mainstream film (i.e., presumably “male-centered”). Women reported significantly more sexual arousal while viewing a female-centered film relative to a male-centered film (Laan et al., 1994). Further support for this came from the Janssen et al. study

(2003), which explored gender differences in sexual responsiveness to erotic films that had been selected for their differential appeal to men and women (Janssen et al., 2003). Overall, men found the film segments more sexually arousing than women. Gender differences in arousal were negligible for female-selected clips and substantial for male-selected segments. In addition, the study revealed that when men and women imagined themselves as a participant in the film, it contributed positively to ratings of sexual arousal. This last finding is consistent with that of Koukounas and Over (1997), who suggested that men' subjective sexual arousal and penile tumescence were greater when they employed a participant-oriented rather than a spectator-oriented attentional focus while viewing an erotic film segment.

Another study by Toledano and Pfaus (2006) examined whether the different levels of subjective sexual arousal and desire in men and women would be altered when subjects used erotic fantasy versus exposure to a female-centered erotic film segment. Forty men and 40 women were asked to complete the Sexual Arousal and Desire Inventory (SADI), and other scales that measure aspects of sexual arousal and desire, after being presented with either a 3-minute female-centered erotic film segment or following a 3-minute period of erotic fantasy. For the fantasy condition, participants were instructed to think about a sexual experience of their choice that would make them feel sexually aroused. Mean scores on the evaluative (cognitive-emotional), motivational, and physiological subscales of the SADI were significantly higher in the fantasy condition than in the erotic clip condition. Women had significantly higher mean scores than men on the physiological subscale in the fantasy condition. Men had significantly higher mean scores than women on a measure of affective sexual arousal and on a measure of sexual desire in both the fantasy and the

erotic film condition. Taken together these findings illustrate why erotic stimuli have been a paradigm of choice in the study of sexual arousal and desire.

Many male-centric erotic film sequences are terminated by a scene of explicit ejaculation, known in the porn industry as the “money shot”, and such endings may help to reinforce the cultural perception that sex begins and ends with an erect penis. However, several of the female-centric sequences chosen by the women in the Janssen et al. study (2003) contained such endings. This suggests that ejaculation scenes in erotic clips can produce heightened levels of subjective sexual arousal in women, like they do in men.

The aim of the present study was to evaluate whether subjective sexual arousal and desire would be altered if this ejaculation ending was or was not contained in an erotic film segment, and whether the inclusion or exclusion of the accompanying soundtrack would alter the direction of the sexual responses of men and women.

## **Method**

### *Participants*

A total of 119 men and women, mostly Canadian undergraduate students, viewed a 10-minute sexually explicit film sequence that had been rated of high arousal value by women and men in a study conducted by Janssen et al. (2003). The sequence is terminated by an ejaculation scene in the last 15 seconds. This ejaculation scene is preceded by a natural break in the action. Two versions of the sequence were created, one that contained the ejaculatory ending, and one that faded out immediately after the break in the action but before the ejaculation. Subjects were assigned randomly to view one of these two versions with or without the accompanying

soundtrack, after which they filled out the Sexual Arousal and Desire Inventory (SADI).

#### *Materials and Procedure*

The SADI (Toledano & Pfaus, 2006) is composed of two parts. The first part is a form used to gather demographic information about the participants, such as sex, age, nationality, religion, and sexual orientation. In the second part of the SADI, subjects are asked to rate the list of 54 descriptors on a 0-5 Likert scale (0 = "does not describe it at all," 5 = "describes it perfectly") as they pertain to their subjective experiences of sexual desire and arousal while watching the erotic film segment. The SADI contains four subscales including an evaluative subscale, which pertains to cognitive and emotional aspects of sexual arousal and desire, the motivational subscale, which evaluates the propensity to seek out sexual feelings and/or responses, the physiological subscale, which assesses subjective feelings of autonomic and physical responses of arousal and desire, and a final negative subscales, which pertains to aversive or inhibitory responses to sexual cues.

#### **Results**

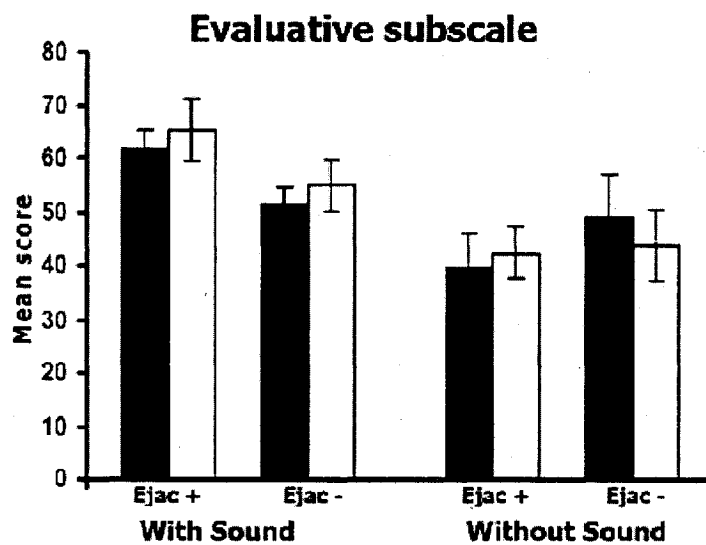
Data were analysed using Between-Subjects Analysis of variance (ANOVA) to evaluate significant main effects and interactions of Version of the erotic film segment (with or without the ejaculation scene), Auditory condition (with or without), and Gender (male or female) for each of the four different subscales of the SADI. For each significant interaction, posthoc t-tests were conducted between the individual means.

For the Evaluative subscale of the SADI, a significant main effect of Auditory condition was found, where the mean score was higher with sound than without sound



( $F(3,114) = 13.33, p < .001$ ). As well, a significant interaction of Auditory condition by Version summed across gender was found ( $F(3,114) = 4.00, p < .05$ ). Mean scores were significantly higher for the erotic clip version with sound and with the ejaculation scene included than with sound but without the ejaculation scene. For the motivational subscale of the SADI, the same significant main effect of Auditory condition was found, where the mean score was higher with sound than without sound ( $F(3,114) = 5.30, p < .05$ ). Although not statistically significant, a trend was also found toward an interaction for Auditory condition by Version ( $F(3,114) = 3.26, p = .07$ ), again with mean scores were significantly higher for the erotic clip version with sound and with the ejaculation scene included than with sound but without the ejaculation scene. For the physiological subscale of the SADI, once again a significant main effect of Auditory condition was found, where the mean score was higher with sound than without sound ( $F(3,114) = 13.40, p < .001$ ). Finally, for the Negative subscale of the SADI, no significant main effects were found. However, a significant three-way interaction was found of Auditory condition by Version by Gender ( $F(3,114) = 5.49, p < .05$ ). As well, a trend was found for a significant interaction of Version by Gender ( $F(3,114) = 3.11, p = .08$ ). These results are depicted in Figures 1, 2, 3, and 4.

Tables 1, 2, 3, and 4 show the mean scores for men and women for each auditory cue condition and version of the erotic film segment. No significant gender differences were found on the Evaluative and Motivational subscales across all 4 experimental conditions. On the Physiological scale, women had significantly higher means than men in the condition with sound and without the ejaculation scene ( $t(38) = 2.09, p < .05$ ). On the Negative scale, women also had significantly higher means than men for the no sound with ejaculation scene condition ( $t(17) = 2.19, p < .05$ ).



**Figure 3:** Means and standard errors of scores on the SADI Evaluative subscale for men (black bars) and women (white bars) for each Auditory condition. Mean scores for the sequence with sound were significantly higher overall compared to the sequence without sound ( $P < .0003$ ). The interaction of Auditory Condition with Version revealed that the Ejac+ condition with sound was significantly higher than all other conditions ( $P < .01$ ).

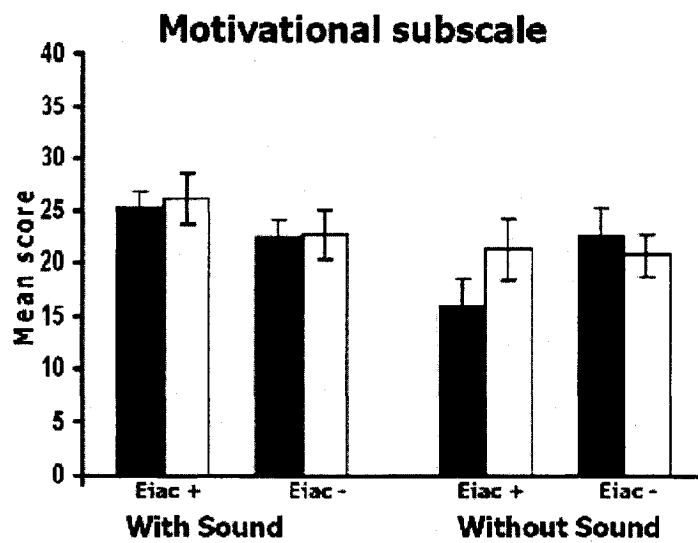


Figure 4: Means and standard errors of scores on the SADI Motivational subscale for men (black bars) and women (white bars) for each Auditory condition. Mean scores for the sequence with sound were significantly higher overall compared to the sequence without sound ( $P < .03$ ). A trend was found for a significant interaction of Auditory Condition and Version ( $P < .07$ ).

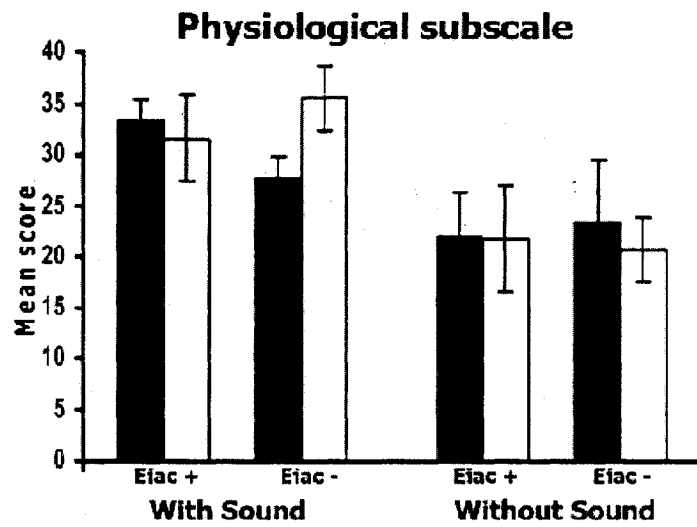


Figure 5: Means and standard errors of scores on the SADI Physiological subscale for men (black bars) and women (white bars) for each Auditory condition. Mean scores for the sequence with sound were significantly higher overall compared to the sequence without sound ( $P < .0003$ ).

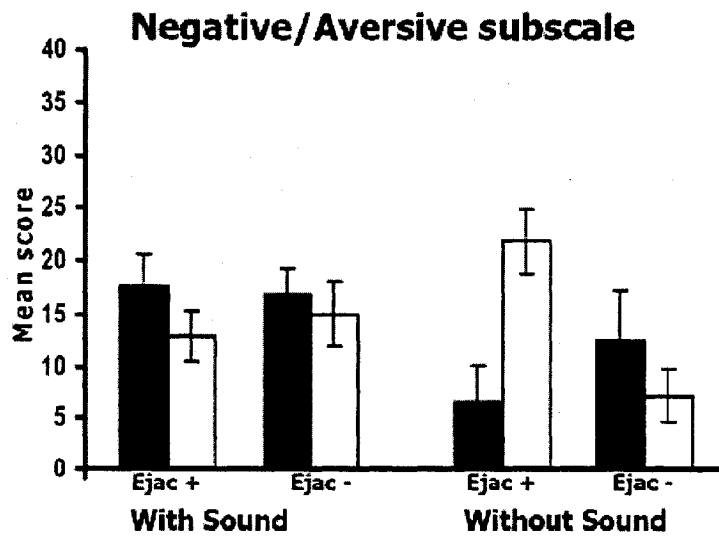


Figure 6: Means and standard errors of scores on the SADI Negative subscale for men (black bars) and women (white bars) for each Auditory condition. A significant three-way interaction of Auditory Condition, Version, and Gender was found ( $P < .02$ ).

Women found the Ejac+ sequence without sound more negative than did men, whereas this gender difference was not found with sound. Interestingly, men found the Ejac+ sequence with sound to be more negative than without sound, whereas women found the Ejac- sequence more negative with sound than without.

**Table 18**

Means Scores and standard deviations of men and women on the Evaluative subscale of the SADI for both Auditory conditions and both Versions of the Erotic Film segment

<u>Auditory Cond.</u>	<u>Version</u>		M	SD	N
Sound +	Ejac +	Men	61.55	15.88	20
		Women	65.30	26.43	20
Sound +	Ejac -	Men	51.35	15.18	20
		Women	54.95	21.64	20
Sound -	Ejac +	Men	39.60	19.60	10
		Women	42.44	14.33	9
Sound -	Ejac -	Men	49.20	24.38	10
		Women	44.00	20.78	10
All groups combined			53.55	21.39	119

**Table 19**

Means Scores and standard deviations of men and women on the Motivational subscale of the SADI for both Auditory conditions and both Versions of the Erotic Film segment

<u>Auditory Cond.</u>	<u>Version</u>		M	SD	N
Sound +	Ejac +	Men	25.20	7.21	20
		Women	26.20	10.92	20
Sound +	Ejac -	Men	22.45	6.83	20
		Women	22.75	10.75	20
Sound -	Ejac +	Men	16.00	8.22	10
		Women	21.33	8.63	9
Sound -	Ejac -	Men	22.70	8.27	10
		Women	20.80	6.30	10
All groups combined			22.85	8.92	119

**Table 20**

Means Scores and standard deviations of men and women on the Physiological subscale of the SADI for both Auditory conditions and both Versions of the Erotic Film segment

<u>Auditory Cond.</u>	<u>Version</u>		M	SD	N
Sound +	Ejac +	Men	33.30	9.89	20
		Women	31.60	18.79	20
Sound +	Ejac -	Men	27.65	9.98	20
		Women	35.55	13.67	20
Sound -	Ejac +	Men	22.00	13.64	10
		Women	21.78	15.93	9
Sound -	Ejac -	Men	23.30	19.46	10
		Women	20.70	10.10	10
All groups combined			28.72	14.67	119



**Table 21**

Means Scores and standard deviations of men and women on the Negative subscale of the SADI for both Auditory conditions and both Versions of the Erotic Film segment

<u>Auditory Cond.</u>	<u>Version</u>		M	SD	N
Sound +	Ejac +	Men	17.60	14.18	20
		Women	12.85	10.75	20
Sound +	Ejac -	Men	16.80	10.94	20
		Women	14.95	13.71	20
Sound -	Ejac +	Men	6.60	11.18	10
		Women	21.89	18.09	9
Sound -	Ejac -	Men	12.50	15.17	10
		Women	7.20	7.91	10
All groups combined			14.32	13.11	119

## Discussion

This study shows that when a “female-centric” erotic film segment was presented with the soundtrack included, both women and men rated the sequence with ejaculation as more arousing than the sequence without ejaculation. This overall rating was reflected by significant response differences on the Evaluative and Motivational subscales, but not the Physiological subscale of the SADI for both groups. A trend toward significance was found on the Negative/Aversive subscale, on which the mean scores of men were higher than those of women after viewing the sequence without ejaculation. The *opposite* pattern of results was found with the soundtrack excluded. Women rated the sequence with ejaculation significantly higher on the Negative/Aversive subscale than did men. However, men rated the sequence without ejaculation higher on this subscale than did women.

On all three positive subscales of the SADI, the Evaluative, the Motivational, and the Physiological subscales, mean scores for the film sequence with sound were significantly higher overall when compared to the sequence without sound. This finding suggests that in the absence of auditory cues, the same erotic film sequence induces significantly less arousal and desire in both men and women when compared to having the auditory cues present.

On the Evaluative subscale, the interaction of Auditory condition with Version revealed that the sequence with ejaculation and with sound seemed to produce the highest levels of subjective sexual arousal and desire in both men and women. This finding is consistent with the one in Janssen et al.’s study (2003), in which women were equally aroused as were men by “female-centered” erotic film sequences that included both ejaculatory endings and auditory soundtracks.

However, the results of this study also demonstrated an interesting and significant gender difference. Women found the version of the erotic sequence with the ejaculation ending more aversive than did men in the absence of auditory cues. As mentioned earlier, this gender difference was not found in the presence of auditory cues. On the contrary both men and women were equally aroused by the same erotic sequence in the presence of auditory cues. However, men found the erotic sequence with the ejaculation ending and with the auditory cues more negative or aversive than without sound, whereas women found the film sequence without the ejaculation ending more negative with sound than without sound. These results indicate that men and women both require more than simple visual cues to determine the incentive value of an erotic sequence, and that they utilize auditory cues as an unambiguous indication of the emotional valence. This may be especially true for women, who seemed to show a diametrically opposite rating on the Negative/Aversive scale with the ejaculation ending depending on whether the soundtrack was present or absent.

In conclusion, this study suggests that scenes of explicit ejaculation that terminate an erotic film sequence increase the evaluative and motivational properties of subjective sexual arousal and desire in both men and women, but only when the auditory cues signal a clear and gratifying end to the sexual interaction. With sound, both men and women responded identically across the four SADI subscales, showing higher arousal and desire after the sequence with the ejaculation ending relative to the sequence without. However, without sound, men and women differed with regard to the ejaculation ending. Although it is difficult to explain the reason for those gender differences, they seem to confirm the idea that both men and women are subjectively sensitive to auditory dimensions of erotic content. Accordingly, we predict that if stimulated sexual arousal is based on exposure to static erotic pictures or film

segments without sound, as occurs routinely in the literature, sex differences may emerge along negative and aversive lines depending on the nature of the depicted action and how it is interpreted (e.g., as pleasurable vs. degrading; male-centric versus female-centric, etc). However, the inclusion of sound may diminish those well-documented sex differences, especially if the voices of the actors depict words and emotional tones of pleasure and fulfillment during the action. It would be interesting to examine brain activation based on the same depicted sequences with and without sound, to examine the contribution of multisensory erotic stimulation in men and women. We hypothesize that fewer sex differences in brain activation would emerge from such studies with the sound included.

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### CHAPTER 3

The final chapter of this thesis presents a preliminary study in which the SADI was translated into Québec French and which aimed at evaluating the factor structure of this French version called the Inventaire de l'Excitation et du Désir Sexuel (IEDS). Three hundred and sixty-nine participants, the large majority of which were Canadian undergraduate francophone women in their early twenties, were asked to fill out the IEDS. They were instructed to rate each descriptor as it applied to their most recent sexual encounter. PCA was conducted and revealed a four-factor structure similar to the one found in the SADI. The percent of total variance explained by the four factors was 40.54%, with the Evaluative factor accounting for 12.55%, the Physiological factor accounting for 8.05%, the Motivational factor accounting for 7.09%, and the Negative factor accounting for 12.85%.

The results of this preliminary study seem to suggest that the IEDS is a multidimensional assessment tool that can be used for the evaluation of the subjective experience of sexual arousal and desire in Québec French-speaking populations. However, further studies need to be conducted to replicate these results with a larger sample of men and in demographically different populations, as well as to evaluate the psychometric properties of the IEDS, as was done for the SADI.

**L'Inventaire de l'Excitation et du Désir Sexuel (IEDS): The Québec  
French Version of the Sexual Arousal and Desire Inventory (SADI).**

Rachel R. Toledano, Andrew G. Ryder, and James G. Pfaus

Department of Psychology, Concordia University  
Montréal, QC, H4B 1R6 CANADA

*Correspondence concerning this paper should be addressed to*

*[Jim.Pfaus@concordia.ca](mailto:Jim.Pfaus@concordia.ca)*

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***Abstract:** The Sexual Desire and Arousal Inventory (SADI) is a validated multidimensional assessment scale to assess subjective sexual arousal and desire in English-speaking populations. The scale is made up of 54 descriptors that cluster into four different factors or subscales, including an Evaluative factor, a Physiological factor, a Motivational factor, and a Negative/Aversive factor. The present study sought to develop and characterize a Québec French version of the inventory, the Inventaire de l'Excitation et du Désir Sexuel (IEDS). A preliminary sample of 369 participants (310 women and 59 men) were recruited from French universities in Québec and were asked to fill out IEDS and rate each descriptor as it applied to their most recent sexual encounter. Principal Component Analysis revealed a four-factor structure nearly identical to that of the SADI. We conclude that the IEDS is a promising multidimensional assessment scale to evaluate the subjective experience of sexual arousal and desire in Québec French-speaking populations.*

*Key Words:* Sexual arousal Sexual desire Scale, Human sexuality Psychometric analysis

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## INTRODUCTION

A multidimensional view of human sexuality, which conceptualizes the human sexual response as being influenced by multiple factors including cognitive, emotional, motivational, and physiological processes, has led to the need to develop multidimensional assessment scales that measure those different components of subjective sexual arousal and desire simultaneously. Recently, Toledano and Pfaus (2006) developed the Sexual Arousal and Desire Inventory (SADI), a multidimensional assessment scale that accomplishes this task. They began by generating adjectives and phrases that may reflect different aspects of the experience of sexual desire and arousal. These were compiled following extensive discussions in random internet sex chat rooms and through one-on-one interviews. Subsequently, the descriptor-based, self-rating questionnaire was developed using the McGill Pain Questionnaire (Melzack & Torgerson, 1971) and the Orgasm Rating Scale (Mah & Binik, 2002) as models, both of which are adjectival rating scales that describe the subjective constructs of pain and orgasm, respectively, while successfully taking into account the multidimensional nature of these psychological experiences.

Toledano and Pfaus (2006) asked men and women, mostly white Canadian undergraduate university students in their twenties, to rate the 54 adjectives and phrase descriptors contained in the SADI as they applied to their normative experience of arousal and desire, on a 0-5 point Likert scale. Principal component analyses were conducted to derive factors that the descriptors loaded onto. These factors were then analyzed as subscales of the SADI. The descriptors loaded onto four factors that accounted for 41.3% of the variance. Analysis of the descriptor loadings broke these factors down into an Evaluative factor, a Physiological factor, a Motivational factor, and a Negative factor.



Factor analysis demonstrated that all items of the SADI loaded onto one or two of these four factors, with factor loadings  $\geq .30$ , confirming the scale's validity. The SADI was also shown to possess strong psychometric properties and it can be used with confidence as a statistically valid and reliable research tool to help establish an empirically based, normative perspective of the subjective experience of sexual arousal and desire in both men and women (Toledano & Pfaus, 2006).

Because the descriptors in the SADI are in English, its utility is restricted to English-speaking populations only. The aim of this study was to develop a Québec French version of the SADI, named the "Inventaire de l'Excitation et du Désir Sexuel" (IEDS) which could be used in Québec's French-speaking populations, and to evaluate its factor structure. We hypothesized that the four-factor structure of the SADI would be replicated in the IEDS. It was also hypothesized that descriptors loading onto the different factors may vary due to the translation itself, because not all English descriptors had a direct equivalent in French. These two languages have different kinds of descriptors and trying to equate them in order to obtain a French version of the SADI was not a matter of simple direct translation from English to French. The subjective sexual meaning of the descriptors had to be taken into account in order to obtain the culturally and socially appropriate translation of each descriptor.

It is also important to mention that this French translation of the SADI, and the findings of this preliminary study, will be applicable strictly to francophones in Québec, relative to other French-speaking populations in other countries such as France, Belgium, or Switzerland, for example. The SADI was translated into the IEDS for the purpose of this study using the Québec variation of the French language, and there are therefore adjectives or phrases that make up the IEDS' descriptors that may not be understood outside of a Québec French milieu.

Regional variations in French are widely studied in the field of linguistics and the literature dedicated to regionalism has coined terms such as “francisme,” referring to French words and idioms belonging only and specifically to France, and “québecisme” which refers to French words and idioms spoken and used only in Québec (Lamiroy, 2003). An example of such a difference in use of words is the following: The French translation of “feeding your baby with a bottle” in France would be, “nourrir son enfant au biberon,” whereas the Québec French version would be “nourrir son enfant à la bouteille.” Another example would be the Belgian French translation the sentence “this machine costs an arm and a leg” which is “cette machine coûte un os,” the France translation is “cette machine coûte bonbon,” and the Québec French translation being “cette machine coûte un bras” (Lamiroy, 2003).

Klein and Rossari (2003) talk about their collaboration in the BFQS project, which aims at creating a dictionary of four varieties of French, including that of Belgium, France, Quebec, and Switzerland, and which would allow one to understand or learn French words, expressions, and idioms which are used differently in these four different regions. There also exists a bank of words called the Banque de données lexicographiques panfrancophones, section Québec (BDLP-Québec), which was created by the Centre Interdisciplinaire de Recherches sur les Activités Langagières (CIRAL) of Université de Laval and by the Trésor de la Langue Française au Québec. A person can refer to it in order to obtain the definition and pronunciation of certain “québecismes”.

Bélanger (2004) attempted to define thousands of strictly Québécois expressions and words, so that others may understand them when they encounter them in Québec. Bélanger describes, for example, how Québec French uses words with

religious connotations as swear words (i.e., “tabarnac”), whereas French from France uses words with sexual connotations (i.e., “putain”).

The same types of word and idiomatic differences emerge in regional varieties of the French language used to describe sexuality and sexual experiences. For example, the Québec French translation of a term such as “being nasty” (in the sexual sense) would probably be “être cochonne,” which would most likely not be an expression understood by a French person from France who might translate the term as “être coquine.” Words that are used to express an emotional state can also be different from one region to another. Some examples of differences between Québec French (QF) and French from France (FF): “Annoyed” is “Agacé” (FF) and “Tanné” (QF), “To get mad” is “Se fâcher” (FF) and “Se choquer” (QF), “To get angry” is “S’ennerver” (FF) and “Pogner les nerfs” (QF), and “To complain” is “Râler” (FF) and “Chialer” (QF).

Although the translation of the SADI into the IEDS was obtained using as many “common” French words and phrases as possible, “common” meaning neutral considering all the possible regional French variations, it would not be recommended that the Québec French IEDS be used anywhere other than Québec, unless studies using this version of the IEDS in other French regions confirm the reliability of its four-factor structure and the fact that it is equally well-understood by other French-speaking populations.

## **METHODS**

### *Participants*

Sixty-two men and 319 women volunteered to complete the Quebec French version of the SADI. Twelve of those participants (3 men and 9 women) were excluded from the

study either because they did not complete the questionnaire in its entirety or because they met exclusion criteria (see below), resulting in a total number of 369 participants (59 men and 310 women). Subjects were between the ages of 18 and 54 (mean age = 22.98) and the majority of them were Canadian, heterosexual, undergraduate students (Table 1). All subjects were recruited in classrooms of Université de Montréal, Université du Québec à Montréal (UQAM), and Université Laval in Québec City. Exclusion criteria included scoring 3, 4, or 5 (often to always) on a scale from 0 to 5 (0= “never”, 5= “always”) to the question, “Do you experience difficulty engaging in sexual activity?” and, giving a score lower than 3 on a scale from 0 to 5 (0= “very poor”, 5= “very fluent”) for the level of French fluency. Subjects were notified that their participation was on a voluntary basis, that no incentives would be provided, and that they could drop out of the study at any time without any negative consequences. Participants were also asked to sign a consent form (Appendix B) and were informed both verbally and on the consent form that all information gathered would remain strictly confidential, and that completion of the IEDS would take approximately 10 to 15 minutes.

**Table 22**

Demographic Information for the 369 Participants who filled out the IEDS

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	<u>All Subjects</u>	<u>Females</u>	<u>Males</u>
Mean Age	22.98	22.66	24.66
Age Range	18 to 54	18 to 51	19 to 54
Religion (number of subjects)			
Catholicism	319	268	51
Protestantism	2	2	0
Judaism	2	2	0
Islam	2	1	1
Other	6	4	2
No Religion	38	33	5
Level of Education completed Way (number of subjects)			
High School	6	6	0
College or Cegep	198	170	28
Trade School	16	14	2
Undergrad Program	135	111	24
Graduate Program	3	3	0
Postgraduate Program	11	6	5
Sexual Orientation (number of subjects)			
Heterosexual	346	296	50
Homosexual	14	6	8
Bisexual	9	8	1
Average Number of Times Masturbate/Week			
0	103	96	7
1-4	220	186	34
5-8	35	23	12
9 or more	10	4	6

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(Table 1 continued)

## Demographic Information for the 369 Participants who filled out the IEDS

	<u>All Subjects</u>	<u>Females</u>	<u>Males</u>
Average Number of Times Sexual Intercourse/Week			
0	45	36	9
1-4	245	205	40
5-8	70	60	10
9 or more	9	9	0
Average Number of Times Other forms of Sex Play/Week			
0	71	60	11
1-4	228	190	38
5-8	58	51	7
9 or more	12	9	3
Average Number of Times Think about Sex/Week			
0	0	0	0
1-5	100	93	7
6-10	129	117	12
10-15	63	52	11
15 or more	77	48	29

### *Materials and Procedure*

The questionnaire used for the present study was the Inventaire de l'Excitation et du Désir Sexuel (IEDS) (Appendix C), a Québec French translation of the Sexual Arousal and Desire Inventory. To ensure that the IEDS was a valid and equivalent version of the SADI, a back translation was used, which ended up giving an almost identical version of the SADI. The IEDS was made up of two separate questionnaires. Participants' demographic information, such as sex, age, nationality, religion, and sexual orientation, was gathered in the first questionnaire. Optional questions about the personal sexual lives of the participants (e.g.: "On average, how many times a week do you masturbate?") were also included for possible use in future studies. The second questionnaire of the IEDS contained the 54 word descriptors, which participants rated on a 0 to 5 Likert scale (0= "does not describe it at all", 5= "describes it perfectly"), according to their last subjective experience of sexual desire and arousal. Definitions of sexual desire and sexual arousal were provided to the participants using the DSM definitions as a template for defining sexual desire and arousal. Sexual desire was defined as "an energizing force that motivates a person to seek out or initiate sexual contact and behavior", whereas sexual arousal was defined as, "the physiological responses that accompany or follow sexual desire". Subjects were informed about the general goal of the study, the voluntary participation, and the confidentiality of the information revealed, which were also mentioned in the consent form.

### **RESULTS**

Principal components analysis (PCA) with varimax rotation, using Systat for Windows (Version 10.2), was employed to obtain statistically based factors and to

determine the descriptors that were found to be statistically relevant to each factor by having factor loadings  $\geq 0.30$ . Pairwise deletion was used for missing values in participants' descriptor ratings. Table 2 contains a list of the descriptors and their factor loadings. Table 3 provides a list of the means and SDs for the 54 descriptors used in the IEDS.

PCA identified the presence of four interrelated factors: The first representing an Evaluative (or cognitive-emotional) component, the second reflecting a Physiological (autonomic and endocrine) component, the third representing a Motivational component, and the fourth reflecting a Negative (aversive or inhibitory) component of sexual desire and arousal. The percent of total variance explained by the four factors was 40.54%, with the Evaluative factor accounting for 12.55%, the Physiological factor accounting for 8.05%, the Motivational factor accounting for 7.09%, and the Negative factor accounting for 12.85%. All of the 54 descriptors used in the IEDS were statistically shown through PCA to belong to at least one of the four factors extracted as shown in Table 4.

## **DISCUSSION**

The IEDS is a 54-item multidimensional assessment scale that evaluates physiological, cognitive-emotional, and aversive or inhibitory components of the subjective experience of sexual desire and arousal in Québec French-speaking populations. Like for its English counterpart, PCA revealed that four interrelated factors were present in the IEDS: an Evaluative factor, a Motivational factor, a Physiological factor, and Negative factor, which all together accounted for over 40% of the explained variance by all descriptors. The fact that both questionnaires present the same four-factor structure confirms the reliability and replication of the multidimensional and interrelated model of sexual arousal and desire in the IEDS, the



**Table 23**

Factor Loadings for the 54 Descriptors Used in the IEDS

<u>Variable</u>	<u>Evaluative</u>	<u>Negative Control</u>	<u>Physiological</u>	<u>Motivational</u>
Anticipation	0.075	0.217	0.025	<b>0.312*</b>
Picotements partout	0.120	0.061	<b>0.342*</b>	0.147
Contenu(e)	0.061	<b>0.451*</b>	-0.265	0.233
Anxieux(se)	-0.065	<b>0.545*</b>	-0.200	0.217
Impulsif(ve)/ Initiateur(trice)	<b>0.353*</b>	0.052	0.043	<b>0.336*</b>
Frigide	-0.037	<b>0.467*</b>	0.047	-0.285
Sensible au toucher	-0.003	-0.141	0.287	<b>0.406*</b>
Las(se)	0.002	<b>0.456*</b>	-0.003	-0.413
Forte envie d'être satisfait(e) ou de satisfaire	0.299	-0.125	0.227	<b>0.465*</b>
Enthousiaste	0.297	-0.301	0.088	<b>0.497*</b>
Mécontent(e)	-0.107	<b>0.719*</b>	0.024	-0.185
Lubrifiée/Érection	0.118	-0.250	<b>0.366*</b>	0.220
Frustré(e)	-0.126	<b>0.697*</b>	-0.049	-0.058
Langoureux(se)	<b>0.340*</b>	0.001	0.153	0.204
Extasié(e)	<b>0.450*</b>	-0.162	0.295	0.274
Aversion	-0.141	<b>0.500*</b>	0.054	-0.285
Chaud(e)	<b>0.406*</b>	-0.088	<b>0.398*</b>	<b>0.339*</b>
Tenté(e)	<b>0.384*</b>	-0.029	0.179	<b>0.518*</b>
Passionné(e)	<b>0.498*</b>	-0.191	0.264	<b>0.371*</b>
Fantasme sur le sexe	<b>0.392*</b>	0.066	0.179	0.236
Refoulé(e)	-0.106	<b>0.666*</b>	-0.013	0.094
Contrarié(e)	-0.115	<b>0.703*</b>	-0.049	0.130
Plaques rouges sur le corps	0.065	0.011	<b>0.496*</b>	-0.063
Impatient(e)	0.104	<b>0.331*</b>	-0.004	0.257
Résistant(e)	0.081	<b>0.564*</b>	-0.088	-0.101
Corps tout chaud	0.249	-0.069	<b>0.530*</b>	<b>0.331*</b>
Agité(e)	<b>0.376*</b>	0.280	0.179	0.289
Picotements organes génitaux	0.000	0.091	<b>0.535*</b>	0.117
Désintéressé(e)	-0.144	<b>0.656*</b>	-0.006	-0.338
Plaisir	<b>0.407*</b>	-0.415	0.254	<b>0.411*</b>
Coeur bat plus vite	0.190	-0.117	<b>0.498*</b>	0.257
Content(e)	<b>0.329*</b>	-0.384	0.281	<b>0.457*</b>
En colère	-0.217	<b>0.679*</b>	0.039	-0.072
Attirant(e)	<b>0.766*</b>	-0.146	0.062	0.069
Puissant(e)	<b>0.560*</b>	-0.029	0.141	0.232
Osé(e)	<b>0.682*</b>	-0.032	0.149	0.109
Attrayant(e)	<b>0.788*</b>	-0.124	0.094	0.114

(Table 2 continued)

## Factor Loadings for the 54 Descriptors Used in the IEDS

<u>Variable</u>	<u>Evaluative</u>	<u>Negative Control</u>	<u>Physiological</u>	<u>Motivational</u>
Épuisé(e)	0.091	0.193	<b>0.322*</b>	-0.077
Excité(e) sexuellement	<b>0.403*</b>	-0.339	<b>0.307*</b>	<b>0.401*</b>
Sensuel(le)	<b>0.607*</b>	-0.138	0.201	0.184
Respirer plus vite/ Haleter	0.167	-0.186	<b>0.618*</b>	0.184
Mécontentement	-0.204	<b>0.703*</b>	0.032	-0.048
Stimulé(e)	<b>0.446*</b>	-0.247	<b>0.367*</b>	<b>0.327*</b>
Papillons dans le ventre	0.236	0.027	0.283	<b>0.398*</b>
J'oublie tout le reste	<b>0.296*</b>	-0.185	0.272	0.281
Répulsion	-0.050	<b>0.483*</b>	-0.028	0.044
Sexy	<b>0.792*</b>	-0.087	0.155	-0.032
Frémissements	<b>0.370*</b>	-0.137	<b>0.464*</b>	0.082
Insensible	0.037	<b>0.586*</b>	-0.014	-0.217
Séduisant(e)	<b>0.816*</b>	-0.088	0.096	0.016
Organes génitaux rougeâtre	0.082	0.039	<b>0.673*</b>	-0.013
Peu attirant(e)	-0.446	<b>0.346*</b>	0.197	0.179
Se sentir bien	<b>0.332*</b>	-0.418	0.222	<b>0.333*</b>
Pulsations organes génitaux	0.189	-0.139	<b>0.650*</b>	0.114

\* Descriptors with factor loadings equal to or bigger than 0.300

**Table 24**

Means and Standard Deviations for the 54 Descriptors of the IEDS

<u>Variable</u>	<u>Mean</u>	<u>Standard Deviation</u>
Anticipation	2.772	1.611
Picotements partout	1.347	1.379
Contenu(e)	1.558	1.434
Anxieux(se)	0.997	1.320
Impulsif(ve)/ Initiateur(trice)	2.851	1.237
Frigide	0.333	0.804
Sensible au toucher	3.940	1.064
Las(se)	0.469	0.900
Forte envie d'être satisfait(e) ou de satisfaire	4.347	0.935
Enthousiaste	4.024	0.954
Mécontent(e)	0.420	0.906
Lubrifiée/Érection	3.992	1.134
Frustré(e)	0.428	0.924
Langoureux(se)	3.030	1.403
Extasié(e)	3.258	1.216
Aversion	0.122	0.435
Chaud(e)	3.726	1.132
Tenté(e)	3.989	0.964
Passionné(e)	3.932	1.057
Fantasme sur le sexe	3.366	1.343
Refoulé(e)	0.575	1.099
Contrarié(e)	0.523	0.981
Plaques rouges sur le corps	1.133	1.617
Impatient(e)	1.607	1.557
Résistant(e)	0.791	1.157
Corps tout chaud	3.518	1.218
Agité(e)	2.496	1.447
Picotements organes génitaux	1.902	1.723
Désintéressé(e)	0.263	0.654
Plaisir	4.260	0.836
Coeur bat plus vite	3.854	1.071
Content(e)	4.065	0.962
En colère	0.146	0.547
Attrayant(e)	3.715	1.110
Puissant(e)	2.531	1.598
Osé(e)	3.051	1.435
Attrayant(e)	3.585	1.151
Épuisé(e)	1.434	1.578
Excité(e) sexuellement	4.393	0.847

(Table 3 continued)

## Means and Standard Deviations for the 54 Descriptors of the IEDS

<u>Variable</u>	<u>Mean</u>	<u>Standard Deviation</u>
Sensuel(le)	3.862	1.027
Respirer plus vite/ Haleter	3.770	1.257
Mécontentement	0.295	0.785
Stimulé(e)	3.856	0.980
Papillons dans le ventre	2.472	1.684
J'oublie tout le reste	3.230	1.472
Répulsion	0.136	0.492
Sexy	3.350	1.257
Frémissements	3.098	1.380
Insensible	0.225	0.668
Séduisant(e)	3.520	1.108
Organes génitaux rougeâtre	2.133	1.743
Peu attirant(e)	0.301	0.733
Se sentir bien	4.144	0.977
Pulsations organes génitaux	3.593	1.447

**Table 25**

The 54 descriptors of the IEDS and the factors they loaded onto

<u>Evaluative</u>	<u>Negative</u>	<u>Physiological</u>	<u>Motivational</u>
Impulsif(ve)	Contenu(e)	Picotement partout	Anticipation
Langoureux	Anxieux(se)	Lubrifiée/Erection	Impulsif(ve)
Extasié(e)	Frigide	Chaud(e)	Sensible au toucher
Chaud(e)	Las(se)	Plaque rouge corps	Envie être satisfait
Tenté(e)	Mécontent(e)	Corps tt chaud	Enthousiaste
Passionné(e)	Frustré(e)	Picotements org gén	Chaud(e)
Fantasme sur sexe	Aversion	Cœur bat plus vite	Tenté(e)
Agité(e)	Refoulé(e)	Epuisé(e)	Passionné(e)
Plaisir	Contrarié(e)	Excité(e) sexuellem	Corps tt chaud
Content(e)	Impatient(e)	Respirer + vite/Hal.	Plaisir
Attrayant(e)	Résistant(e)	Stimulé(e)	Content(e)
Puissant(e)	Désintéressé(e)	Frémissements	Excité(e) sexuellement
Osé(e)	En colère	Organes gén. rouges	Stimulé(e)
Attrayant(e)	Mécontentement	Pulsations org gén	Papillons dans le ventre
Excité(e) sexuellem.	Répulsion		Se sentir bien
Sensuel(le)	Insensible		
Stimulé(e)	Peu attirant(e)		
J'oublie tt le reste			
Sexy			
Frémissement			
Séduisant(e)			
Se sentir bien			

Québec French version of the SADI. This finding supports one of the two hypotheses of the current study, that the four-factor structure of the SADI would be replicated in its French counterpart. As well, the percent of total variance explained by the four factors in both scales were almost identical. For the IEDS, the total variance explained was 40.54% whereas it was 41.3% for the SADI. Moreover, the percent of the variance explained by each factor individually was also very similar in both versions of the scale with the Evaluative factor explaining 12.55% in the IEDS and 15.6% in the SADI, the Physiological factor explaining 8.05% of the variance in the IEDS and 9.8% of the variance in the SADI, the Motivational factor explaining 7.09% in the IEDS and 4.8% of the variance in the SADI, and finally the Negative factor explaining 12.85% in the IEDS and 11.1% in the SADI. These results provide support for the reliability of the IEDS as a viable Québec French version of the SADI.

There were differences however between the French and English versions of the SADI as to which descriptor loaded onto which factor(s). Half the descriptors loaded onto either a different factor or the same factor plus another additional loading to another factor. For example, the descriptor “impatient” loaded onto the Negative factor within the IEDS and onto the Motivational factor within the SADI. These differences could be due to the translation per se because some descriptors, when translated into French, had no direct equivalent and consequently could have lost some of their meaning or sexual connotation. These differences might be explained by indirect translation of certain descriptors from English to French, for example “excited” and “agité” or “lethargic” and “épuisé”, which do not really mean the same thing, however they were the best translations available. These differences may also be the result of differential cognitive interpretations of different words and idioms in

French and in English, reflecting dissimilarities in the subjective interpretation of certain descriptors in Québec Francophone and Anglophone populations. The IEDS and the SADI should therefore each be used with the descriptor loadings appropriate to its version when applied to research settings. These results confirm the second hypothesis of this study that descriptors loading onto the different factors may vary due to the translation itself, because not all English descriptors had a direct equivalent in French.

The current study being only a preliminary study on the Québec French version of the SADI, the IEDS, several limitations are present concerning the results obtained. An important limitation is that the sample was composed mainly of women, as they were the only Québec French speaking participants who volunteered to participate in this study, and it would be important in future studies to replicate these results with an equally large number Québec Francophone men. As opposed to studies conducted on the SADI, this preliminary study did not allow to evaluate gender differences, which should be taken into consideration in future studies. The sample recruited was also largely composed of white Canadian heterosexual undergraduate students in their twenties, thereby limiting the generalizability of these results to other populations. Assuming the four-factor structure of the IEDS is replicated with a large and equal number of Québec French men and women, it would then be necessary to conduct future studies which would also evaluate the psychometric properties of the IEDS.

As mentioned above, the IEDS is intended to be used only in Québec, as several studies have shown that major differences exist between different regional variations of French (Klein & Rossari, 2003; Lamiroy, 2003). Because the translation of the SADI was conducted using as many “common” French words and phrases as

possible, it might be that the IEDS could be used in other countries such as France, Belgium, or Switzerland, however future studies would have to test the reliability and validity of the IEDS using samples of French speaking populations from those countries.

In sum, this preliminary study of the IEDS suggests that its four-factor structure is as reliable, at least in women, as it is in its English counterpart. These results are encouraging and justify conducting future studies regarding the IEDS' psychometric properties, in order to confirm whether this multidimensional assessment scale can become useful in Québec Francophone applied settings of human sexuality.



## GENERAL DISCUSSION

The research reported in this thesis was concerned with the creation and validation of a multidimensional adjective-based subjective measure of sexual arousal and desire that could be used for both men and women. The ability of this measure to track state and trait aspects of sexual arousal and desire was examined using both sexual fantasy and exposure to a sexually explicit film, and gender differences were evaluated. At a more theoretical level, the correlational and factor analysis revealed that the human experience of sexual arousal and desire is multidimensional and interconnected between awareness of physiological sensations, motivational and aversive properties, and their cognitive evaluation. Clearly, a unidimensional model of sexual arousal and desire does not fit the data. The fact that men and women both reported higher mean values on the positive SADI subscales after viewing the film with the soundtrack relative to the film without the soundtrack suggests that state measures of subjective sexual arousal and desire reflect the affective quality of the perceived experience, in addition to other situational variables or trait expectancies brought into the experience. Moreover, gender differences in the experience of sexual arousal and desire were not strong in the present analysis, suggesting that the experience of sexual arousal and desire may be interpreted in the brain by similar mechanisms in men and women, leading to a similar cognitive state.

Two studies comprised the first chapter. The first study developed an adjective-based questionnaire to assess subjective sexual arousal and desire called the SADI. Results showed that these two phases of the human sexual response cycle are psychologically interconnected, even though theoretically they can be defined as distinct processes. Results also showed that a four-dimensional model, with three positive dimensions including an evaluative, a motivational, and a physiological

dimension, and one negative dimension, which reflects inhibitive or aversive aspects, can be used to fully describe the subjective experience of sexual arousal in both men and women.

These findings are consistent with recent theoretical considerations found in the literature. As suggested by Pfaus (1999) in his Incentive Sequence Model, the human sexual response cycle can be described as being composed of two main phases, appetitive and consummatory, with an overlap between these two phases that comprise precopulatory behaviors. Emphasis is placed on the idea that certain sexual responses, such as arousal, desire, and foreplay, can be placed in both phases, thereby showing their interrelatedness at a theoretical level. The Incentive Sequence Model suggests that contact with a sexual incentive can be made "psychologically" and that sexual desire and arousal, although they remain conceptually distinct, can be viewed as overlapping and interconnected phases.

Experts in the field of human sexuality agree that the dichotomization of biological and psychological factors to describe the sexual response cycle is considered outdated. A biopsychosocial perspective is advocated, and each of the separate phases of the sexual cycle is said to be best described in multidimensional terms. Current models of the human sexual response cycle take into account not only the physiological changes that take place, but also the psychological factors that come into play before, during, and after sexual interaction, including an individual's sexual history and expectations, the context of the sexual encounter, and the moment-to-moment alterations in sensory stimulation along with their cognitive processing (Basson, 2003; Basson, 2001; Mah, 2002; Pfaus, 1999).

Cognitive and affective components are no longer to be ignored when describing the different phases of the human sexual response cycle. Several

researchers have demonstrated the crucial and prominent role of evaluative aspects of subjective sexual arousal and desire (Basson, 2005; Basson, 2003; Basson, 2002; Basson, 2001; Laan et al., 2002; Nobre et al., 2004; Rosen & Beck, 1988; Laan et al., 1995; Althof, 2005; Delizonna et al., 2001; Stoleru et al., 1999; Mah & Binik, 2005). Their research showed that the human sexual response cycle should be described using a more multidimensional approach, which takes subjective psychological events, including an individual's sexual history and expectations, along with moment-to-moment alterations in sensory stimulation and its cognitive processing, into consideration around the physiological outflow (Basson, 2003; Basson, 2001; Mah, 2002; Pfaus, 1999) and that physiological and behavioral aspects alone are not sufficient to fully describe the range of experiences involved in human sexuality (Rosen & Beck, 1988).

Findings of the first study of Chapter 1 also revealed the important role of the cognitive and emotional factors involved. Of the 41.3% total variance explained by the 4 factors extracted in the Sexual Arousal and Desire Inventory, the Evaluative factor alone explained 15.6% of the variance, the highest percentage explained of all four factors. The fact that the Evaluative factor accounted for the most variance indicates that physiologic changes alone are not sufficient to account for the range of experiences involved in subjective sexual desire and arousal. Schachter and Singer's theory of cognitive arousal (1962), in which they argued that the experience of emotion is predicated on the occurrence of both physiological arousal and a state of "emotional" cognition related to it, seems to be supported by these results.

The findings of this thesis seem to support the idea that the mind, which can be described as combining cognitive, emotional, and motivational components, and the body, which encompasses all of the physiological and behavioral components, are

intertwined and can in no way be considered or studied separately when attempting to fully and comprehensively describe a human experience. In the case of subjective sexual arousal and desire in men and women, this theory confirms the idea of the mind-body connection, where a sexual stimulus or experience can elicit, through either a positive or negative feedback loop, a series of evaluative, cognitive, emotional, and motivational reactions, which will be preceded, accompanied, or followed by a set of physiological and behavioral responses that, in turn, reinforce or alter the cognitive evaluation.

The second study included in the first chapter evaluated the psychometric properties of the SADI as a measure of the subjective experience of sexual arousal and desire and of its four-dimensional model. Results of this study showed that the SADI possesses excellent psychometric properties as a state measure, and that it can be used as a research tool to establish both normative data on trait arousal and desire, and as a tool to assess changes in arousal and desire that accompany exposure to erotic or other material. Indeed, the SADI could be used in conjunction with psychophysiological measurement devices, such as penile strain gauges and vaginal photoplethysmographs, to obtain a complete overview of both objective and subjective responses to sexual stimuli in applied settings. Studies of those kind would also show to what extent the subscales correlate with actual physiological measures of arousal.

Future studies may also demonstrate the SADI's usefulness in clinical settings. If patterns of scores on the different subscales of the SADI, in the form of a response profile, can be established and matched consistently with different types of sexual disorders, it can become a useful assessment measure with clinical populations. The profile would depict a person's score on each of the four subscales of the SADI,

thereby rendering an overall score, subscale scores, and the ability to identify potential areas of sexual difficulty.

The second study in Chapter 1 examined whether mean scores on the four subscales of the SADI would be significantly different when men and women used erotic fantasy versus exposure to an erotic film segment to generate increases in subjective arousal and desire and whether gender differences would be found. Results indicated that mean scores on the three positive subscales of the SADI were significantly higher in the fantasy condition than in the erotic clip condition. These results are not consistent with past research, which has repeatedly reported that erotic films induce higher levels of genital and subjective sexual arousal than stories, slides, or fantasy instructions (Heiman, 1980; Koukounas & Over, 1997; Laan & Everaerd, 1995; Smith & Over, 1987). It is possible that participants in this study had a good ability to generate vivid content imagery within their sexual fantasies, which has been positively correlated with sexual arousal and desire (Smith & Over, 1987). It is also possible that fantasies, which are not directed by the experimenter, as was the case in this study, may achieve a higher level of arousal for the participant. The ability to freely control the fantasy content, and thereby the important cognitive and emotional components of their fantasies, may have generated stronger subjective sexual arousal in this condition. These findings once again underline the multidimensional nature of the psychological constructs of sexual arousal and desire.

The erotic clip used in this study lasted three minutes, depicting consensual heterosexual intercourse comprising 1 minute of kissing and petting, 1 minute of oral sex (both the man and the woman were alternatively receiver and giver), and 1 minute of vaginal intercourse. It is possible that this film segment may have been too short to properly elicit in our sample of participants sexual arousal and desire, or that the sexual acts engaged in by the heterosexual couple was too “soft” for a sample composed of mostly Montréal

undergraduate university students in their twenties who can often be described as being sexually open and liberal. There is evidence that younger men and women in Montréal display more positive attitudes toward sex and sexually explicit material than in the rest of Canada (Samson et al., 1993). Our sample may have needed either a longer film segment or a ‘harder’, more sexually explicit type of erotic film segment to generate results similar to those previously yielded in the literature comparing sexual arousal induced through erotic film and fantasy. Future research should explore whether a similar Montréal sample of participants would indeed achieve increased levels of sexual arousal and desire when presented with a longer version of the same erotic clip, and when presented with a film segment that depicts more sexually explicit or diverse acts.

Although a study directly contrasting subjective sexual arousal and desire elicited by the same erotic clip edited to obtain different clip lengths was not conducted, the study in chapter 1 used a 3-minute erotic segment and the study included in chapter 2 of this thesis used the full 10-minute version of the erotic film. According to the results of these two studies, no significant gender differences were found on any of the four SADI subscales whether a 3-minute or a 10-minute erotic clip was used. These findings may suggest that it is sufficient to use a 3-minute erotic clip to elicit subjective sexual arousal and desire in both genders, and that it is not length of the clip that will lead to differential levels of arousal and desire, but rather such factors as the presence or absence of specific erotic cues like sound and orgasm (ejaculation). These findings once again support the idea that evaluative components play a crucial role in the subjective experience of sexual arousal and desire, where cognitive labelling and the emotional state brought on by such labelling is dependent upon such erotic cues.

In terms of gender differences, results of the second study found that women had significantly higher mean scores than did men on the physiological subscale of the SADI in

the fantasy condition. This finding is not consistent with past research showing that men are more likely to engage in sexual fantasy and be sexually aroused by their fantasies than women (Ellis & Symons, 1990; Halderman et al., 1985). Women in this sample of participants may have been better able to generate more vivid fantasies than did the men, or contrary to findings in the literature (Heiman, 1980; Meston & Gorzalka, 1995; Meston & Heiman, 1998), women may have been more subjectively in tune with their physiological responses than were the men in this study. Women also scored higher than men on a measure of affective sexual arousal in the fantasy condition, although the difference was not significant. Men had significantly higher means than women on a measure of affective sexual arousal in the film condition and on a measure of sexual desire in both the fantasy and the erotic film condition. This finding supports the idea that the cognitive and affective components of subjective sexual arousal and desire are just as important for men as they are for women, and that these constructs must be perceived of as multidimensional for both genders (Delizonna et al., 2001; Stoleru et al., 1999).

The Sexual Desire Inventory is a trait measure of the frequency and intensity of desire in normative circumstances. The Affective Sexual Arousal subscale of the Multiple Indicators of Subjective Sexual Arousal (MISSA) was used to determine the level of perceived arousal induced by fantasy or film. It is interesting to note that women showed higher responses on the SADI Evaluative and Motivational subscales in the fantasy condition relative to the film condition, although in the film condition their scores were not lower than those of the men. Thus, the way that affective sexual arousal is processed using the MISSA diverges from the way it is processed using the SADI. Despite this difference, strong and significant correlations were obtained between the MISSA and SADI subscales.

The second chapter of the present thesis examined the effects of the presence or absence of a final ejaculation scene in a 10-minute female-centered erotic film segment, as

well as of the presence or absence of auditory cues in the same film segment, on men and women's subjective experience of sexual arousal and desire. Results of this study showed that for both men and women, subjective sexual arousal and desire were significantly higher in the presence of auditory cues, thereby suggesting that sounds related to pleasurable sexual sensations, along with ambient music which sets a sexual type of mood, are important cognitive and emotional factors that are processed to increase the incentive value of the sexual stimulus. Findings of this study also showed that in the presence of the erotic soundtrack, the film segment with the ejaculation scene included was rated as being more subjectively sexually arousing than without the ejaculation scene. Again, it seems that the presence of the soundtrack and of the ejaculation scene, which each might be perceived of as predicting the upcoming presence of something rewarding and pleasurable, were cognitively and emotionally processed to increase the sexual impact on subjective arousal and desire in both genders.

Another interesting gender difference found in this study was that women found the segment without the soundtrack but with the ejaculation scene significantly more aversive than did men. This finding indicates that the absence of an auditory context for women increased the aversive interpretation of the action depicted. Auditory cues, including the voices of the actors, the music, and emotional sounds made during orgasm that indicate a positive experience occurred for the woman and man, may be necessary for women to subjectively experience a positive state of sexual arousal and desire. This may be especially true with scenes that depict an extravaginal ejaculation onto the woman's body, something that could be considered degrading in a different context (e.g., Merritt, Gerstl, & LoSciuto, 1975). These findings seem to confirm the conceptualization of women's sexual response cycle which combines psychological and biological factors with contextual and interpersonal factors, and in which emphasis is placed on the essential differences between



psychological/subjective and physiological/objective aspects of women's sexual experiences (Basson, 2005; 2003; 2002). In Basson's (2005; 2003; 2002; 2001) model of female sexual response, she argues that cognitive and emotional processing of sexual stimuli occurs under the influence of previous physiological and psychological experiences, and that if the cognitive and emotional feedback is positive, a state of subjective sexual arousal is activated. The findings in the study included in Chapter 2 of this thesis seem to indicate that auditory cues provide important positive feedback for women's subjective experience of sexual arousal and desire, and that the absence of such feedback can have an inhibitory or aversive effect.

As for men, the absence of both the soundtrack and the ejaculation scene rendered their subjective experience of sexual arousal as being significantly more aversive than women. This finding suggests that the visual depiction of ejaculation has a higher incentive value for men than for women, that even without auditory cues men can subjectively be aroused as long as the ejaculation is present, and that depictions of sexual activity that do not end in ejaculation for the male actor are more aversive for men, which is not the case for women. These findings seem to support the idea that for men, just like for women, certain cognitive and emotional cues are crucial determinants for the presence or absence of subjective sexual arousal and desire (Delizonna et al., 2001; Nobre et al., 2004; Stoleru et al., 1999; Mah & Binik, 2005).

Cognitive schemas, the mind's blueprints that dictate how a person will perceive and experience the world, others, and him or herself, are shaped by many factors including heredity, religion, culture, societal rules and norms, education, social experiences, and family environment. Previous experiences with sexually explicit material will necessarily influence the type of cognitive schemas one has formed in

relation to depictions of sexuality. One's cognitive interpretations and emotional reactions related to sexual stimuli, and whether or not such stimuli will be experienced as being either arousing or aversive, will depend on these cognitive schemas. For example, a person who suffered from childhood sexual abuse will likely have formed several rigid, negative aversive and inhibitive cognitive schemas related to sexual experiences and sexuality. These schemas can and will likely lead to an avoidance of and repulsion toward sexual stimuli. On the other hand, if a person has been exposed to erotic or pornographic material in his or her teenage years, and that this exposure has led to positive sexual experiences of self-exploration, masturbation, and orgasm, the conditioned response to such material can be expected to be one of induced arousal and desire.

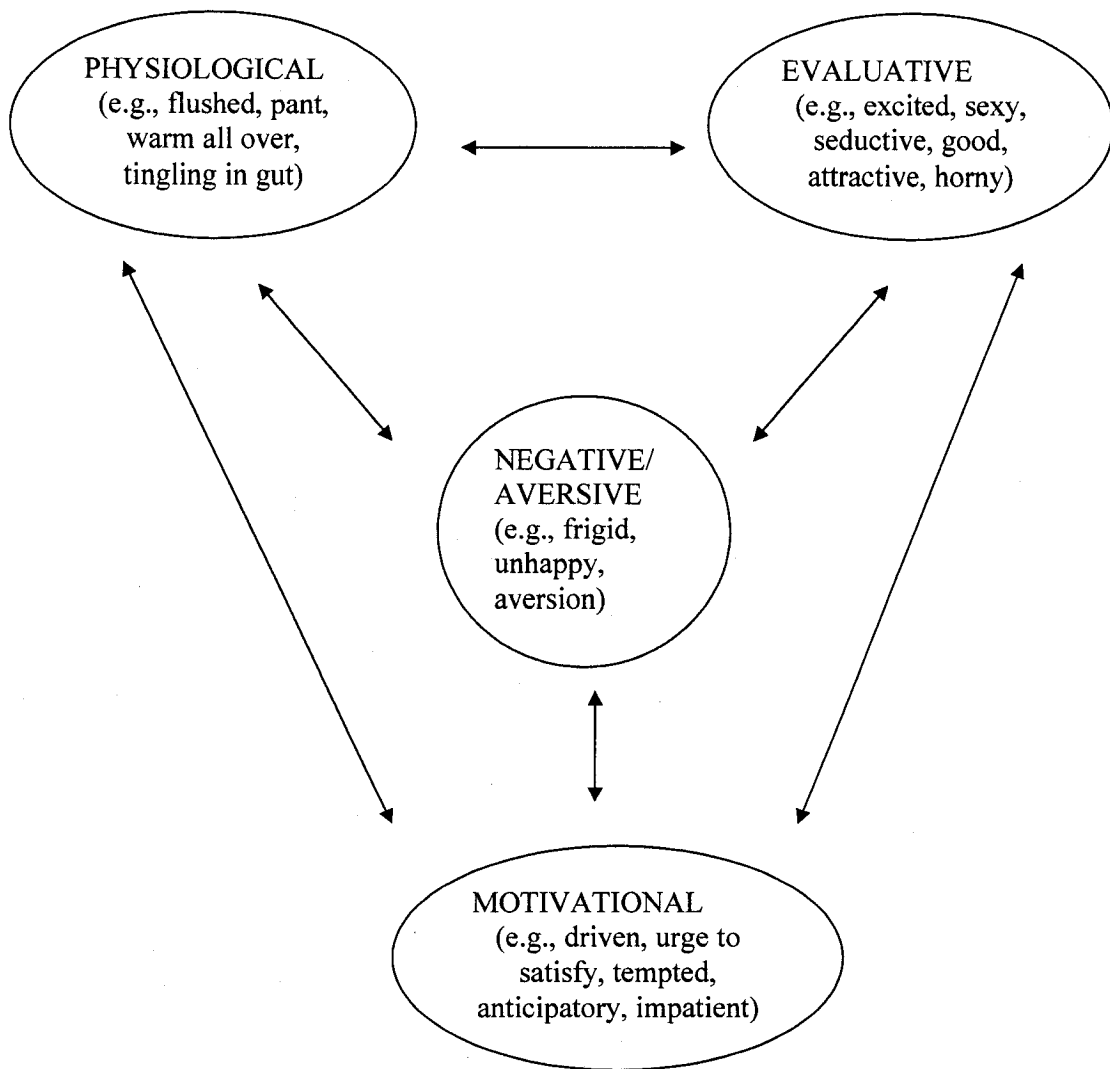
This type of conditioned response was demonstrated to exist in male rats as well. In one of their studies, the authors developed a model to study the influence of conditioning on sexual partner preference in the rat. In this model, pairing a neutral odor with copulation to ejaculation produces a subsequent preference to ejaculate with females bearing that odor. The authors named this phenomenon a conditioned ejaculatory preference (Kippin & Pfaus, 2001a). In another study, the same authors showed that the development of a conditioned ejaculation preference can only occur in the presence of certain specific conditions. The results of this study showed that ejaculation plus a post-ejaculatory interval were necessary for the development of the conditioned ejaculatory preference and that the female had to be present during the post-ejaculatory interval for this preference to occur. These findings indicate that events during the post-ejaculatory interval are critical components of the unconditioned stimulus for the development of conditioned ejaculatory preference (Kippin & Pfaus, 2001b). These type of findings emphasize the important role of

learning in sexual excitement, in sexual behaviors that lead to the opportunity to engage in sexual interactions, in displays of courtship, in sexual arousal and copulatory behaviors, in sexual partner preferences, and the short- and long-term influence of sexual experiences (Pfaus et al., 2001). These findings provide a framework to help understand the role of Pavlovian and motivational learning in sexual partner preference, but can also be generalized to the learning that leads to the formation of specific cognitive sexual schemas of arousal and desire or of avoidance and inhibition.

The third and final chapter of this thesis aimed at producing a Québec French version of the SADI, called the Inventaire de l'Excitation et du Désir Sexuel (IEDS). A preliminary study was conducted which confirmed the presence of the same four-dimensional model of the subjective experience of sexual arousal and desire in men and women as that found in the SADI, with an evaluative, a motivational, a physiological, and a negative factor. The sample of participants in this study was composed mostly of women and therefore these results need to be replicated in a sample of men. The Québec French IEDS may become useful in both research and clinical settings once its psychometric properties have been evaluated and more demographically diverse norms have been established. Its use will however be limited to Québec French-speaking populations because of the differences in French language found across countries, unless studies are conducted that can demonstrate its validity and reliability for use in other French-speaking countries, such as France or Switzerland, for example. Each country possesses its own culture, which in turn influences the way language and the different words of this language are used and understood. Regional variations in the French language are known to exist and are widely studied in the field of linguistics. The literature dedicated to regionalism has

coined terms such as “francisme,” which refers to French words and idioms belonging only and specifically to France, and “québecisme” which refers to French words and idioms spoken and used only in Québec (Lamiroy, 2003). Based on these cultural and language differences, it would not be wise to use the Québec French version of the SADI in other French-speaking countries without studies confirming its linguistic and cultural reliability and validity in those countries.

The findings of the present thesis emphasize the need to describe the subjective experience of sexual arousal and desire of both men and women in multidimensional terms. Psychologically, the constructs of sexual desire and arousal appear to be intertwined for both men and women. The model supported by the results of the studies included in this thesis involves a physiological factor, a motivational factor, an evaluative, and a negative factor, which all interact with each other in either a positive or negative feedback loop. The cycle of activation can be triggered by any one of these four factors. Once one factor has been activated, it can be assumed that the three others will be influenced either positively or negatively, as well. The following figure demonstrates how this model can be perceived.



**Figure 7:** The four-dimensional model of subjective sexual arousal and desire in men and women.

In the presence of a sexual stimulus or situation, the subjective recognition of physiological sensations that denote sympathetic activation will be evaluated and thereby lead to cognitive and emotional processing of such sensations. In the case of a positive feedback, this processing will then lead to increased motivation to engage in or seek out sexual stimulation and behaviors that will maintain the positive sensations. The cycle can also begin to be activated at the evaluative level, for example, a person sees an attractive individual walking by, cognitively evaluates the individual's attractive traits, which leads to a positive emotional state, which then leads to physiological sensations associated with increased sexual desire and arousal, which will then activate the motivation or desire to seek out the attractive individual and to perhaps initiate contact with that individual. By the same token, people often begin the cycle at the level of motivation. The desire to experience sexual arousal, for example, may lead a person to seek out erotic material, which he or she will then watch, leading to an evaluation of the incentive value of this erotic material. If the evaluation is positive, meaning that the person will have positive thoughts and emotions associated with the erotic material, this will lead to an increase in positive physiological sensations of sexual arousal and perhaps initiate behaviors leading to sexual pleasure, such as masturbation or intercourse.

When the feedback loop is negative, any of the three positive factors of this model will be negatively influenced. The experience then becomes inhibitive or aversive as opposed to increasing positive feelings of sexual arousal and desire. For example, in the case of people who suffer from hypoactive desire disorder, they often begin with negative feelings such as feeling sluggish, lethargic, or repressed. These negative feelings lead them to experience low psychological and motivational activation even though physiologically, they are capable of experiencing sensations

associated with sexual arousal. In the case of female sexual arousal disorder or of male erectile disorder, the evaluative and motivational factors may be appropriately activated however, there is a short circuit in the cycle and the physiological activation is not considered adequate. This short circuit can lead those who suffer from these disorders to feel unhappy, unattractive, angry, or frustrated for example. The interconnectedness of the four factors is once again demonstrated in cases of sexual disorders where the feedback loop becomes negative. Any of the four factors can become the source of the negative feedback leading to an aversive or inhibitive sexual experience rather than a positive and exciting one. This explains and justifies the inclusion of the fourth factor, the negative factor.

Janssen et al. (2002a) developed the Sexual Inhibition and Sexual excitation (SIS/SES) Scales which measure men's propensity to become sexually inhibited and sexual excited. The development of these scales was based on the theoretical assumption that dual control mechanisms involving neuropsychological systems of inhibition and excitation regulate sexual responses and their associated behaviors. The scales are made up of three main factors including two sexual inhibition factors and one factor related to sexual excitation. In a study evaluating the scales' predictive validity, Janssen et al. (2002b) found that men with high scores on the sexual excitation subscale showed generally higher sexual responses to different types of erotic films, and that men with low sexual inhibition scores showed greater genital response to threatening erotic stimuli. These findings demonstrated the scales' utility in predicting sexual response.

Bancroft et al. (2005) also examined the relevance of the dual control model in explaining male sexual dysfunction. Using the SIS/SES scales, they measured the extent to which men with sexual dysfunction and non-clinical men displayed sexual

inhibition and excitation. These authors found that sexual excitation scores were higher in men with normal morning erections and in men with better erections during masturbation than during intercourse. They also found that sexual excitation was lower in men with high levels of performance anxiety. Sexual inhibition scores were higher in men with low sexual desire and in men with fears of being rejected by their partners. The authors of this study concluded that male sexual dysfunction can theoretically be seen as resulting from impaired arousability (low SES), high inhibition proneness (high SIS), or a combination of these two factors.

The dual control model of sexuality, in which the roles of both inhibitory and excitatory processes of the human sexual response cycle and of its associated behaviors are described, is congruent to the four-factor model of subjective sexual arousal and desire described in the present thesis. The theoretical perspective of positive and negative feedback loops that can respectively either lead to increased sexual excitation or inhibition is present in both models. It would be useful to evaluate how scores on the SADI subscales correlate with those on the subscales of the SIS/SES scales following exposure to different types of erotic stimuli, including threatening and non-threatening erotic films. It would help confirm the congruence between the two theoretical models underlying each scale thereby providing further evidence for the multidimensional nature of sexual responses and for their capacity to be activated in an exciting or inhibitive fashion, depending on the cognitive, emotional, and physiological mechanisms at play.

Mah and Binik (2002) proposed a three-dimensional model of the subjective experience of orgasm in men and women, involving a sensory, an evaluative, and an affective dimension. They developed an adjective-rating questionnaire called the McGill-Mah Orgasm Questionnaire, which confirmed the presence of these three



factors to describe orgasm experiences of both genders. Because having an orgasm does not logically contain a negative component to it, their measure does not include the negative factor that the SADI does. However, those who suffer from anorgasmia or delayed ejaculation for example cannot be evaluated through use of this questionnaire. Not using negative adjectives or words as probes in the McGill-Mah Orgasm Questionnaire means that there could not be a negative or aversive subscale. People suffering from anorgasmia or delayed ejaculation, for example, may very well describe their experience of orgasm in negative terms, as might a person who has suffered from childhood sexual abuse, rape, or even painful intercourse.

The negative and aversive adjectives used in the SADI were included to control for participants that mark the value of all adjectives in the same way. However, the data from Chapter 2 indicate that scores on the negative/aversive factor can be used to evaluate people who suffer from either sexual desire or sexual arousal disorders or who simply experience a particular experimental condition as being sexually aversive and negative. In the case of a negative subjective experience of sexual arousal and desire, adjectives and words such as anxious, resistant, unhappy, uninterested, unattractive, repressed, repulsion, and aversion, become useful in helping to describe an aversive, inhibitory, or negative experience of sexual arousal and desire.

Sexual disorders are often treated in therapy using a cognitive-behavioral approach, similar to the one used to treat several types of anxiety disorders. The CBT approach is also a multidimensional one in which physiological symptoms are treated by using relaxation and breathing techniques, psychological symptoms are addressed through use of cognitive reevaluation, and behavioral and motivational symptoms are treated by using gradual exposure. The idea is once again that a positive feedback

loop can be created by teaching and mastering skills that will break the negative cycle at any level, the physiological, the cognitive-emotional, or the behavioral one.

At the physiological level, the focus is to help the person to regain some form of control over his or her sympathetic (and parasympathetic) responses to erotic stimulation. At the cognitive level, one is taught to become aware of the negative distorted or unrealistic thoughts that lead to the experience of equally negative and aversive emotional states which in turn impact negatively on behavior and level of motivation to approach or initiate contact with people or different types of situations. By thinking more realistically, thereby changing one's perspective and resulting in different, perhaps more positive evaluative results, one can also succeed in altering their emotional reactions. By experiencing less aversive or more positive emotions, one's motivations can also change and thereby approach behaviors can become more likely.

The four-dimensional model of the subjective experience of sexual arousal and desire presented in this thesis and in the SADI adheres to this cognitive-behavioral multidimensional approach. It can therefore become useful in applied settings, especially when used in conjunction with other subjective and objective measures, as well as in clinical settings in which sexual disorders are evaluated and treated.

The results of the studies in this thesis support recent trends in the sexual literature toward describing the human sexual response cycle in multidimensional terms, and toward a biopsychosocial approach to human sexuality. It would however be useful to replicate the results of these studies in demographically diverse populations, of different ages, sexual orientations, cultural backgrounds, as well as from different regions across Canada, the United States, and Europe, in order to establish norms applicable to each population. It would also be useful to conduct

studies in which physiological measures of genital arousal, skin conductance, and heart rate for example are compared to scores on the subscales of the SADI to see how well they actually reflect actual physiological and genital arousal. It would also be of interest to see whether the different brain regions that are activated by sexual stimuli, in studies using functional magnetic resonance imagery (fMRI) or positron emission tomography (PET), would be reflected in scores on the subscales of the SADI. For example, strong activation of a brain region controlling sexual motivation would be accompanied by a high score on the motivational subscale of the SADI. This type of finding would help to confirm the concordance between physiological and subjective sexual arousal, as well as the SADI's ability to demonstrate it.

Future studies should also aim at establishing the psychometric validity of the SADI in clinical populations so as to confirm its potential usefulness in clinical settings and research related to clinical populations. It would be important to show whether different patterns of scores on the subscales of the SADI can be consistently matched with different types of sexual disorders and dysfunctions. If this is the case, it will help both clinicians and researchers to obtain a person's sexual arousal and desire profile, similar to that obtained through use of the Minnesota Multiphasic Personality Inventory (Hathaway & Meehl, 1951). Should this type of predictive validity be confirmed in the SADI, it can become a helpful screening and assessment tool in outcome and efficacy studies that evaluate changes induced through use of different psychological or psychopharmacological treatments.

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## Appendix A

### The Sexual Arousal and Desire Inventory (SADI)

**Sexual arousal** is defined as **the physiological responses that accompany or follow sexual desire**. For example, when you feel sexually aroused, your heart might beat faster or your palms may get sweaty. Men may experience penile erection and women may feel a moistness of the vagina. Sexual Arousal involves the more physiological aspects of wanting sex. **Sexual desire** is defined as **an energizing force that motivates a person to seek out or initiate sexual contact and behavior**. You can think of it as a hunger or a sexual "drive" that leads you to seek out sexual contact. Sexual Desire involves the more psychological aspects of wanting sex.

Keeping in mind these definitions of **sexual arousal and sexual desire**, try to remember, as best as you can, the last time you felt **sexual arousal and desire** (for example: prior to engaging in intercourse or upon viewing sexually stimulating material). Following is a list of words that might describe how you felt the last time you felt **sexual arousal and desire**. Different people experience **sexual arousal and desire** in distinct, individual ways. There is no "right" or "wrong" answer. Please indicate to what extent each word describes how you felt when you felt **sexual arousal and desire**, by placing the number that describes the feeling most accurately.

Please use the following scale to rate each of the words below. **Please rate all of the words. Do not skip any.**

0	1	2	3	4	5
does not describe it at all			describes it moderately well		describes it perfectly
Anticipatory _____			Frustrated _____		
Tingly all over _____			Lustful _____		
Restrained _____			Entranced _____		
Anxious _____			Aversion _____		
Driven _____			Hot _____		
Frigid _____			Tempted _____		
Sensitive to touch _____			Passionate _____		
Sluggish _____			Fantasize about sex _____		
Urge to satisfy and/or be satisfied _____			Repressed _____		
Enthusiastic _____			Disturbed _____		
Unhappy _____			Flushed _____		
Wet (women only) _____			Impatient _____		
Hard (men only) _____			Sensual _____		
Resistant _____			Breathe faster/ Pant _____		
Warm all over _____			Displeasure _____		



0                      1                      2                      3                      4                      5  
 does not                      describes it                      describes it  
 describe it at all                      moderately well                      it perfectly

Excited _____	Stimulated _____
Tingling in genital area _____	Tingling sensation in gut _____
Uninterested _____	I forget about everything else _____
Pleasure _____	Repulsion _____
Heart beats faster _____	Sexy _____
Happy _____	Quivering sensations _____
Angry _____	Insensible _____
Attractive _____	Seductive _____
Powerful _____	Genitals Reddish _____
Naughty _____	Unattractive _____
Alluring _____	Good _____
Lethargic _____	Throbs in genital area _____
Horny _____	

You have now completed the Sexual Arousal and Desire Inventory.

## Appendix B

### Formulaire de Consentement du Participant

Ceci est pour déclarer que j'accepte de participer au programme de recherche mis en œuvre par Rachel Toledano et Dr. James G. Pfaus du Département de Psychologie à l'Université Concordia.

J'ai été informé(e) que l'objectif de cette étude est d'évaluer de quelle façon les gens décrivent leurs expériences subjectives et psychologiques d'excitation et de désir sexuel. Le but de cette étude est d'évaluer la version française d'un outil, originellement développé en anglais, qui a pour but d'aider les cliniciens dans leurs évaluations de l'excitation et du désir sexuel, ainsi que dans leurs évaluations des patients ayant des dysfonctions sexuelles.

Je comprends que je devrai remplir l'Inventaire de l'Excitation et du Désir Sexuel (IEDS) et que toutes mes réponses demeureront confidentielles. Il n'y aura aucun moyen de faire un lien entre le questionnaire complété et la personne qui le rempli. Le questionnaire sera rempli de façon anonyme et prendra approximativement 10 à 15 minutes à compléter.

Je comprends que ma participation à ce projet est volontaire et que je peux refuser de répondre à des questions ou choisir de renoncer à participer à n'importe quel moment et sans aucune conséquence négative. Toute information fournie dans le questionnaire demeurera strictement confidentielle et les résultats de cette étude peuvent être publiés.

**J'AI LU ATTENTIVEMENT ET COMPRENDS L' ENTENTE CI-HAUT.  
JE CONSENS EN TOUTE LIBERTÉ ET ACCEPTE VOLONTAIREMENT À  
PARTICIPER À LA PRÉSENTE ÉTUDE.**

**NOM :** \_\_\_\_\_

**SIGNATURE :** \_\_\_\_\_

**SIGNATURE DU TÉMOIN :** \_\_\_\_\_

**DATE :** \_\_\_\_\_

**Enquêteuse Principale :**

Rachel Toledano, M.A., Candidate de Doctorat en Psychologie Clinique  
Centre pour les Etudes en Neurobiologie Comportementale  
Département de Psychologie, Université Concordia  
1455 Blvd. de Maisonneuve ouest  
Montreal, Quebec, H3G 1M8      Téléphone: (514) 848-2196

## Appendix C

### *L'Inventaire de l'Excitation et du Désir Sexuel (IEDS)*

Chaque personne a une manière distincte et individuelle de rapporter ses expériences d'excitation et de désir sexuel. Généralement, ceux qui ressentent le désir sexuel et deviennent excités, développent par la suite des comportements orientés vers un but, le but étant habituellement une forme de jeu ou d'interaction sexuelle. Par contre, dans certains cas qui se présentent en milieu clinique, la personne ressent un manque de désir. Celle-ci peut aussi ressentir un désir sexuel sans toutefois atteindre des sensations physiques d'excitation. Plusieurs facteurs peuvent contribuer à ces conditions et dans certains cas, la personne peut être diagnostiquée comme ayant des troubles de désir sexuel ou d'excitation sexuelle.

Dans la présente étude, nous définissons le **DÉSIR SEXUEL** comme **une force énergisante qui motive une personne à rechercher ou à initier un contact et un comportement sexuel**. On peut y penser en termes d'« appétit » ou de « pulsion » sexuelle qui génère la recherche de contact sexuel. Le **Désir Sexuel** implique les aspects psychologiques du fait de vouloir une relation sexuelle. Nous définissons l'**EXCITATION SEXUELLE** comme l'ensemble **des réponses physiologiques qui accompagnent ou suivent le désir sexuel**. Par exemple, quand vous vous sentez excités sexuellement, il se peut que votre cœur batte plus vite ou que les paumes de vos mains deviennent moites. Les hommes peuvent avoir une érection pénienne et les femmes, une humidité au niveau du vagin. L'**Excitation sexuelle** implique les aspects physiologiques du fait de vouloir du sexe.

Le but de la présente étude est de vérifier l'utilité d'un nouvel outil d'évaluation intitulé l'Inventaire de l'Excitation et du Désir Sexuel (IEDS). Ce dernier est utilisé pour évaluer la description des expériences subjectives actuelles de désir et d'excitation sexuelle. Nous cherchons à déterminer si le IEDS soutiendra les cliniciens dans leurs évaluations du désir et de l'excitation sexuelle, ainsi que dans leurs comparaisons des personnes qui se plaignent de leurs expériences sexuelles.

Pour atteindre ce but, nous avons conçu un questionnaire qui inclus un grand choix d'adjectifs pouvant décrire l'expérience subjective d'un individu quant au désir et à l'excitation sexuelle. Nous vous demandons de bien vouloir remplir ce questionnaire pour nous aider à évaluer comment quelqu'un comme vous vit le désir et l'excitation sexuelle. Ce questionnaire prendra environ 10-15 minutes à compléter.

Veillez noter que votre participation à la présente étude est volontaire, et que vous avez le droit de refuser de répondre à n'importe quelle question ou de retirer votre participation à tout moment. Toutes les informations que vous fournissez dans le présent questionnaire resteront strictement confidentielles. Un code de sujet sera utilisé à la place de votre nom. Si vous avez des questions ou des inquiétudes concernant le questionnaire, n'hésitez pas à contacter l'enquêtrice principale. Nous vous remercions de votre temps et de vos efforts. Nous apprécions grandement votre participation.

<i>Informations sur le/la participant(e)</i>
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Si vous avez choisi de ne pas participer à la présente étude, nous vous prions de bien vouloir fournir une brève explication des raisons pour lesquelles vous avez refusé d'y participer.

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Veillez remplir cette première partie de l'inventaire de la façon la plus précise. Toutes les informations que vous fournissez resteront strictement confidentielles.

1. Homme \_\_\_ Femme \_\_\_

2. Age \_\_\_\_\_

3. Nationalité \_\_\_\_\_

4. Dans quelle religion avez-vous grandi? Veuillez choisir une réponse.

Catholicisme \_\_\_ Protestantisme \_\_\_ Judaïsme \_\_\_ Islam \_\_\_  
Autre (Précisez) \_\_\_\_\_ Aucune religion \_\_\_

5. Veuillez noter votre niveau d'aisance de la langue française. (Encerclez une réponse).

0	1	2	3	4	5
Très faible					Très fort

6. Quel niveau d'études avez-vous complété?

École primaire _____	Programme de 1 <sup>er</sup> cycle universitaire _____
École secondaire _____	Programme universitaire d'études supérieures _____
Cégep _____	Programme universitaire de 2 <sup>e</sup> ou 3 <sup>e</sup> cycle _____
Collège technique _____	

7. Quelle est votre orientation sexuelle?

Hétérosexuelle \_\_\_\_\_  
Homosexuelle \_\_\_\_\_  
Bisexuelle \_\_\_\_\_

8. A quelle fréquence estimez-vous avoir du mal à entreprendre une activité sexuelle? (Encerclez une réponse).

0	1	2	3	4	5
jamais		parfois	souvent		tout le temps

9. Souffrez-vous d'une maladie sérieuse ou prenez-vous des médicaments? Si oui, veuillez préciser.

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**Les questions suivantes sont facultatives.**

10. En moyenne, combien de fois par semaine vous masturbez-vous?

0 \_\_\_\_ 1-4 \_\_\_\_ 5-8 \_\_\_\_ 9 ou plus \_\_\_\_

11. En moyenne, combien de fois par semaine avez-vous des relations sexuelles (orales, génitales ou anales)?

0 \_\_\_\_ 1-4 \_\_\_\_ 5-8 \_\_\_\_ 9 ou plus \_\_\_\_

12. En moyenne, combien de fois par semaine vous engagez-vous dans des jeux sexuels?

0 \_\_\_\_ 1-4 \_\_\_\_ 5-8 \_\_\_\_ 9 ou plus \_\_\_\_

13. En moyenne, combien de fois par semaine pensez-vous au sexe?

0 \_\_\_\_ 1-5 \_\_\_\_ 6-10 \_\_\_\_ 10-15 \_\_\_\_ 15 ou plus \_\_\_\_

14. Y a-t-il des moments où vous pensez plus souvent au sexe?  
Précisez.

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***L'Inventaire de l'excitation et du désir sexuels (IEDS)***

La deuxième partie de l'inventaire est en rapport avec l'**EXCITATION SEXUELLE** et le **DÉSIR SEXUEL**. Nous définissons l'**excitation sexuelle** comme l'ensemble des réponses physiologiques qui accompagnent ou suivent le désir sexuel. Par exemple, quand vous vous sentez excités sexuellement, il se peut que votre cœur batte plus vite ou que les paumes de vos mains deviennent moites. Les hommes peuvent avoir une érection pénienne et les femmes, une humidité au niveau du vagin. L'**excitation sexuelle** implique les aspects plus physiologiques du fait de vouloir du sexe. Nous définissons le **désir sexuel** comme **une force énergisante motivant une personne à rechercher ou à initier un contact et un comportement sexuel**. On peut y penser en termes d'« appétit » ou de « pulsion sexuelle » qui mène à la recherche de contact sexuel. Le **désir sexuel** implique les aspects plus psychologiques du fait de vouloir du sexe.

En tenant compte des définitions de l'**excitation sexuelle** et du **désir sexuel**, essayez de vous souvenir, du mieux que vous le pouvez, de la dernière fois que vous avez fait face à une expérience sexuelle. Estimez approximativement le nombre de jours depuis cette expérience : \_\_\_\_\_ jours.

Vous trouverez ci-dessous une liste de mots qui pourraient décrire comment vous vous sentiez la dernière fois que vous avez ressenti de l'**excitation sexuelle** ou de **désir**. Chaque individu est différent et la façon de ressentir l'**excitation sexuelle** et de **désir** est distincte et individuelle. Il n'y a pas de réponse "juste" ou "fausse". Nous vous demandons d'indiquer à quel point, chaque mot décrit comment vous vous sentiez lors de votre plus récente rencontre sexuelle. À cette fin veuillez utiliser le chiffre qui correspond le plus à cette sensation. **SVP notez tous les mots. N'en omettez aucun.**

0	1	2	3	4	5
ne le décrit pas du tout			le décrit assez bien		le décrit parfaitement
Anticipation _____					Frustré(e) _____
Picotements partout _____					Langoureux(se) _____
Contenu(e) (se retenir) _____					Extasié(e) _____
Anxieux(se) _____					Aversion(répugnance) _____
Impulsif(ve)/Initiateur(trice) _____					Chaud(e) _____
Frigide _____					Tenté(e) _____
Sensible au toucher _____					Passionné(e) _____
Las(se) _____					Fantasme sur le sexe _____
Forte envie de satisfaire ou d'être satisfait(e) _____					Refoulé(e) _____
Enthousiaste _____					Contrarié(e) _____
Mécontent(e) _____					Plaques rouges sur corps _____
Lubrifiée (femmes seulement) _____					Impatient(e) _____

0	1	2	3	4	5
ne le décrit pas du tout			le décrit assez bien		le décrit parfaitement

Érection (hommes seulement) _____ Résistant(e) _____ Haleter _____ Le corps tout chaud _____ Agité(e) _____ Picotements organes génitaux _____ Désintéressé(e) _____ Plaisir _____ Cœur bat plus vite _____ Content(e) _____ En colère _____ Attirant(e) _____ Puissant(e) _____ Osé (e) _____ Attrayant(e) _____ Épuisé(e) _____ Excité(e) sexuellement _____	Sensuel(le) _____ Respirer plus rapidement / Mécontentement _____ Stimulé(e) _____ Papillons dans le ventre _____ J'oublie tout le reste _____ Répulsion _____ Sexy _____ Frémissements _____ Insensible _____ Séduisant(e) _____ Organes gén. rougeâtres _____ Peu attirant(e) _____ Se sentir bien _____ Pulsations organes génitaux _____
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Vous avez maintenant terminé de remplir ce questionnaire. Nous vous remercions de votre participation.